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STUDIES IN THE LATIN CHRISTIAN RECEPTION OF
EARLY GREEK MATERIALISM

ONE VOLUME

BY

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Submitted for the degree of PhD.

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Classics

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Declaration

I declare that the following thesis is my own work and that I have not obtained a degree at this university or any other institution on the basis of this work.

Abstract

This work explores the reception of the physical teachings of the Presocratic philosophers, as transmitted by the doxographical tradition, during Late Antiquity and the Early Middle Ages. In particular it examines the ways in which Presocratic physical doctrines permeated the literary culture of Late Antiquity in polemic, exegesis and computistical writing. This work seeks to highlight the legacy of the Presocratic philosophers during these eras, and place their legacy within the context of the history of philosophy.

Abbreviations

DG Doxographi Graeci. Hermann Alexander Diels, *Doxographi Graeci* (Berlin: De Gruyter, 1879).

DK Diels-Kranz. Hermann Alexander Diels, *Die Fragmente der Vorsokratiker. Griechisch und Deutsch*, ed. by Walther Kranz, 3 vols (Berlin: Weidmann, 1951).

KRS Kirk, Raven and Schofield. Kirk, Geoffrey S., J.E. Raven, and Malcolm Schofield, *The Presocratic Philosophers*, 2nd edn (Cambridge: Cambridge University Press, 1983).

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*Sic fatur lacrimans, classique immittit habenas,
et tandem Euboïcis Cumarum adlabitur oris.
obvertunt pelago prosas; tum dente tenaci
ancora fundabat naves, et litora curvae
praetextunt puppes. iuvenum manus emicat ardens
litus in Hesperium; quaerit pars semina flammae,
abstrusa in venis silicis;
-Vergil, Aeneid VI 1-7.*

Introduction: Reception of the Presocratic Philosophers

1. INTRODUCTION

A central problem of Presocratic studies lies in the heavily fragmented nature of what has been handed down to us of their work. Little survives of the literary output of these physicists and philosophers of the fifth and sixth centuries BCE, with no complete work by any of them extant. Much of what we have comes to us from second hand accounts, whose reliability has been called into question. Whereas scholars of the nineteenth century collected these fragments and testimonies in order to reconstruct the historical opinions of Presocratics, subsequent scholarship has found reasons to doubt some of the authorities for these philosophers and their teachings. Indeed, even the designation ‘Presocratic’ itself, a neologism of that era, is beginning to yield to the broader term ‘Early Greek’.¹ In the absence of extant complete texts, to say anything about the philosophers or their works with absolute certainty is a luxury which contemporary scholarship does not possess. Indeed, as shall be discussed throughout this thesis, the ancient historiography of the philosophy from which many of these fragments and testimonies are derived presents challenges in its own right, the most pressing being the reliability of the narrators. Difficulties arise for scholarship not only from questions of textual criticism of these fragments but also in their interpretation. A statement as apparently sound as ‘Thales believed the material principle of all things to be water’ can no longer be taken as a given.²

Because of these problems, the study of Presocratic philosophy risks becoming trapped in a state of Socratic *aporia*. After centuries of inquiry, scholarship has arrived at a point where the construction of grand narratives about the Early Greek philosophers becomes increasingly problematic. Most of our sources for these philosophers come to us through the doxographical tradition rather than as primary sources, and there are questions of reliability hanging over the tradition. In their introduction to the *Oxford Handbook on Presocratic Philosophy*, Patricia Curd and Daniel Graham outline the historiography of Presocratic philosophy. They sum up the modern study of the

¹ See, for example the recent collection of nine volumes of fragments edited by Glen Most and André Laks, titled *Early Greek Philosophy* (Harvard: Harvard University Press 2016). Some of these philosophers were indeed contemporaries of Socrates. See 2.1 below

² Aristotle, *Metaphysics* A 3 983b6.

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Presocratics as ‘a twofold attempt to recover ancient thought: an effort to reconstruct the historical, social, linguistic and intellectual context in which the Presocratics wrote and an effort to reconstruct their theory in a systematic way so that the scattered remarks and doctrines attributed to them make philosophical sense’.³ The scope of this project falls outside of their summary, looking not to the modern interpretation of the Presocratics, but rather their ancient reception. Rather than investigating the fragments and *testimonia* of the Presocratics themselves in order to reconstruct the historical reality of their teachings or their lives, this thesis seeks to take an alternative approach and examine their legacy in later periods—Late Antiquity and the Early Middle Ages—and to contribute to our understanding of the *longe durée* of ancient philosophy as a whole.

What follows in this thesis is a series of studies on the reception of and engagement with Presocratic philosophy in the Latin literature of Late Antiquity and the Early Middle ages, in the hopes of shedding light on the legacy of Early Greek philosophy. As will be discussed below, the historiography of these philosophers privileges their thought on nature over other areas, leading to portrayals of them in later authors as materialists. Much of this can be traced to Aristotle’s depiction of them in his work, and the view permeated into doxographical writings and thence into wider literature. Although there was likely more to the Presocratics than materialists and naturalists, this view of them was influential on later perceptions of them and their place in intellectual history. In discussing the Latin Christian reception of their ideas, this thesis aims to highlight both their legacy in the ancient world and contribute to ongoing scholarly discussions about how their ideas may be read, by looking at the responses and reactions to them by Christian authors.

1.1 Preliminary Methodology and Scope

This work will endeavour to examine the reception of the Presocratic philosophers in Late Antiquity and the Early Middle Ages in order to establish what details, teachings, and information survived about them after the decline of institutionalised philosophy in the ancient world. However, this broad aim is channelled into a narrow scope, defined by two factors. First and foremost is a linguistic or perhaps regional factor in that this thesis will focus on Latin literature.⁴ This decision to focus on the Latin reception of Greek

³ Patricia Curd and Daniel W Graham, ‘Introduction’, in *The Oxford Handbook of Presocratic Philosophy* (Oxford: Oxford University Press, 2009), p. 9.

⁴ Or perhaps literature from the Latin West. The main exception to a solely linguistic restriction is the *Against Heresies* of Irenaeus of Lyons, which was written in Greek but survives in a Latin translation.

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philosophy was necessary in order to narrow the scope of this project to suit the timeframe of the investigation. A broader study of the reception of ancient philosophy during this period would incorporate the Latin, Greek and Arabic reception of Presocratic philosophy, too ambitious for a project of this size. In the interest of defining the project the scope of the thesis is limited to Latin literature.

In addition to the linguistic factor there is also a factor presented by the material present in the Latin textual tradition during this period. By making use of online databases of Latin texts it was possible to establish the scale of the potential material for study. A cursory search of the Brepols Cross-Database search tool for the sixteen Presocratic philosophers surveyed by Kirk, Raven, and Schofield during the years 200-500 CE returned in excess of 1,140 individual mentions across a wide variety of texts.⁵ The results returned by the search were limited in that it could not distinguish between individuals of the same name, for example the Presocratic Zeno of Elea and the Stoic Zeno of Citium.⁶ An examination of these results did reveal a recurring pattern in how these sixteen philosophers were discussed in Latin literature, however. They were often mentioned by authors in tandem with one another and in relation to their opinions on a single topic. This repeating pattern lent itself to an investigation driven by a textual tradition which originated in Peripatetic dialectic, the doxographical tradition.

1.2 Research Questions

In his assessment of the sources for Presocratic philosophy, David Runia describes the situation as follows:

‘Between about 2,600 and 2,400 years ago, a group of men lived whose thought formed the beginning of the discipline of philosophy as we know it. All contemporary records of these men have disappeared, with the possible exception being a piece of statue and some likenesses on early coins and vases. For our knowledge of these men we are wholly dependent on the literary tradition. Literary tradition involves transmission combined with interpretation. Everything we know about these men has been transmitted through the use of writing, in one way or another. Interpretation accompanies the process every step of the way.’⁷

No fragment or testimony of Presocratic philosophy has survived to the modern day free from some process of interpretation, and most of the latter come to us through the lens of doxographical collections, in which the teachings of a philosopher have been interpreted

⁵ Brepols Cross Database search tool, <http://clt.brepols.net/cds/Default.aspx> [Last accessed 3 July 2018].

⁶ Variations on the spelling of names (e.g. *Pitagoras* for *Pythagoras*, particularly in Medieval texts, were accounted for as thoroughly as possible through regular expression searches and wildcard queries.

⁷ David T. Runia, ‘The Sources for Presocratic Philosophy’, in *The Oxford Handbook of Presocratic Philosophy*, ed. by Curd and Graham (Oxford: Oxford University Press, 2009), p. 55.

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to pertain to a certain topic, been compacted into a short δόξα (Latin *opinio*) and compiled according to that topic for dialectical reasons. Most of the information which ancient and late-antique authors had on Presocratic teachings ultimately derives from the doxographical tradition (see 2.2 below).

This thesis will approach the investigation of the legacy of the Presocratic philosophers in the Latin textual tradition in Late Antiquity and the Early Middle Ages, using connections with the doxographical tradition as a starting point. The metric for the selection of texts is thus as follows. The text must be a Latin text composed between the second and ninth centuries and which has an identifiable connection to the doxographical tradition. By examining such texts we can investigate the legacy of the Presocratic philosophers during this time period in a way which connects it to a long-standing tradition of textual transmission concerning their teachings, whether or not that tradition reflected accurately the historical reality of the Presocratic philosophers themselves.

In essence the central research questions for this thesis is ‘What was the legacy of the Presocratic philosophers in Late Antiquity?’. Related to this are the questions of ‘What were the sources for Late Antique and Patristic authors on these early philosophers?’ and ‘In the absence of direct transmission, what knowledge about the Presocratics survived into the Middle Ages?’.

2. DEFINITIONS

2.1 *Presocratic*

At the outset I wish to define and clarify a recurring term to be used throughout this thesis. Before proceeding with a discussion of Presocratic philosophy, it is necessary to be clear about the definition of ‘Presocratic’. The term raises the question of whether there was truly a break in the philosophical tradition with Socrates’ life and work. This issue is further compounded by the fact that the term is a relatively recent one and lacks precedent in Greek or Latin in Antiquity. While it may seem anachronistic there are compelling reasons for its continued usage.

The first recorded use of the German *vorsokratisch* was in the late-eighteenth century in a handbook on the history of philosophy by Johann Augustus Eberhard.⁸ During the following century the word was calqued into English, appearing as ‘pre-

⁸ Johann August Eberhard, *Allgemeine Geschichte der Philosophie zum Gebrauch akademischer Vorlesungen* (Halle: Hemmerdeschen Buchhandlung, 1788).

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Socratic’ or ‘Presocratic’.⁹ Although the term itself is relatively recent in origin, the distinction between philosophy before Socrates and philosophy after his death is of considerable antiquity. This distinction is most clearly voiced in Cicero’s *Tusculan Disputations*: ‘But it was Socrates who first called down philosophy from the heavens and moved it into the cities and the home, and introduced and made it examine life and morals and good and evil.’ *Socrates autem primus philosophiam devocavit e caelo et in urbibus conlocavit et in domus etiam introduxit et coegit de vita et moribus rebusque bonis et malis quaerere.*¹⁰ This calling down of philosophy from the heavens is both literal and metaphorical. In the literal sense, philosophers and physicists before Socrates are portrayed as having conducted investigations into μετέωρα, heavenly and cosmic matters, attempting to understand the origin and nature of things seen in the sky. Despite the portrayal of Socrates in Aristophanes’ *Clouds*, which introduces Socrates declaring: ἀεροβατῶ καὶ περιφρονῶ τὸν ἥλιον, ‘I am walking in the air, and speculating about the sun’, there is little evidence that he enquired into celestial phenomena like the Ionian philosophers.¹¹ The play itself was quite a negative portrayal of Socrates and indeed was used as evidence against him at his trial.

The many negative tropes about the students in Socrates’ ‘Think-tank’ reflect the generally negative attitudes in fifth-century Athens to inquiries into nature. Although Thales was regarded as a great man and counted among the seven sages, inquiry into μετέωρα was seen as impious. In 438-7 BCE, a decree was issued against such inquiries, a law which the philosopher Anaxagoras fell afoul of.¹² Xenophon and Plato repeatedly denied that Socrates concerned himself with such matters, and with the exception of the *Timaeus*, their depictions of Socrates portrayed him as inquiring into ethical matters, rather than physical or celestial ones. André Laks identifies two traditions from antiquity concerning Socrates’ legacy, one which contrasts him with the Sophists of his own day, and the other which contrasts him with the Ionian and Italian physicists. The first he terms the Platonic-Aristotelian tradition, which maintains that Socrates’ main contribution to philosophy was his new method, the famous Socratic elenchus, which he used to question the underlying concepts and assumptions behind the ethical assertions of the Sophists.

⁹ The hyphenated form is preferred by the Oxford English Dictionary, but for reasons of style the unhyphenated form is predominantly used in academic works.

¹⁰ Cicero, *Tusculan Disputations* V 10.

¹¹ Aristophanes, *Clouds* 225; Aristophanes, *The Comedies of Aristophanes*, trans. by William James Hickie (London: G. Bell & Sons, 1853).

¹² André Laks, ‘Presocratics’ in A. Grafton, G. W. Most, and S. Settis, *The Classical Tradition* (Harvard University Press: London, 2010), pp. 776-8.

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The second, he calls the Socratic-Ciceronian, is succinctly summarised by the above quote from Cicero's *Tusculan Disputations*.¹³ That is to say that Socrates' main contribution to the philosophical tradition was his rejection of the Ionian inquiry into nature and the heavens and his pursuit of ethical inquiries. Laks echoes John McDiarmid in his assessment of Aristotle's view of philosophical history when he says 'Aristotle endeavours to draw out, from among all his predecessors, the progressive appearance of the four causes that are at the base of his own theory of physics'.¹⁴

The influence of Aristotle on the historiography of philosophy, both ancient and modern, is paramount here. Aristotle presents the history of philosophy as teleological, the *τέλος* of which is his own work. As McDiarmid describes it:

There Aristotle marshals the early doctrines in such a way as to establish that all philosophers have been seeking, knowingly or not, to achieve his system of four causes and that none had ever put forward any other type of cause than these. Behind his argument is the assumption that the main problem of earlier philosophy was causality and that the cause that first and chiefly engaged the attention of the Presocratics was the material cause. The Presocratics as a group are set up as champions of matter, and on the opposing side is Plato, who is champion of the formal cause.¹⁵

One can argue that in the *Metaphysics A* all of philosophy is presented through the lens of Aristotle's own causal system. His predecessors appear to be reaching out towards the truth but falling short of the mark. Thus he was eager to stress continuity rather than discontinuity between what came before Socrates and what came after. For Plato and Aristotle, Socrates' methodology was what distinguished him from his Ionian and Sophist predecessors and contemporaries. The Socratic-Ciceronian tradition on the other hand focuses on the shift from physics to ethics as Socrates' main contribution to philosophy. Even if Aristotle's account of the history of philosophy is not to be trusted, there is more than enough evidence to attest the role of these philosophers in the formation of ancient physical theories of material monism and pluralism, atomism, and elemental theory.¹⁶ These are the matters in Antiquity for which the early philosophers are most often cited as authorities (or else criticised for their shortcomings), primarily concerning theology or physics but above all else, their opinions on what Aristotle termed the material or first

¹³ André Laks, '«Philosophes présocratiques» Remarques sur la construction d'une catégorie d'historiographie philosophique.', in A. Laks and C. Louguet, *Qu'est-ce que La Philosophie Présocratique?*, pp. 17–38.

¹⁴ Laks, 'Presocratics', p. 777; cf. John B. McDiarmid, 'Theophrastus on the Presocratic Causes', *Harvard Studies in Classical Philology*, 61 (1953), 85–156.

¹⁵ McDiarmid, p. 86.

¹⁶ Hermann Alexander Diels, *Die Fragmente der Vorsokratiker. Griechisch und Deutsch*, ed. by Walther Kranz, 3 vols (Berlin: Weidmann, 1951).

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principle.¹⁷ Thus their reputation as physicists and Socrates' legacy as a break in the philosophical tradition are warranted. The designation of these early philosophers as Presocratic is not anachronistic despite the relatively recent coining of the term. It is however, as Most and Laks state, a fluid boundary rather than solid one.¹⁸

We can understand the term then to refer to the philosophers and physicists who lived before Socrates (c. 470-399 BCE), in particular the thinkers of early fifth and late sixth century Ionia, Sicily, and Southern Italy. However, the historical narrative is complicated somewhat by the presence of the Sophists of the fifth century who would satisfy a solely temporal criterion for Presocratic by having been active before and during Socrates' lifetime but by convention are not included. The matter is further complicated by the fact that certain Presocratics, like the atomist Democritus of Abdera (c. 460-370 BCE), likely outlived Socrates. From a chronological perspective, distinction of philosophy before and after Socrates is problematic. In order to clarify what is meant by Presocratic, one must look at the content and context of their works. At the risk of oversimplifying, the context of the Sophists was that of the social and political landscape of fifth-century Athens, with their works mostly focusing on the concerns of the *polis*. How is it to be run well? How are citizens to be active members of the polity? Their works focused on matters of ethics and rhetoric, the very same concerns for which Socrates' own inquiries were remembered through Plato's dialogues. Indeed, Taylor has argued that Socrates, especially in the later dialogues can be read as a sophist.¹⁹ The Presocratics in contrast were remembered for their enquiries into nature. This is neither to say that these philosophers did not inquire into ethical matters nor to suggest that nature and *μετέωρα* were not the concerns of the Sophists as a rule, but that in terms of this history of philosophy, their legacy is mainly grounded in their natural rather than ethical philosophy.

As a classification, 'Presocratic' is not without its baggage or its caveats and so its fluid boundaries as a general term must be borne in mind. However, its usage in this thesis is justified by its immediate utility to this study. The tradition, beginning with Aristotle and continued by the doxographical tradition that these philosophers were mostly concerned with nature rather than ethics was propagated during the Classical period and survived into Late Antiquity and the Early Middle Ages.

¹⁷ I discuss this in greater detail in chapter one.

¹⁸ Laks and Most, *Early Greek Philosophy* I, pp. 5-7.

¹⁹ C.C.W Taylor, 'Socrates the Sophist', in *Remembering Socrates*, ed. by Lindsay Judson and Vassilis Karasmanis (Oxford: Clarendon Press, 2006), pp. 157-68.

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Despite Cicero's portrayal of Socrates as the one who called down philosophy from the heavens, shifting its emphasis from physics to ethics, this transformation of philosophy was not as revolutionary as he made it appear. The study of nature was not superseded by the study of ethics. Indeed, philosophical pursuits maintained a focus on the natural world during the Hellenistic period. Among the Stoics, philosophy was divided into three branches of physics, ethics and logic, while among the Epicureans, the study of physics was foundational to the study of ethics. In his *Letter to Herodotus*, Epicurus summarised his works on nature concluding by reflecting on the utility of knowledge of these doctrines for the attainment of *ataraxia*, the desired state of the Epicurean:

‘It is of such a sort that those who are already tolerably, or even perfectly, well acquainted with the details can, by analysis of what they know into such elementary perceptions as these, best prosecute their researches in physical science as a whole; while those, on the other hand who are not altogether entitled to rank as mature students can in silent fashion and as quick as thought run over the doctrines most important for their piece of mind’²⁰

Within the Epicurean system, ethics are predicated on certain points which follow on from the physical principles. For example, since all bodies, including souls, are of a compound nature, formed of atoms and void and subject to dissolution, the soul cannot be immortal or undergo metempsychosis, but rather dissolves upon death. It follows from this physical principle that since there can be no better or worse outcome *post-mortem*, there is no utility in trying to offer propitiations to certain gods or engaging in certain types of religious purification or seeking to attain ritual purity. The obeying of laws, customs and participation in civic religion is justified by their utility for social cohesion and the inherent benefits of friendship. Laws maintain peace, necessary for an undisturbed life, while worship and contemplation of the divine focuses humanity on a higher goal; the attainment of as near a blessed tranquillity on earth as possible as the gods have in their *intermundia* beyond the cosmos. Knowledge of Epicurean physics is presented as the foundation for understanding their ethics and the pursuit of tranquillity. While Socrates was held as a watershed moment for philosophy, the transformation was likely not as total as Cicero portrayed it.

It is arguable that we see this among the Stoics too. They were said to have divided philosophy into the aforementioned tripartite division of ethics, physics and logic, and

²⁰ Diogenes Laertius, *Lives of the Eminent Philosophers: Books 6-10*, trans. by R.D. Hicks, LCL, 185, 2 vols (Cambridge, MA: Harvard University Press, 1925), II. p. 613.

while there is some evidence privileging one over the others, the interdependence of these three branches is often asserted in sources.²¹ A recurring image is that of the divisions as parts of a single living being or an egg; while the parts have independent existence and differing functions, they form an aggregate and depend upon one another. Long and Sedley comment on the differing presentations of the Stoic philosophical curriculum in Diogenes Laërtius, Sextus Empiricus, Seneca and Plutarch, observing ‘Whatever such divergences betoken, the distinction between Stoics who did or did not posit a preferred order is certainly too sharp. We can well imagine that Chrysippus’ lectures followed the order [logical, ethical, physical]; but on his own testimony ethics has to be based upon theses from physics. Equally, logic is said to have a general bearing upon ethics.’²² The three Stoic branches of philosophy can be understood not as independent and non-overlapping but fundamentally interconnected, though particular philosophers may have privileged one branch to suit their purposes.

We see then that in terms of ancient historiography, Socrates was held up as a turning point in intellectual history, marking a shift from inquiry into natural phenomena to inquiries into ethical matters, yet as a matter of modern historiography, we can understand this transformation to have been somewhat less decisive and all-embracing than the ancients presented it. Although ethical and metaphysical inquiries became more prominent in Hellenistic philosophy, the study of nature did not diminish into nothing and was maintained as a key part of the curriculum.

2.2 *Doxography*

A related neologism of the nineteenth century is the term ‘doxography’, coined by Hermann Diels in his *Doxographi Graeci*.²³ The term describes a phenomenon from the ancient world of collecting the opinions of philosophers in works organised according to topic. Doxography will be discussed in greater detail in chapter one, but for present purposes it is important to provide a brief outline on the nature of doxography. At its core, doxography is an ancient genre of literature, first identified by Diels, which mainly

²¹ There is also the possibility that it is more accurate to say that the Stoics themselves did not divide philosophy into three parts but rather divided discourse about philosophy into three parts. This distinction between *κατὰ φιλοσοφίαν λόγος* and *φιλοσοφία* proper is made in Katerina Ierodiakonou, ‘The Stoic Division of Philosophy’, *Phronesis*, 38.1 (1993), 57–74.

²² A. A. Long and David Sedley, *The Hellenistic Philosophers: Volume 1, Translations of the Principal Sources with Philosophical Commentary* (Cambridge: Cambridge University Press, 1987). p. 160-1.

²³ Hermann, Diels, *Doxographi Graeci* (Berlin: De Gruyter, 1879).

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consists of collections of the opinions of philosophers on nature.²⁴ Understood broadly, doxography is any such collection organised around a single matter (e.g. God, soul, the first principle, etc.). Jaap Mansfeld supplies six further subcategories to account for the fact that rarely, if ever, do doxographies appear as pure lists of opinions with no additional information. He accounts for additional information about their lives, their relationships to one another and collections of sayings through his system of classification.²⁵ The criterion used in this thesis for the selection of texts involves the presence of lists of physical tenets and thus the chief focus of this work will be the first of Mansfeld's categories, doxography *stricto-sensu*.

2.3 Timeframe: Classical Antiquity, Late Antiquity and the Early Middle Ages

This thesis traces strands of philosophical thought over time from Late Antiquity to the Early Middle Ages. Beginning with the Latin reception of Greek philosophy via the doxographical tradition, this thesis will examine the reception of Presocratic physics in the world of post-Classical Latin literature. As such this project will touch upon reception over a wide range of time.

While the divisions between Antiquity and Late Antiquity and between Late Antiquity and the Early Middle Ages are arbitrary, these distinctions do have their use to the study of intellectual history. Antiquity spans the Late Bronze Age and much of the Iron Age, arguably up until the collapse of the Western Roman Empire. Certain moments within Antiquity—namely fifth-century Athens, and the Late Roman Republic, Early Principate and Empire of the first centuries BCE and CE—are marked as being not just antique, but 'Classical'. Salvatore Settis, in his essays reflecting on the meaning of 'Classical' notes that while it is often a dynamic term, it is always connected with nostalgia for a by-gone era.²⁶

Late Antiquity is a temporal designation, beginning with the tumultuous third century and its various crises and ending if not with the deposition of Romulus Augustulus in 476 then as Brown places it with the rise of the Islamic Caliphate in the 630's.²⁷ Late Antiquity, being post-Classical, is a period upon which scholarship has

²⁴ J. Mansfeld and D. T. Runia, *Aëtiana: The Method and Intellectual Context of a Doxographer. The Sources*, *Philosophia Antiqua*, 73, 4 vols (Leiden: Brill, 1997), I p. xv n. 1.

²⁵ Jaap Mansfeld, 'Sources', in *Cambridge Companion to Hellenistic Philosophy* (Cambridge: Cambridge University Press, 2005), pp. 3–30.

²⁶ Salvatore Settis, *The Future of the Classical*, trans. by A. Cameron (Cambridge: Polity Press, 2006).

²⁷ Peter Brown, *The World of Late Antiquity, AD 150-750* (London: Thames and Hudson, 2006), pp. 189-203.

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reflected with pity or melancholy rather than nostalgia. Until recently, Late Antiquity has been discussed solely in terms of decline and decay. Indeed, this has been the popular view of the period ever since Edward Gibbon's *Decline and Fall of the Roman Empire*.²⁸ And while we need not doubt that there is truth to be found here we ought to doubt that decline is only truth which will emerge from the study of this period. We need not necessarily accept the narrative of these centuries as a decline leading towards inevitable collapse of the Western Empire. This view risks framing Late Antiquity in terms of what preceded and followed it, rather than viewing it on its own terms. In other words, it is a view which begins at the end and works backwards through several centuries connecting everything to decline and collapse. As Simon Swain describes it:

The difference between the Roman Empire in 200 and 400 is huge—if one cares to see it that way. We are still brought up to think of the start of the third century AD as a continuation of the Empire of Augustus, the Principate. For Gibbon, following Cassius Dio and Herodian, everything went to the bad after the death of Marcus Aurelius and the reign of his mad son, Commodus. For many moderns it is the period after the murder of Alexander Severus in 235 which ushers in the so-called 'Third Century Crisis'. No one can dispute that this period was one of real political and economic distress for many regions of the Roman world. 'Krisengeschichte' has been big business. Clearly though, 'crisis' is a subjective interpretation and depends on one's agenda.²⁹

Recognising the subjectivity of the *Krisengeschichte* which Swain speaks of, scholarship can now experiment with other means of interpreting Late Antiquity, in particular ideas about transformation and continuity leading into the Middle Ages.

The Early Middle Ages and Late Antiquity certainly overlap. This also is a period of time—during which our focus is confined mostly to territories of the former Western Empire—marked by the absence of a unified polity, and the Early Middle Ages are separated from the High Middle Ages by the absence of a (at least, nominal) Western Roman Emperor. The fall of the Western Empire is often taken as a watershed moment, leading Late Antiquity into the Early Middle Ages, spurred on by the localisation of tax collection, military and political power throughout the territory of the former Western Empire and the establishment of kingdoms by the Franks, Vandals, Goths and others into Roman territory. This model of migration and settlement is a useful approach to the study of the period, but for our current purposes, focused on philosophy and literature, the changes to the culture's literary output may prove more apt.

²⁸ Edward Gibbon, *The History of the Decline and Fall of the Roman Empire*, Decline and Fall of the Roman Empire (London: Penguin Press, 1994).

²⁹ Simon Swain, 'Introduction', in *Approaching Late Antiquity: The Transformation from Early to Late Empire*, ed. by Simon Swain and Mark Edwards (Oxford: Oxford University Press, 2004), pp. 1–20.

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Which works survived and which did not was influenced by a variety of factors ranging from changes in infrastructure for keeping texts to the changes in the medium of writing itself. For example, Latin and Greek literature underwent what we might term a ‘format change’ in the fourth century with the rise of the codex and the decline of the papyrus roll. Survival depended upon whether they were worth the effort of transcribing. Works prized as Classical were transcribed into the new format while less esteemed works remained on fragile papyrus to succumb to the elements. In the introduction to his volume on the transmission of Latin literature, L.D. Reynolds discusses the changes which shaped the survival of Latin works through the centuries, comparing the developments over time to the shape of an hourglass. Its base is the literary output of Antiquity, whether Classical or otherwise. Over time the production and reproduction of literature declined, whether due to the change from papyrus to codex, loss of infrastructure or changes in priority of the literary output, the available corpus of Latin literature begin to decline towards a narrow point. However, at its narrowest point, the hourglass then opens up and expands as the surviving texts were reproduced *en masse* in the scriptoria and libraries during the Carolingian renaissance.³⁰

This model places Late Antiquity and the Early Middle Ages within a period of literary decline, which may appear to reinforce the wider view of this period as one of stagnation, with passive compilers amassing information from earlier authors and contributing little. While the decline in literary output from the third century onwards is undeniable this thesis focuses on the continuity from Classical to Late Antique and Early Medieval literary accounts of philosophical doctrines and the ways in which authors engaged with and preserved these accounts over the centuries.

3. METHODOLOGY

Much of the methodology for this project is grounded in the discourses surrounding philology, reception, source criticism, intertextuality and intellectual history. To be sure, there are tensions between these different approaches, arising out of the conflict between positivist and postmodern thought which underscore the different approaches. Over the course of the twentieth century, scholarly discourse has shifted away from the pursuit of positivist assertions of historical fact to methods of study which mirror the tensions in philosophy which led from Modernism to Postmodernism and Structuralism to Post-

³⁰ *Texts and Transmission: A Survey of the Latin Classics*, ed. by L. D. Reynolds (Oxford: Clarendon Press, 1983), pp. xiii-xliii.

Structuralism. The displacement of authorial intent and shift towards polysemy are central to the approach taken in this thesis.

3.1 *Philology*

Philology, the study of languages both written and spoken, is at the core of the methodology of this thesis. In his article ‘Philology in Three Dimensions’ Indologist Sheldon Pollock offers a conceptual framework for understanding philology. He describes philology in terms of planes in space along the three axes, all of which enable the philologist to come to a greater understanding of the text. A particular reading may be visualised as a coordinate within a three dimensional Cartesian plane. The three planes represent the historicist, the traditionalist, and the presentist readings of a text. The historicist reading concerns the origins of the text—the immediate context in which it was written and read. The traditionalist reading concerns the reception of the text in the past. The presentist plane is the meaning engendered by the act of reading a text in the hear-and-now. Pollock explores how these three understandings are in tension with one another but stresses the need for philologists to practice polysemy—in his terms ‘learn to read in three dimensions’—rather than attempting to establish a single definitive reading based exclusively on authorial intent or our own subjective readings.³¹

The approach in this thesis, being a study of the transmission and reception of Presocratic philosophical teachings, is mainly grounded in a traditionalist reading of these texts i.e. the doxographical tradition and texts influenced by them. Yet at the same time, this work engages with the historicist reading on multiple levels by seeking to understand the doxographical tradition, its origins and function at its genesis in the past and how this influenced the works which made use of these texts at their points of creation. All three of these readings can exist at once, despite tensions between them, but for the most part it is the third reading, the traditionalist with which this work is concerned.

3.2 *Reception*

A concept related to Pollock’s traditionalist plane is the theory of reception. In his book *Redeeming the Text*, Charles Martindale argued that meaning is realised in a text at the point of its reception.³² At every point in time in which a text is read, its meaning is generated, rather than existing unchanging in the words of the text. ‘We are not the direct

³¹ Sheldon Pollock, ‘Philology in Three Dimensions’, *Postmedieval*, 5.4 (2014), 398–413.

³² Charles Martindale, *Redeeming the Text: Latin Poetry and the Hermeneutics of Reception* (Cambridge: Cambridge University Press, 1993).

inheritors of antiquity' as he says, and all literature has different meaning in different contexts.³³ We see in this many of the same approaches as in the philological approach and in intertextuality.³⁴ All of these share in the postmodern distancing of authorial intention from the meaning derived from a text.

In the present case, this study examines the reception of Presocratic philosophy at particular moments in time, rather than trying to set out, for example, what Parmenides or Thales actually believed. Thus the goal is to understand the legacy of Presocratic philosophy at certain moments in its reception in Late Antiquity and the Early Middle Ages, how this legacy functions within a particular text and from a more historicist perspective, how ideas were transmitted from Antiquity to moment in question.

3.3 Source Criticism

Source criticism, or *Quellenforschung*, is a philological technique of comparing multiple texts to establish which one is the common ancestor text or source for all extant copies. While it was a very prominent strategy one hundred years ago it has since fallen out of favour. Nevertheless, many works of source criticism remain foundational studies to this day.³⁵ In his essay on the topic, Glenn Most discusses the origins and significance of this strategy.³⁶ Most observes the twofold origins of *Quellenforschung* in a deconstructive strategy on the one hand and a constructive strategy on the other. The process of deconstruction breaks down a text on the basis of anomalies or idiosyncrasies (e.g. anachronism, dialect, contradiction) and posits separate *Quellen* for these differing sections. The classic example of this used by Most is Spinoza's analysis of the Pentateuch. The constructive process, Most argues, developed out of textual criticism in the manuscript tradition, which sought to establish the eldest common ancestor of all surviving copies of a text in order to find the most authoritative version of a text. This philological technique, known as Lachmann's method, was used to chart manuscript families in an effort to find the closest text to the ancient original. Within the field of source criticism, this gave rise to the comparative method, which seeks to reconstruct lost sources on the basis of quotation and similarities in separate texts.

³³ Charles Martindale, 'Introduction: Thinking through Reception', in *Classics and the Uses of Reception*, ed. by C. Martindale and R.F. Thomas, Classical Receptions (London: Blackwell, 2006), pp. 1–14.

³⁴ See 1.3.4 below.

³⁵ In particular, Diels' work which, as Mansfeld and Ruina describe it, has been criticized by scholars it has yet to be superseded. *Aëtiana*, I, p. xiv.

³⁶ Glenn W. Most, '*Quellenforschung*', in *The Making of the Humanities*, ed. by Rens Bod, Jaap Maat, and Thijs Weststeijn, 3 vols (Amsterdam: Amsterdam University Press, 2014), III, 207–17.

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Famously, this technique was employed by Hermann Diels in his *Doxographi Graeci*, his reconstruction of a purported lost handbook of ancient philosophy. Based on similarities between the *Epitome* (falsely attributed to Plutarch), and the *Anthology* of Stobaeus, Diels reconstructed a lost source used by these two authors, attributed to a certain Aëtius, whom the fifth-century Bishop Theodoret named as a compiler but is otherwise unknown.³⁷ Through a synoptic reading, comparing the text side by side in columns, Diels made a compelling argument for the lost source. However, the technique itself is not without its shortcomings. As Most points out, the technique originates in a time and place when the Humanities were striving for scientific legitimacy through positivism, which perhaps blinded its users to some of their underlying assumptions. Egregiously, there is often an assumption of passive reception on the part of Late Antique and Byzantine compilers and often an unwillingness to accept a plurality of sources. While the results may have appeared scientific in the nineteenth century, by modern standards the reconstructions of *Quellenforschung* for the moment they are unfalsifiable. ‘Until the sands of Egypt of the monastery libraries of Asia Minor finally yield up manuscripts that provide direct testimony of one of the postulated early sources of transmitted late ancient compilations, we shall never be able to test the results of the reconstructions of modern *Quellenforschung*’.³⁸

This thesis engages with *Quellenforschung* in two ways: in its reliance on Diels’ work which employed the technique and also in the use of the comparative method to study the relationship between texts. I do not make use of the comparative method for the purpose of demonstrating a lost source common to multiple texts, but for the purpose of highlighting intertextual relations between texts. At times I will connect two texts as likely to share a common source due to strong similarities between them, but the aim is to show that these works draw on similar doxographical material without attempting to reconstruct a lost source for the two.

3.4 Intertextuality

Much of this project draws upon intertextuality to trace the transmission of Presocratic philosophical concepts across the centuries. Intertextuality is a broad framework which analyses texts in relation to a wider body of literature rather than in isolation. An

³⁷ Jaap Mansfeld and David Runia, ‘What We Know About Aëtius’, in *Aëtiana: The Method and Intellectual Context of a Doxographer. The Sources*, *Philosophia Antiqua*, 73, 4 vols (Leiden: Brill, 1997), I, 319–38.

³⁸ Most, p. 215.

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intertextual reading of a text looks at the presence of such devices as imitation, parody, direct and indirect quotation, paraphrasing, plagiarism, and allusion to establish how the meaning of a text is constructed in relation to other texts.

Intertextuality was first coined by Julia Kristeva in the 1960's although its origins lie in earlier twentieth-century thought.³⁹ Of seminal importance to the theory is the works of the Swiss scholar Ferdinand de Saussure in language and linguistics and Russian literary theorist M.M. Bakhtin. Saussure drew a distinction within a linguistic sign between the signifier (i.e. a sound-image) and the signified (the concept to which the sound-image refers). The signs themselves are fundamentally arbitrary and their meaning is not inherent but is derived from the wider system of language at that point in time. Just as saussurean linguistics looked to signs within a wider linguistic system, intertextuality would look to texts within a wider literary system. Bakhtin examined language from a Marxist perspective, looking at the social function of language within the context of class and developed a view of texts as dialogic. While a text may present itself as a stand-alone or monologic text it nevertheless engages with its literary predecessors and will be alluded to by later authors. From this perspective a text is seen as a dialogue within a wider literary culture rather than a self-contained work.⁴⁰

Saussure's ideas inspired the Structuralist movement which began to look at the wider structural relationships between systems of culture, philosophy, science and literature. French philosopher Michel Foucault drew attention to the boundless nature of a text. Claude Lévi-Strauss' image of the author as the *bricoleur* stresses the nature of composition, not as an act of inspired creation *ex nihilo* but as the organising of pre-existing elements together into a new arrangement.⁴¹ No matter the intent of the author, the text always refers to and engages with the wider literary culture.⁴² The decentralisation of the author reached its zenith with Roland Barthes—well known for declaring the death of the author—who assessed the state of the text as 'a multi-dimensional space in which a variety of writings, none of them original, blend and clash. The text is a tissue of quotations drawn from the innumerable centres of culture'.⁴³

³⁹ Julia Kristeva, 'Word, Dialogue and Novel', in *Desire in Language* (Oxford: Blackwell, 1982), pp. 64–92.

⁴⁰ Graham Allen, *Intertextuality* (Oxford: Routledge, 2011), pp. 8-29.

⁴¹ Claude Lévi-Strauss, *The Savage Mind* (Chicago: University of Chicago Press, 1966).

⁴² Michel Foucault, *L'Archéologie Du Savoir* (Paris: Gallimard, 1969).

⁴³ Roland Barthes, *Image, Music, Text*, ed. by S. Heath (London: Fontana Press, 1977), p. 25.

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Intertextuality, then, sets aside notions of authorial intent and the isolation of the text from the wider literary culture. For Classical studies, the use of an intertextual framework is useful for reading a text not as a closed system but part of a wider literary network which looks backward to earlier authors and was reflected upon by later readers. For Bakhtin, Plato's dialogues were some of the earliest examples of what he called the dialogism—which would be later termed intertextuality by Kristeva. Plato's theory of *mimesis* understands that acts of creation, whether they are artisanal or poetic, are always simply mimicry or imitation of a pre-existent idea of the object of their craft. Beyond the theoretical underpinnings of his philosophy, Plato's Socratic dialogues, steeped in allusions to myth and mysticism, lend themselves to intertextual readings.⁴⁴ As Worton and Still describe it, 'Plato's typical creation does not have an imposed unity; it is a sometimes meandering and inconclusive discussion which is characterised by digression and which is often playful or even savagely satirical'.⁴⁵ Aristotle takes up the importance of *mimesis* from Plato in the *Poetics*, arguing that mimicry and imitation are central to the processes of learning and creation.⁴⁶ These ideas would later be taken up by Latin authors.⁴⁷

Giorgio Pasquali's idea of *arte allusiva* is central to the understanding of allusion and emulation in Latin poetry. The art of allusion is the means through which poets construct deliberate references to other works, which are dependent on the wider literary culture. Pasquali's ideas were taken up by Gian Biagio Conte in his book *The Rhetoric of Imitation*, which explores and builds upon Pasquali's thesis, rejecting the positivist approaches of his work.⁴⁸ In Pasquali's work, there is a certain dependence on the author's intention to create a connection with another work, and the allusion falls apart if gaps appear in the literary culture. Conte sets aside this focus on the author's will to look at the texts themselves. As he describes it:

If one concentrates on the text rather than on the author, on the relation between texts (intertextuality) rather than on imitation, then one will be less likely to fall into the common

⁴⁴ María Jesús Martínez Alfaro, 'Intertextuality: Origins and Development of the Concept', *Atlantis*, 18.1/2 (1996), 268–85.

⁴⁵ *Intertextuality: Theories and Practices*, ed. by Michael Worton and Judith Still (Manchester, UK: Manchester University Press, 1990), p. 4.

⁴⁶ Aristotle, *Poetics* 1148b-24.

⁴⁷ E.g. Cicero in *De Oratore*; Quintilian in *Institutio Oratoria*.

⁴⁸ Gian Biagio Conte, *The Rhetoric of Imitation: Genre and Poetic Memory in Virgil and Other Latin Poets*, ed. by Charles Segal (Ithaca, NY: Cornell University Press, 1986).

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philological trap of seeing all textual resemblances as produced by the intentionality of a literary subject whose only desire is to emulate.⁴⁹

With the will of the author decentralised, Conte sought to set out a philological strategy for dealing with allusion and imitation in Latin poetry which approaches the matter intertextually.

In Antiquity there was a rich tradition of intertextuality, manifesting through imitation, quotation, translation, paraphrase, allusion and other practices. Indeed it is through these that many fragments and testimonia of the Presocratics were preserved and transmitted. When viewed intertextually, allusions to and discussions of the Presocratics in later authors can give us a sense of their familiarity with the works, and assist in identifying whether the source lies in the doxographical tradition or outside of it. This thesis will make use of intertextual readings of later Latin discussions of the Presocratics and their teachings as part of the investigation into their legacy in this period.

3.5 *History of Ideas*

In 1933 Arthur O. Lovejoy gave a series of lectures to the philosophy faculty at Harvard University in which he issued a call to scholars to broaden their horizons from the narrow fields in which they work. This call to interdisciplinary action was grounded in the idea that specialist approaches to scholarship often wind up converging on similar ideas, but because of the isolation inherent to such a narrow focus few specialists realise the relevance of other fields to their own work. These lectures were of little interest to philosophers but garnered the attention of literary scholars who found his thought on the history of ideas applicable to their field. His work bore fruit in the form of his 1936 book *The Great Chain of Being*, in which he outlines his view of intellectual history.⁵⁰

Lovejoy's thesis posits a distinction between ideas and the contexts in which they are known to us. These ideas exist in a simple, refined form independently of their occurrence in a text which he terms unit-ideas. The aim of the historian of ideas is to isolate these unit-ideas from the wider context and trace their history across the ages. He does not furnish the reader with a strict definition of the unit-idea but instead offers descriptions of how they manifest. As an example, Lovejoy states that the idea of God is not a unit-idea because it is highly variable in different contexts.⁵¹

⁴⁹ Conte, p. 27.

⁵⁰ Arthur O. Lovejoy, *The Great Chain of Being* (New York: Harper & Row, 1936).

⁵¹ Lovejoy, p. 5.

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His work was highly influential on the study of intellectual history, but it has been subject to criticism. Daniel Wilson, in his retrospective article on Lovejoy, examines the influence of his thesis and subsequent criticism, identifying two main strands of criticism of his approach. There is a methodological critique, which stresses the problems with his dualistic approach to ideas, and a hermeneutical critique, which approaches Lovejoy from a deconstructionist or intertextual perspective. These criticisms stress that such a phenomenon as a unit-idea cannot have fixed meaning. Grounded in the work of Barthes and Kristeva, it argues that meaning is generated by the act of reading and interpreting, rather than out of some inherent quality of the idea.⁵²

In terms of its applicability to the methodology of this thesis, the history of ideas approach faces a conflict with the intertextual approach outlined above. Namely, that a unit-idea lacks potency in the absence of a single authoritative reading of a text. Nevertheless, it holds some utility for present purposes in the form of his fifth principle type of unit-idea:

The type of idea with which we shall be concerned is, however, more definite and explicit, and therefore easier to isolate and identify with confidence, than those of which I have been hitherto speaking. It consists of a single specific proposition or ‘principle’ expressly enunciated by the most influential of early European philosophers, together with some further propositions which are, or have been supposed to be, its corollaries.⁵³

In other words, the types of ideas expressed by the early Greek philosophers concerning their principles can be understood as such a unit-idea. The doxographical tradition itself breaks down the complexities of the Presocratics worldviews into short and simple summaries, the repetition of which naturally lends itself to being traced throughout history. Thus the various subcategories of early Greek material monism as interpreted by the Peripatetics and transmitted through the doxographical tradition can be read as unit-ideas and their history can be examined.

This is not to subscribe to Lovejoy’s notion of ideas as having an independent existence from their context. Rather, I seek to modify the thesis and regard these ideas—e.g. the idea of the material monism of Thales, the idea of the fourfold pluralism of Empedocles, and so on—as dependent on the textual context in which they occur. Thus when this thesis discusses ‘the idea of atomism’ it is not trying to isolate the pure elemental form of the idea out of some noösphere, but to discuss ‘the idea of atomism’ as

⁵² Daniel J. Wilson, ‘Lovejoy’s *The Great Chain of Being* after Fifty Years’, *Journal of the History of Ideas*, 48.2 (1987), 187–206.

⁵³ Lovejoy, p. 14.

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it arises within a specific textual context. Essentially, Lovejoy's history of ideas approach is a tool which allows this project to isolate specific strands of Presocratic thought preserved in the doxographical tradition and trace their lineage through Late Antiquity and beyond.

4. THESIS STRUCTURE

Beginning with Aristotle and the Greek doxographical tradition, the first chapter will survey the means through which Presocratic physical doctrines were transmitted during Antiquity. After this general introduction the chapter will examine a particular phenomenon which occurs in the Latin transmission specifically. From the earliest points of entry into the Latin language in the philosophical works of Cicero up until the Early Medieval period, the names and teachings of philosophers, especially their physical doctrines, are given in the form of a list. In these lists, the Presocratic teachings on the nature of the first principle feature most prominently. I will argue that discourse on the Presocratics often appears derivative of the doxographical tradition. This chapter will demonstrate that most knowledge of the Presocratics in Antiquity came from doxographical sources and that this resulted in a relatively uniform and stable tradition about Presocratic physics in Latin literature. I shall argue that these lists served as the primary means of transmitting the doctrines of the physicists throughout the Classical and Late Antique periods and were influential on the understanding of their teachings in many of the texts to be discussed in the following chapters. This early reception would go on to shape the understanding of the history of philosophy in the Latin speaking West from the first century CE right up until the Carolingian period.

The second chapter will focus on the earliest Latin reception of Presocratic physics in a Christian context, with an emphasis on Christian and Gnostic identities as portrayed in Christian heresiological texts. In the anti-heresy works of Tertullian of Carthage and Irenaeus of Lyons, a relationship between ancient physics and then-current Christian heresies is conjectured. This chapter explores how this early Christian reception of Presocratic doctrines uses the physical teachings, presented in the 'principle lists' format outlined in chapter one, in order to propose that the teachings of Christian Gnostics were derived from the pagan philosophers and are therefore not truly Christian. I shall examine how this relationship between physics and heresy is constructed in these heresiological texts and how it functions within them. Ultimately, this chapter will argue that this conjectured link between the Presocratics and heretics must be understood as an

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attack on the internal enemies of the Christian orthodoxy of the time. The arguments made by this chapter will contribute to on-going academic discourse about the polemic nature of heresiology.

The third chapter also examines the reception of Presocratic physics in early Christian Latin texts. In this case it is the role which the four Empedoclean elements have to play in Christian exegesis, in particular exegesis on the creation narrative in the Book of Genesis. At their core, Presocratic physics have an underlying principle which is seldom expressed but often understood. They are underpinned by a presumption that nothing will come from nothing and the fourfold pluralist principle of Empedocles, the four elements, is no exception to this. His ideas went on to become the dominant theory of the natural sciences for centuries after his death, and by the beginning of the Christian period it had widespread acceptance, even among differing philosophical schools. The theory was so pervasive that it was accepted as true by Christian exegetes who made use of it to interpret scripture, which early Christian exegesis by Basil of Caesarea and Ambrose of Milan on the creation narrative in Genesis highlights. This chapter examines how the theory of the four elements is changed when the *nihil ex nihilo* presumption is set aside in favour of creation from nothing.

The final two chapters of the thesis explore the legacy of atomic theory in Late Antiquity and the Early Middle Ages. Scholarship to date has been quite dismissive of accounts of atomism during these periods, often regarding them as ill-informed or utterly divorced from ancient atomism. These chapters seek to challenge that perception, and place emphasis on dynamic developments in the transmission of atomism into the Early Middle Ages as well as arguing for continuity between Classical and later conceptions of atomism. The fourth chapter focuses on the reception of atomism within Early Medieval literature and its presence in encyclopaedias, computistics, and grammatical texts. More specifically the origins and impact of the *atomus in tempore*, the atom in time, an indivisible unit of time which emerged as a chronological unit in Late Antiquity. This chapter examines the textual history of the concept of a temporal atom and argues that it develops from the atomism of Democritus and Epicurus when the theory of indivisible units of matter was used to interpret a particularly challenging passage from the Bible. From this beginning the concept went on to be transmitted across the Latin-speaking world and became part of the underlying theory of time behind the medieval science of the Computus.

Introduction

The fifth and final chapter explores other concepts which developed in tandem with the *atomus in tempore*. Post-Isidore, a number of other *atomi* come into play in a variety of contexts, in computistics, poetry, and grammatical treatises right up until the Carolingian period. By the eighth century there were five categories of atom, *in corpore* (primary indivisible bodies), *in tempore* (indivisible units of time), *in numero* (i.e. the number one), *in litteris* or *in oratione* (letters, or perhaps more accurately graphemes and phonemes) and *in sole*, the often-enigmatic ‘atom in the sun’. This chapter examines the last three atoms in this list, outlining their history and proposing origins for each. As with the preceding chapter on the *atomus in tempore*, I will argue that these various *atomi* must be understood as representing both continuity and change from earlier atomism rather than being simply errors or corruptions.

Drawing together these strands of investigation I seek to demonstrate that through the reception of their physics in later periods, Presocratic ideas retained a great deal of influence when it came to theories about nature. The products of their inquiries were invoked to reconcile scripture with natural sciences and came to play important roles in exegesis. The Presocratic philosophers themselves acquired new roles in history. Whereas in Aristotle’s reckoning they were part of a sequence in intellectual history which culminated in his own philosophy, Late Antique authors would take different stances. Politically minded Christians like Irenaeus and Tertullian considered these physicists as the intellectual forefathers of heretics, while the encyclopaedist Isidore of Seville regards them as first discoverers of fields of inquiry which culminated in the seven Liberal Arts.

Chapter One: Doxography and the Transmission of Presocratic Doctrines

1. INTRODUCTION

This chapter will examine how the ideas and teachings of the Presocratic philosophers about nature were transmitted from Greek texts to Latin texts during the Classical period. It will outline the various biases to be found in the Greek sources and discuss the implications of these for the Classical and Late Antique reception of Presocratic physics. As will be discussed below, scholarship since Diels has highlighted that the biases of the early second-hand accounts of Presocratic doctrine continued in the later reception. This raises the problem that aside from various fragments, much of what is taken from the doxographical tradition was not an accurate reflection of the historical Presocratics, but instead reflected the conventions of historiography originating in Aristotle's dialectic. Nevertheless, we can explore accounts from doxographic sources and from there examine their bearing on the Classical and Late Antique understanding of Presocratic physics, and thus their legacy during these periods.

Central to the transmission of any Presocratic teaching, whether on nature, ethics, or theology, is the ancient tradition of collecting the opinions of the philosophers and arranging them by topic. These opinions form the basis of what scholars term the doxographical tradition. As noted in the introduction, like the term 'Presocratic' itself, 'doxography' is a term without precedent in Antiquity. However, that is not to say that the term is ahistorical. Doxography, as David Runia describes it, 'is more systematic than historical in orientation'.⁵⁴ These lists existed in Antiquity and their impact can be seen from the fourth century BCE onwards. It is an observer category, defined by its readers, rather than an actor category, defined by authors, and its usefulness for scholarship is not diminished by its status as a neologism. The history of the study of these texts will be explored in due course, but before proceeding it is essential to outline their own history, features and typology.

2. THE EVIDENCE FOR THE PRESOCRATICS

Who were the Presocratics? The simplest definition would be philosophers who came before Socrates, but such a temporal criterion is not satisfactory. We should consider them

⁵⁴ David T. Runia, 'Lucretius and Doxography', in *Aëtiana: The Method and Intellectual Context of a Doxographer*, Philosophia Antiqua, 118 (Leiden/Boston: Brill, 2009), pp. 255-70 (p. 94).

as philosophers who were not influenced by Socrates as Plato, Aristotle, and the Hellenistic schools were. They are best remembered for their cosmogonies and inquiries into nature, although this was by no means the extent of their works. They are distinguished from their predecessors who posited the mythological cosmologies found in Homer, Hesiod, Pherecydes, and the Orphics, and from their successors who were more focused on ethical concerns than natural ones.⁵⁵

How do we know about the character of their works? No complete work of any Presocratic philosopher has survived into the modern era. Their teachings have been the subject of study and commentary since at least the fifth century BCE. For example, in the Derveni Papyrus, the earliest extant Greek text papyrus, we find quotation and commentary on Heraclitus.⁵⁶ The Presocratics were present in Greek literature throughout Antiquity, and it is through such attestations that we know about some of the characteristics and content of their works. Their teachings survive either through direct quotation or indirect attestations, respectively called fragments and testimonies.

Simplicius, Plutarch, Sextus Empiricus, Clement of Alexandria, Diogenes Laërtius, Hippolytus, and Stobaeus provide most of the quotations of the Presocratics which survive to this day.⁵⁷ These fragments vary in length and integrity and the context of them can be obscure. According to David Furley ‘the evidence for the theories of the sixth and fifth centuries B.C. is scrappy and ambiguous: we lack the context of the short quotations that survive—the longest consecutive fragment is sixty-six lines of verse. It is just possible that we have the whole intent and direction of some fragments wrong. That is not likely because the tradition has been subjected to the most careful criticism by many generations of scholars and philosophers; but there is no general consensus on some important questions’.⁵⁸ Lacking the full context of the works, scholarship will always struggle with interpreting these fragments, yet strong arguments have been put forward.

In addition to the fragments there are many ancient authors who provided testimonies about the Presocratics, their doctrines and their lives. Plato is the earliest to comment on them, although his remarks, which are laden with his characteristic dramatic irony, are too light-hearted to be taken seriously. His comments about Heraclitus,

⁵⁵ KRS, pp. 7-74.

⁵⁶ Gábor Betegh, *The Derveni Papyrus: Cosmology, Theology and Interpretation* (Cambridge: Cambridge University Press, 2007), p. 11.

⁵⁷ KRS, pp. 1-2.

⁵⁸ David Furley, *The Greek Cosmologists: The Formation of Atomic Theory and Its Earliest Critics*, 2 vols (Cambridge: Cambridge University Press, 1987), I, p. 16.

Parmenides, and Empedocles do not stand to tell us much about the historical realities of these men or their teachings. Aristotle's engagement with the Presocratics is much more serious than Plato's but his reports of their teachings are to be approached with caution. The same is to be said about Aristotle's successor, Theophrastus, who followed Aristotle's approach to the historiography of philosophy. The majority of testimonies of the physical teachings of the Presocratics can be ultimately traced to Aristotle's and Theophrastus' accounts, via the doxographical tradition. It is through these lines of transmission that we know most about Presocratic physics.

3. PRESOCRATIC PHYSICS

When we speak of 'Presocratic physics', it is difficult to disentangle the historical realities of philosophy in the sixth and fifth centuries BCE from the dialectic of the fourth and third centuries. The influence of this Peripatetic interpretation of Presocratic philosophy is most noticeable when it comes to the outlining of one aspect of Presocratic physics within the framework of the Aristotelian system of causation. This is seen in Aristotle's *Metaphysics A* and later in the doxographical tradition with the apparent emphasis of Presocratic philosophers on the ἀρχή, the first principle or in Aristotelian terms, the material cause. Kirk, Raven & Schofield define the first principle as 'the original constituent material of things, which persists as substratum and into which they will perish'.⁵⁹ Through this lens, the 'debate' among Presocratic philosophers about physics has been framed as a process of dialectic, with arguments, rebuttals and resolutions. For example, since we lack any of his own writings we cannot say with any certainty that Thales said what Aristotle reported him to have said, either that the first principle is water or that the earth rests on water.⁶⁰ Aristotle's own assessment describes Thales as the founder of this type of philosophy, by which he means material monism (i.e. all matter is derived from a single substance and plurality arises from unity).⁶¹ The 'dispute' then, among these philosophers, Thales, Hippo, Anaximenes, Diogenes, Hippasus, and Heraclitus, is over the question of the identity of the first principle. The argument that water is the principle is disputed by a counter-argument that fire or air is the principle, before the difference between these material monists is solved by a material pluralist in the form of Empedocles of Acragas, who synthesised the disparate principles of water,

⁵⁹ KRS, pp. 89-90.

⁶⁰ Aristotle, *De Caelo* B13 294a28.

⁶¹ Aristotle, *Metaphysics* A3 983b6.

air and fire into the system of the four elements with the addition of earth. Philosophy is presented here as a dialectical process, with schools of thought (and in later periods, institutional schools) debates and solutions, the ultimate resolution being Aristotle's own system of fourfold causation.

Naturally enough, given that this is the source of much of what is recorded about the Presocratics, this view has coloured how modern scholarship understands Presocratic philosophy. In the final chapter of his book, Cherniss examines just how Aristotle's presentation of the Presocratics had influenced scholarship up until that point.⁶² The *Metaphysics A* in particular has presented the Presocratics and their thought as rational and systematic, and in light of this, events such as Thales' prediction of the solar eclipse at the battle between the Medes and Lydians was interpreted as the emergence of scientific inquiry in an era of superstition. However any attempts to understand the Presocratics as purely rational inquirers or pre-enlightenment proto-scientists runs into a problem. In the extant fragments of the Presocratics there are no divisions between science, philosophy, religion and magic. Indeed, Parmenides and Empedocles' works are presented in terms of revelatory religious visions about nature. Gregory Vlastos noted the profound religious nature of the Presocratics and was critical of scholars who attempted to square the religious and scientific aspects of their works. As he said, 'To think of them as mere naturalists, bracketing off their speculations from religious belief and feeling, would be to take an anachronistic view of their thought'.⁶³ The understanding of Aristotle and his successors in the Peripatetics and the doxographical tradition therefore do not reflect the nuances of the Presocratics as historical figures.

Presocratic philosophy arrives to us abridged and somewhat distorted. Yet this does not mean that we cannot ascertain certain details about their worldview. A recurring theme from Heraclitus, Empedocles, and Democritus is the idea of 'like goes to like', which—depending upon one's interpretation—can be understood as a principle of cosmogony in certain contexts.⁶⁴ The Presocratic worldview in general does appear to have an underlying principle of conservation: in other words, nothing comes to be from

⁶² Cherniss, pp. 347-404.

⁶³ Gregory Vlastos, 'Theology and Philosophy in Early Greek Thought', *The Philosophical Quarterly* (1950-), 2.7 (1952), 97-123 (p. 97).

⁶⁴ DK B164, A20a; cf. Andrew Gregory, 'Leucippus and Democritus on Like to Like and Ou Mallon', *Apeiron: A Journal for Ancient Philosophy*, 46.4 (2013), 446-68.

nothing and nothing will decay into nothing.⁶⁵ These characteristics can be seen in the fragments and in the doxographical tradition itself.

4. THE DOXOGRAPHICAL TRADITION

The doxographical tradition is the sum of collections of tenet-writings from Antiquity. These δόξαι (also called ἀρέσκοντα, or in Latin *placita* or *opiniones*) are summed up by Runia as ‘brief statements of the views held by a philosopher on a particular subject’.⁶⁶ The origins of the practice of collecting these opinions in this fashion are seen in the works of Aristotle who considered it prudent to examine the reputable opinions (ἔνδοξα) of his intellectual forbearers prior to outlining his own.⁶⁷ Baltussen defines them as ‘specific *doxai* thought of highly within certain circles’.⁶⁸ After stating the opinions of past philosophers, Aristotle would then critique their shortcomings before proceeding to outline his own ideas. These were not sweeping overviews of the opinions of philosophers, but comparisons or contrasts between various opinions organized by topic (e.g. opinions on the material cause, opinions on the nature of the soul). This method of *diairesis*, the separation of things under different headings, is seen in Aristotle’s *Physics* and *Metaphysics*.⁶⁹

Following Aristotle’s example the Peripatetic school would go on to adopt this practice of outlining the opinions of past philosophers. The need to know these opinions gave rise to the compiling of these ἔνδοξα, on topics ranging from the nature of the soul to the question of the singularity or plurality of worlds. The most prominent example of a Peripatetic work on this was the lost compilation by Theophrastus of Eresus (c.371-287 BCE). While the title of this work is a matter of some dispute, either Φυσικῶν Δόξαι or Φυσικαί Δόξαι, its significance to the doxographical tradition is not.⁷⁰ It was likely the chief source of later lists of philosophical opinions by the enigmatic Aëtius and Pseudo-Plutarch.

These Peripatetic accounts of the opinions of the philosophers present some problems for modern reconstructions of Presocratic philosophy. Before using the

⁶⁵ Furley, *The Greek Cosmologists*, p. 20.

⁶⁶ Runia, *Lucretius and Doxography*, p. 35.

⁶⁷ Curd and Graham speculate that the first to have engaged in a systematized historiography of his philosophical predecessors may have been the Sophist Hippias of Elis, see Patricia Curd and Daniel W. Graham, ‘Introduction’, in *The Oxford Handbook of Presocratic Philosophy*, ed. by Patricia Curd and Daniel W. Graham (Oxford: Oxford University Press, 2009), pp. 3–21 (p. 10)

⁶⁸ Han Baltussen, *Theophrastus against the Presocratics and Plato* (Leiden: Brill, 2016), p. 39.

⁶⁹ Aristotle, *Metaphysics* A983a24-993a27.

⁷⁰ Jaap Mansfeld and Philippe Rousseau, ‘Physikai Doxai et Problemata Physica d’Aristote à Aëtius (et Au-Delà)’, *Revue de Métaphysique et de Morale*, 97.3 (1992), 327–63.

information therein it is important to ask one pressing question: where did it come from? Given the absence of the vast majority of what the Presocratics themselves wrote, the information provided by Aristotle is mostly unverifiable. Since we cannot refer to original source to confirm, we are left with two options. Either we can trust Aristotle's and Theophrastus' accounts (and the accounts later derived from them) as accurate representations of Presocratic opinions or we can approach it with some scepticism. Since Harold Cherniss' work on the matter in the early twentieth century, scholarship has favoured the latter option with good cause. The immediate context of Aristotle's accounts of past philosophers is not a historiographical one, but rather a dialectical one. His goal is not to write an accurate representation of the past as it was, but to use the opinions of the past to affirm his own.⁷¹ Indeed, this is what we see clearly in Aristotle's accounts. His presentation of the philosophers in the *Metaphysics A* is not an account of past opinions on nature for their own sake, but a presentation of past ideas about nature with overtones of progression towards an end, in this case Aristotle's own physics. Richard McKirahan summarizes it as follows: 'Aristotle's purposes are clear. He does not aim to discuss the complete theories of former philosophers systematically and in context; he wants only to see if they contain anything relevant to his own philosophical task of identifying different types of causes'.⁷²

One can discern a progression in Aristotle's narrative from a primitive or simple worldview. For example, the material monists (Thales, Heraclitus, etc.) are presented as champions of the material cause. But then through a process of dialectic Empedocles went on to introduce efficient cause and Plato the formal cause. This presents philosophy as a process of thesis and antithesis, the culmination of which is Aristotle's own system of the four causes, now understood as a synthesis or even as the end of physics. Yet it is highly unlikely that philosophers and physicists prior to Aristotle operated within such a framework. Much more probable is that Aristotle reinterpreted the works of the Presocratics through the lens of his own system. By examining Aristotle's biases, we see that the presentation of philosophy in his works is suspect, and that the tradition which followed his works and methodology should be approached with a degree of scepticism if the information which one seeks is about the historic reality of the Presocratic philosopher's teachings in the sixth and fifth centuries BCE.

⁷¹ Cherniss, pp. ix-xiv.

⁷² Richard McKirahan, *Philosophy before Socrates: An Introduction with Texts and Commentary* (Indianapolis/Cambridge: Hackett Publishing Company, 1994), p. 27.

5. THE STUDY OF DOXOGRAPHY

The word *Doxographie* was coined by German classical philologist Hermann Diels (1848-1922) to refer to the collections of the sayings and teachings of the philosophers.⁷³ Diels is perhaps best remembered for his *Die Fragmente der Vorsokratiker*, still used as the handbook on the Presocratics to this day, but in 1879 he published *Doxographi Graeci*, the foundation of doxographic studies, a work of *Quellenforschung* which analysed works by Cicero, Ps. Plutarch, Stobaeus, Philodemus, Ps. Galen and others to reconstruct lost works which preserved Presocratic teachings throughout Antiquity.⁷⁴ Following his *Doktorvater* Hermann Usener (1834-1905) he used the comparative method and presented a compelling argument for a lost doxographical work known as the *Placita* of an otherwise unknown figure from the first or second century called Aëtius, which he reconstructed from passages in later authors via a synoptic reading of Ps. Plutarch and Stobaeus. Ultimately, Theophrastus' lost work was thought to be the source upon which Aëtius' work was based, though this view is not without its problems.⁷⁵

In essence, Diels set out to outline the sources of Ps. Plutarch's *Placita Philosophorum* and then to organise them. According to Mansfeld and Runia 'Diels set about reducing the incredibly complex strands of the doxographic traditions to an orderly schema'.⁷⁶ He accomplished this in *Doxographi Graeci*, outlining the relationship (as he saw it) between these various doxographical texts and tracing them back to their respective *Quellen*. A stemma of the work shows the tradition from Aristotle to Theophrastus, to the *Vetusta Placita* and thence to Aëtius, Ps. Plutarch, Stobaeus, Ps. Galen and others, in the Arabic and Byzantine traditions.⁷⁷

Aside from the general problems of *Quellenforschung*, one of the shortcomings of Diels' work was his failure to appreciate that the significance of the similarities which he saw in other texts which he traced to Theophrastus' lost text, could equally be seen in Aristotle's own works. Eduard Zeller pointed out the similarities between Theophrastus' account of principles and Aristotle's in the *Metaphysics*.⁷⁸ More recent scholarship by Mansfeld and Runia has explored the Aristotelian influence in greater detail, though this

⁷³ Phillip van der Eijk, 'Doxography', in *The Classical Tradition*, ed. by A. Grafton, G. W. Most, and S. Settis (London: Harvard University Press, 2010), pp. 282–84.

⁷⁴ Hermann Alexander Diels, *Die Fragmente der Vorsokratiker. Griechisch Und Deutsch*, ed. by Walther Kranz, 3 vols (Berlin: Weidmann, 1951).

⁷⁵ Mansfeld and Runia, 'What we know about Aëtius', pp. 64-110.

⁷⁶ Mansfeld and Runia, 'What we know about Aëtius', p. 74.

⁷⁷ Mansfeld and Runia, *ibid.*, p. 81.

⁷⁸ E. Zeller, 'Über die Benützung der Aristotelischen Metaphysik in den Schriften der Älteren Peripatetiker', *Abhandlungen Academie Berlin*, Philosophisch-historische Klasse, 1877, pp. 145–67.

approach has drawn some criticism in the form of accusations of unfair revision of Diels' research.⁷⁹ The comprehensive response by Mansfeld to Zhmud's criticism makes a compelling case for the Aristotelian influence.⁸⁰ As we saw, Aristotle himself did not give an objective account of the Presocratics in his work.

The first major work questioning the reliability of Aristotle on the Presocratics was Harold Cherniss's *Aristotle's Criticism of Presocratic Philosophy*. Cherniss set out to demonstrate just how great Aristotle's influence on the later understanding of the Presocratics was and highlighted that Aristotle's own interpretation skewed this later understanding. Put simply, it is highly unlikely that the Presocratic philosophers conceived of their ideas within the framework in which they are presented in Aristotle's *Metaphysics*.⁸¹ Indeed, there may well be good reason to call into question Aristotle's inclusion of Thales as the first philosopher, something which had enormous impact on the historiography of philosophy.

With regards to recent scholarship on the reception of early Greek materialism in Christian literature, Catherine Rowett's *Rethinking Early Greek Philosophy* critiqued the traditional approach to fragments of the Presocratics recorded by Christian writers and outlined her own approach in response to her critique. Rowett argued that traditionally the aim of Presocratic studies was the discovery of the *ipsissima uerba* of the Greek philosophers and physicists of the fifth and sixth centuries BCE. In the absence of whole and extant texts of these philosophers, scholars turned to whatever fragments, quotations, attributions, paraphrases etc. had been transmitted by other authors, and excised these from the texts and contexts in which they were found, in the hopes of distilling the essence of Presocratic thought and building up a clear picture of their doctrines. This view is to be contrasted with Rowett's own approach, which derives from two major objections to this practice. Firstly, there is an underlying assumption that the authors who selected these fragments for inclusion in their own works were passive receivers of the Classical tradition, who lazily and dutifully copied their sources word for word. Secondly, following on from this assumption there is a belief that as a result of the passivity of these later authors that the material excised from a Presocratic context has been unaltered by

⁷⁹ Leonid Zhmud, 'Revising Doxography: Hermann Diels and His Critics', *Philologus*, 145 (2001), 219–43.

⁸⁰ Jaap Mansfeld, 'Deconstructing Doxography', in *Aëtiana: The Method and Intellectual Context of a Doxographer, Vol. 3: Studies in the Doxographical Tradition of Ancient Theology*, Philosophia Antiqua, 118 (Leiden: Brill, 2009), pp. 161–72.

⁸¹ H. F. Cherniss, *Aristotle's Criticism of Presocratic Philosophy* (Maryland: The Johns Hopkins press, 1935).

its selection and removal from its place within another work and indeed, unaltered by the context into which it has been inserted.

These criticisms lead Rowett to respond by formulating her own approach. She proposes to look at the fragment, not as a vein of Presocratic *Urstoff* within mere rock, but as an embedded text within a text. In a nutshell, Rowett argues that we must pay close attention to the ancient interpretations of these fragments and consider how their presentation can influence our reading of the fragment. Her task then is to see what results from reading the fragments of the Presocratics in Christian authors, especially Hippolytus of Rome, within the immediate context of his work. She approaches Hippolytus, not as a passive receiver of ancient wisdom, but as a *bricoleur*, constructing a narrative from pre-existent material. As she describes it ‘It is precisely in these examples that we lose most by extracting the interpretation to which they belong, presented in an accessible form’.⁸² She concludes that Hippolytus’ interpretation of Heraclitus systematises his notoriously enigmatic teachings which in a traditional approach are highly fragmented. Likewise, she writes of Hippolytus’ approach to Empedocles that the imposition of a Marcionite-tending structure on Empedocles highlights the superfluity of the modern separation of Empedocles’ fragments into two poems—one scientific, the other religious.

Rowett’s thesis has not been met with universal praise. Indeed, there has been some harsh responses to her thesis, in particular by David Furley.⁸³ Chief among the issues is the long standing and often times charged debate as to whether Empedocles wrote one or two poems, and which fragments belong where. Malcom Schofield concluded that the work was significant and van Winden stressed that the book was in many ways preliminary, and that her approach would likely bear fruit when others follow her methodology. Jaap Mansfeld’s extensive treatment of Hippolytus in *Heresiography in Context* responds to Rowett and builds on her approach.

Mansfeld’s meticulously detailed book seeks to place Hippolytus’ *Refutation* as a source for Presocratic philosophy within context. More specifically, he looks at the *Philosophoumena* of book one, which has been excised at length by ‘scissor-happy’ students of multiple disciplines—Presocratic, Hellenistic and Middle Platonist philosophy as well as researchers in Gnosticism and Early Christianity—to the detriment

⁸² Catherine Rowett (Osborne), *Rethinking Early Greek Philosophy: Hippolytus of Rome and the Presocratics* (London: Duckworth, 1987) p. 85.

⁸³ David Furley, ‘Review: Rethinking Early Greek Philosophy by Catherine Osborne’, ed. by Catherine Osborne, *The Philosophical Review*, 100.1 (1991), 157–60.

of the study of the work as a whole. Mansfeld wishes to answer the question ‘why Hippolytus wants us to concentrate on certain things, rather than others, and what is his strategy in arranging his exhibits the way he does’. The received wisdom, both from Diel’s assumptions but also from the latent biases of classical philology as a discipline (i.e. the widespread Hellenophile positions which privileged classical Greek works over later works), was to place less value on the study of the ‘post-classical’, for its lack of originality. Fragments of older works could, on these grounds, be removed from their immediate context without further consideration of the context. These fragments were selected by later authors because they were, demonstrably, the best fragments, and were definitively the opinion of the author on this given topic. The possibility that it was their suitability to the immediate context of the post-classical author was not given serious consideration.⁸⁴

Mansfeld’s starting point lies, as with all of Presocratic doxography, with Hermann Diels. While not calling Diels’s project into question, he opens his work with a critique of Diels’s approach to Hippolytus, in particular his presentation of ‘two instances (only one good) of what he considered to be Hippolytus’ ‘scissors-and-paste methods’, from which Diels extrapolated a universal feature of the *Refutation*. Mansfeld challenges the simplicity of Diels’ conclusion that there were two sources for the *Refutation*, both derivative of Theophrastus, and argues that the work’s source material has a much more complex history than previously thought.

Today, the doxographical tradition is interpreted by scholars in one of two ways: The narrow interpretation stemming from Diels’ research and the broader interpretation set out by Mansfeld and Runia, which examines the source material as more than a simple progression from Theophrastus to Aëtius, and also defines doxography in a broader sense. Significantly, their approach looks to the individual authors from Aëtius to Qusta Ibn Luqa not as passive receivers of a tradition but as ‘integral parts of that tradition’.⁸⁵ That is to say that a doxography need not only be an exhaustive compendium of opinions divided by subject like the works of Theophrastus or Aëtius but that any list of the

⁸⁴ This is not unlike the common misunderstanding of the phrase in evolutionary biology ‘survival of the fittest’. It means not that the fastest, strongest life forms survive, but that the ones most well adapted to their environment. In other words, these fragments survived not because they were the best of the Presocratics, self-evidently great, but because they were the best adaptable to the purposes of the authors who made use of them.

⁸⁵ Mansfeld and Runia, ‘What we know about Aëtius’, p. 107.

opinions of the philosophers within a text of any genre may be considered a doxography. A list such as Aristotle's in *Metaphysics A* or Cicero's in *De Natura Deorum* may be considered doxographical on these grounds, which gives us a wider understanding not only of transmission of philosophical teachings, but also of how these lists influenced opinions about philosophers and philosophy throughout the ages.

For Mansfeld, a core quality of a doxography proper is its diaphonic structure, with its presentation of opposing opinions on a certain problem. Doxography, broadly defined, does require some categorization alongside related practices in the historiography of philosophy. For example, we may consider a list of doctrines in Cicero to be doxographical, but can we consider accounts of lives of philosophers in Diogenes Laërtius as part of the same phenomenon? Arguably, we can. Mansfeld has outlined six subgenres of doxography which may be of use in interpreting the variation in accounts about the philosophers. Firstly there is doxography *stricto sensu*, or tenet-lists, divided by topic with its diaphonic nature. Secondly, there is biography, accounts of the lives of philosophers, lore, and stories. Thirdly, there is the largely lost genre of doxographical literature, the *Περὶ αἰρέσεων* or literature about sects. Fourthly, there is the related idea of literature on the successions of philosophers from master to student, the *διαδοχαί*. Fifthly, there are collections of maxims, like Epicurus' *Κύρια Δόξαι*, and lastly the introductions.⁸⁶ This thesis will focus mostly on doxography *stricto sensu* and derivative works lacking the diaphonic qualities of doxography proper. Other subcategories of doxographical literature will feature throughout the work.

Diels' goal was part of the wider attempt to recover teachings of the philosophers from disparate sources. This is the aim of Presocratic studies, in conjunction with the task of interpreting the teachings within their historical contexts. However, because of the fragmented nature of the evidence and the wide range of times in which these surface, scholarship also looks to reception to help us better understand the context in which these teachings were transmitted. This project looks not to the 'meaning' within the texts, but to find the meanings generated by intermediate readers of the text, in order to understand better the legacies of the Presocratics. Reconstructing the reality of the fifth and sixth centuries BCE from these sources not a goal of this thesis. Rather, the aim of the present work is to examine how the doxographical tradition, with all its biases, was received in Late Antiquity in Latin literature and from there its legacy in the Early Middle Ages. This

⁸⁶ Jaap Mansfeld, 'Sources', pp. 3–30.

thesis examines some of the consequences which flow from the particular interpretations in doxographies and how those interpretations informed discussions of Presocratic physics.

6. THE LATIN RECEPTION OF DOXOGRAPHY IN ANTIQUITY

With a handful of Latin, Syriac, and Armenian exceptions, fragments of the Presocratics are mostly preserved in the Greek language, but the testimonies of their teachings are found in the languages of the ancient Mediterranean world. The doxographies of Aëtius and his putative source in the *Vetusta Placita* were in written in Greek. Even after the rise of Roman power on the Balkan Peninsula, the language of philosophy and indeed the *lingua franca* of the Mediterranean world remained Greek. It was only after 155 BCE, when Athens sent a diplomatic delegation to Rome, made up of the heads of the philosophical schools—the Academy, Stoa, and Lyceum—that the Roman élite began to take an interest in philosophy. The sons of the Roman upper classes were sent to study at Athens, but because the prospect of wealthy Roman patrons proved enticing, the focal point of philosophy gradually became multiple foci and shifted westwards to Italy, southwards to Egypt and eastwards to Syria. This migration was greatly intensified following the First Mithridatic War (88-86 BCE) and Sulla's siege of Athens. Ultimately philosophy became decentralized, with centres of learning springing up throughout the Empire in Rome, Antioch, and Alexandria.⁸⁷ Eventually, as Latin began to overtake Greek as *lingua franca* (at least in the West), Latin philosophical literature emerged alongside Greek, some philosophical literature was translated, and influence of doxographies appeared in Latin works.

Much of the philosophical primary texts available to Roman authors remained in Greek, although some were translated. Doxographies were used by Latin authors to various ends, and extracts were translated into or paraphrased in Latin. We see in Latin literature that the Presocratics were frequently discussed in lists which appear derived from doxographies. As will be shown below, much of the source material is remarkably homogenous in terms of the portrayal of the philosophers' teachings.

6.1 Lucretius

While there certainly were Presocratic philosophical influences on the Latin poet Quintus Ennius (c. 239-169 BCE) in the shape of his Pythagorean ideas—famously, he

⁸⁷ David N. Sedley, 'Epicureanism in the Roman Republic', in *The Cambridge Companion to Epicureanism*, ed. by James Warren (Cambridge: Cambridge University Press, 2009), pp. 29-45.

represented himself as a reincarnation of Homer—the earliest extant Latin work of philosophy is the *De Rerum Natura* of Titus Carus Lucretius (c. 99-55 BCE) and the text shows signs of influence from the doxographical tradition as well as direct influence from Presocratic philosophers.

Of all the sources used in this study, none is more prominent than the *De Rerum Natura* of Lucretius, and the focus on this text necessitates some justification and explication. While the poem dates to the first century BCE, its relationship to earlier Greek philosophy, in both its form and its content merits some reflection. The medium of this philosophical work, hexameter poetry, is particularly striking in its anachronism. Among the Hellenistic philosophers, and one might suggest especially so among the Epicureans (who were often hostile to the arts), prose rather than poetry was the literary medium in which they worked. Indeed, since Plato and Aristotle, philosophical texts were more commonly written in the form of treatises (if indeed, this is what Aristotle's surviving works represent) or as dramatized dialogues, as Plato and later Cicero engaged in. Philosophical poetry was a rarity at the time of this poem's composition, making the poet's choice of form for his work remarkable. This medium, more common in the sixth century than the first, coupled with Lucretius' archaizing language, gave the work the veneer of antiquity, which in a way reflects the age of the influences on the work itself.

Among these influences is that of Empedocles, the emulation of whom by Lucretius has been well documented by David Sedley in *Lucretius and the Transformation of Greek Wisdom*, who argued that Empedocles' philosophical poetry served as a literary model for Lucretius. As Sedley puts it 'Lucretius is the servant of two masters. Epicurus is the founder of his philosophy; Empedocles is the father of his genre. It is the unique task of Epicureanism's first poet to combine these two loyalties. And that task is what gives his poem its very distinctive character'.⁸⁸ While much of the philosophical content of Lucretius' poem toes the Epicurean line, he presented these ideas in a very un-Epicurean manner though the medium of epic poetry.

Lucretius has a curious relationship to other ancient philosophies, in particular the Presocratics. As James Warren describes Lucretius relationship to other philosophies 'Lucretius is also convinced that Epicureanism has been comprehensively described and elaborated by Epicurus himself. There is no further philosophical inquiry to be done; Lucretius' task is therefore expository and explanatory...Alternative accounts of the

⁸⁸ David Sedley, *Lucretius and the Transformation of Greek Wisdom* (Cambridge University Press, 2003) p. 34.

world are offered as illustrations of the kinds of mistakes possible if the Epicurean truth is ignored'.⁸⁹ Yet the nature of the philosophers whom Lucretius offered to illustrate these mistakes is remarkable by the fact that they are all Presocratic rather than contemporaries. Notable by their absence are the rivals of the Epicureans at Rome, the Stoics, who do not feature in the *De Rerum Natura*. Although it has been argued that the Stoics were the true object of Lucretius' polemic, this is unlikely.⁹⁰ There are many ways to read Lucretius' engagement with the Presocratics, either as polemic against the named philosophers, or as stand-ins for contemporaries (whose physics were traced to these philosophers) or indeed, not as polemic at all. Regardless of the precise reason why these philosophers were selected, we can at least say that these three--Heraclitus, Empedocles and Anaxagoras--were considered important enough to warrant a rebuttal while perhaps more prominent later philosophers—Aristotle, Plato, or the Stoics—do not receive such treatment. Furthermore, as has been argued by Rösler, Lucretius' refutations of doctrines are not the actual teachings of these philosophers, but of the teachings as transmitted by reports in doxographical handbooks.

At the same time as Lucretius is emulating Empedocles, he is also seeking to surpass him, and as Mark Edwards has argued, does so in a polemical fashion.⁹¹ In both authors there is an element of the *iatromantis*, the prophet-healer which is central to philosophy. The aims of the philosopher and of the doctor overlap, in that just as medicine ministers to the body, philosophy attends to the soul. The well-known image from Lucretius of the cup of bitter wormwood, deceptively made palatable with a honeyed rim, is of course a medicinal one. It is not simply that the philosophy of Epicurus involves harsh truths like the mortality of the soul and the very earth, sun and stars themselves, but that acceptance of these truths will cure anxieties. But this goes beyond cure; indeed, while the Epicurean sage will not be able to stop the winds and raise the dead from Hades, they nevertheless will attain a god-like state. Lucretius thus promises implicitly to deliver where Empedocles' ambitions towards godhood failed, as Edwards describes it "Attend to my words" Lucretius seem to be urging in Book I, "for I have delivered what Empedocles failed to deliver, I have proved myself a physician, a prophet and a god. I

⁸⁹ S. Gillespie and P. Hardie, *The Cambridge Companion to Lucretius* (Cambridge University Press, 2007) p. 19.

⁹⁰ W.J. Tatum, 'The Presocratics in Book 1 of Lucretius' *De Rerum Natura*', in *Oxford Readings in Lucretius*, by Monica Gale (Oxford: Oxford University Press, 2007), pp. 132–45.

⁹¹ Mark Edwards, 'Lucretius, Empedocles and Epicurean Polemics', *Antike Und Abendland*, 35 (1989), 104–15.

make obscurities clear where Heraclitus obscured simplicity; whereas the way of Empedocles led to [death in] Aetna, I will show you the flaming ramparts of the world”’.⁹²

We might also discern the influence of Democritus. This however, was in a much more indirect manner than the emulation of Empedocles, via the exposition of the atomic theory itself, alongside some specific allusions to him in the poem.⁹³ In antiquity, it was generally held that Epicurus borrowed heavily from Democritus with regard to his physics. Cicero, ever critical of the Epicureans, maintained that where Epicurus altered Democritus’ physics, he wound up changing them for the worse. Indeed, Diogenes Laërtius even records two versions of the story of how Epicurus turned to philosophy, one of which is that it was an encounter with the books of Democritus which set him on that path.⁹⁴ Regardless of the historical reality of these claims the similarities and differences between the early and later atomists are well documented by Andrew Gregory.⁹⁵ In terms of their similarities, both share the principle of conservation, the plurality of *kosmoi*, the infinitude of space and time and the unlimited number of atoms *inter alia*. In terms of their divergence, it is clear that Epicurus did respond to criticisms of atomism by Aristotle and Plato, as well as his own critique of Democritus. For example, Epicurus places an upper limit on the size of atoms, in that they must be small enough to be below the range of human perception in isolation, whereas Democritus did not place such a limit. More important, however, is his introduction of the doctrine of the swerve, which serves to explicate two things; firstly, since atoms fall ‘downwards’ through the void, there is need for a mechanism to explain how they could accrete to form larger compounds and the introduction of a quality of sudden and random motion allows them to impact on one another. Secondly, the doctrine allows for a degree of free will by introducing some randomness to the cosmos. Gregory concludes that while his answers to the criticisms of atomism show originality, overall his cosmogony is reliant on those of his Presocratic predecessors. Via Epicurus, Democritus’ thoughts on nature permeate Lucretius’ work.

⁹² *ibid* p. 112.

⁹³ Lucretius refers to Democritus three times by name at III 371, 1039-4 and V 622, twice using the same wording ‘*Democriti quod sancta viri sententia point*’, indicating that he held Democritus in higher esteem than Epicurus did. In the second mention of him in Book III, he describes Democritus’ willing acceptance of his death, immediately before mentioning Epicurus’ demise. As will be discussed in chapter five, there may well also be a literary allusion to Democritus’ own writing in the poem. See below pp. 166-90. (V§4.2).

⁹⁴ Diogenes Laërtius, *Lives* X 2-3.

⁹⁵ Andrew Gregory, *Ancient Greek Cosmogony* (London: Duckworth, 2007) pp. 173-86.

Lucretius shapes Epicurean philosophy to fit a quintessentially Presocratic literary model. To invoke the image Lucretius used to express his aims, he is administering a medicine, coating the rim of the cup with honey to make it palatable. For him, Presocratic physics can be read as representative of competing schools of thought on nature. Heraclitus, Empedocles and Anaxagoras thus stand not only for their own physical teachings but for all other schools of monism and pluralism which failed to account for the Epicurean arguments for the void and for primary bodies which are uncompounded. Because they were the first to set out these opinions, he engages with them, albeit as he understands them through the lens of the doxographical tradition. It is important to remember that for Romans, novelty was not particularly valued, and so placing the origins of an idea in the remote past was compelling. Regardless, this appreciation for the antique over the contemporary places the Presocratics at the foreground of Lucretius' philosophical criticism. It is of course, distinctly possible too that in targeting these philosophers in particular, he was following his master's own polemic closely.⁹⁶

As a result of the roles which the Presocratics play in *De Rerum Natura* in both its influences and content, the text becomes a medium for the transmission of traditions dating back to the Presocratics. The atomic theory, which Lucretius expounds as essential to his therapeutic mission, was placed by ancient sources as having originated with Democritus and Leucippus. The format of his poem, an epic hexameter poem on nature, is an emulation of Empedocles. Although these traditions are transformed both in terms of language and content they still show signs of their Presocratic inheritance.

The author drew on the work of Empedocles for inspiration and shows great reverence for him as a philosopher, though the poem itself is explicitly about promoting Epicurus and his school. David Runia has outlined the structural similarities between Lucretius' accounts of μετεώρα in Book V and Aëtius' in Book III of the *Placita*.⁹⁷ Wolfgang Rösler made the observation that Lucretius does not appear to criticise the Presocratics *per se* but the Presocratics and their teachings as transmitted through the doxographical tradition.⁹⁸ We see doxographical elements in his criticisms of the Presocratics, as he recounts the opinions of past philosophers on a single topic: the material cause. After outlining the nature of atoms and void, he proceeds to offer an

⁹⁶ *ibid.* p. 179.

⁹⁷ Runia, 'Lucretius and Doxography', p. 97.

⁹⁸ Wolfgang Rösler, 'Lukrez und die Vorsokratiker: Doxographische Probleme im I. Buch von "De rerum natura"', *Hermes*, 101.1 (1973), 48–64.

Epicurean critique of the physicists of the past beginning with Heraclitus of Ephesus at 1.635. After stating Heraclitus' material monist opinion, that fire was the principle of all things, Lucretius offers his refutation of this theory. Like will only produce like, and fire, he argues, will only give rise to more fire. Material monism cannot account for the apparent plurality and diversity of matter. At 1.705 he makes reference to the other materialists and their principles. Though he does not call them by their names, it can be easily inferred for the most part to whom he is referring. After his critique of the fiery monism of Heraclitus, he says that the same criticisms apply to all those who considered a single one of the elements to be the principle, whether it be air, water or earth. While air alludes to Anaximenes and Diogenes of Apollonia, water to Thales and Hippo of Samos, his reference to earth as a material principle is unclear.⁹⁹

With his reference to earth as a principle, Lucretius perhaps alludes to Xenophanes, who, according to Aëtius, said that earth was the principle.¹⁰⁰ Rouse and Smith speculate that earth as a principle is a reference to Pherecydes, the alleged teacher of Pythagoras and theological reformer.¹⁰¹ Aristotle's writings on the matter shed little light on the identity of this physicist, as earth is 'added' to the other three elements by Empedocles and synthesised into a fourfold pluralism in the *Metaphysics*. Later references suggest that an earth monism may have been attributed to Parmenides. the Pseudo-Clementine text *Recognitiones* which refers to a certain 'Paraenides' [*sic*] whose principle was *terra*.¹⁰² The other reference comes from Probus' *Commentary on Vergil's Georgics and Eclogues* which also asserts Parmenides' principle to have been simply earth.¹⁰³ With that said, that tradition is attested in Cicero's *Academica* (per Diels on Theophrastus' authority) where he states *Parmenides ignem qui moveat, terram quae ab eo formetur*.¹⁰⁴ 'Parmenides said that the primary element is fire which imparts motion to the earth that receives from it its conformation'.¹⁰⁵ Lucretius here could be referring to any of these philosophers, but does not delve too deeply into critiquing them as his point concerning material monism from Heraclitus still stands.

⁹⁹ See Aristotle, *Metaphysics* A984b1-8.

¹⁰⁰ Aëtius, *Placita* I 3.12.

¹⁰¹ KRS, pp. 50-71.

¹⁰² Pseudo-Clement, *Recognitiones (secundum translationem quam fecit Rufinus)* viii 15.1. This is an obvious corruption of Parmenides who is frequently depicted by Latin authors as holding earth and fire to be the first principles, a duality rather a unity.

¹⁰³ M. Valerius Probus, *Commentarius in Vergilii Bucolica et Georgica* Buc. 6.31.

¹⁰⁴ Cicero, *Lucullus*, 118; DG, p. 119.

¹⁰⁵ Rackham, p. 619.

Following his dismissal of material monism, Lucretius moves on to material dualism. The crux of his argument here is the same in principle as his dismissal of monism. Two dualisms are mentioned, air and fire and water and earth, but as with earth alone the identity of the dualist philosophers are unclear. Aristotle said Parmenides held the opinion that earth was the principle or material cause, but that fire was the cause of motion, the efficient cause. Smith and Rouse speculated that the first pair may have been the principles of the fifth-century geometer and astronomer Oenopides of Chios, while they more confidently offer Xenophanes as the source of the second pair. This attribution would appear to rely on the authority of Simplicius' commentary on Aristotle's *Physics*.¹⁰⁶ Lucretius does not linger on the dualisms and moves immediately on to the pluralism of Empedocles, who brings together the four elements as first principles.

While Lucretius is critical of Empedocles' physics, he is full of praise for the man himself, and remarks that it can be scarcely believed that a poet-philosopher of such genius could be human rather than a god. His praise seems sincere, though there may be some dark humour in these lines considering that Empedocles was said to have believed himself to be a god, which led to his suicide in Mount Etna.¹⁰⁷ David Sedley also assesses the praise as sincere.¹⁰⁸ The atomist critique of the fourfold materialism offered by Lucretius is extensive, and his source for Empedocles' physics may well have been more direct than a doxographical account, either drawn from Empedocles' own poem *On Nature* or else from a postulated Latin translation, the *Empedoclea* by one Sallustius, mentioned by Cicero. Sedley explored the relationship between the two texts and has argued for their similarities.¹⁰⁹ In any case, the relationship between the *De Rerum Natura* and Empedocles is well attested in Lucretian scholarship.¹¹⁰ Lucretius goes on to critique the *homoeomeria* of Anaxagoras before expounding the Epicurean stance, though this is not the last atomist criticism offered on earlier philosophy. Before expanding on the nature of the soul in book three, Lucretius critiques the *harmonia* theory of the soul and metempsychosis often attributed to the Pythagoreans.¹¹¹

¹⁰⁶ Simplicius, *In Physicam* 189, 1.

¹⁰⁷ Diogenes Laërtius, *Lives* VIII 74-6.

¹⁰⁸ David Sedley, *Lucretius and the Transformation of Greek Wisdom* (Cambridge University Press, 2003), pp. 10-5.

¹⁰⁹ David Sedley, 'The Proems of Empedocles and Lucretius', *Greek, Roman and Byzantine Studies*, 30.2 (1989), 269-96 (p. 269).

¹¹⁰ David Furley, 'Variations on Themes from Empedocles in Lucretius' Proem.', *Bulletin of the Institute of Classical Studies*, 17.1 (1970), 55-64; E. J. Kenney, 'Doctus Lucretius', *Memosyne*, 4.23 (1970), 366-92.

¹¹¹ Lucretius, *De Rerum Natura* III 94-416; 370-738.

We see in the *De Rerum Natura* a historiographical strategy similar to the Peripatetics. These authors prefix their own theses with short accounts of the opinions of past philosophers and criticisms thereof. Aristotle notes the shortcomings of these theories by critiquing their ideas of causation (as he sees them) while Lucretius criticises these Presocratic systems from an atomist perspective. While his presentation is reminiscent of the Peripatetic style of doxography, his use of this style in the context of poetry makes exact *Quellenforschung* rather difficult. The Epicureans were no strangers to doxography, as the fragments of Philodemus' *On Piety* show, so it is likely that he drew upon pre-existing atomist critiques of earlier philosophers in the composition of this section of the poem.¹¹²

6.2 Cicero

The contributions of Marcus Tullius Cicero (106-43 BCE) to the Latin reception of Greek philosophy are well attested in scholarship. Schooled in Stoic dialectic, Academic Scepticism, and rhetoric, Cicero applied these skills to philosophical inquiry after the death of his daughter Tullia and during Caesar's dictatorship. In addition to the original composition of works on ethics and theology, Cicero also translated Aratus' *Phaenomena* and Plato's *Timaeus* into Latin as well as much of Greek philosophical vocabulary over the course of his philosophical career.¹¹³

The doxographical section in the *De Natura Deorum* appears close to the beginning of the dialogue between Cicero, Quintus Lucilius Balbus, Gaius Cotta, and Gaius Velleius concerning the nature of the gods. Cicero opens the book by contrasting two approaches to the philosophy of the divine. On the one hand, there is the dogmatic approach, which defers to authority rather than reason. This approach is illustrated comically by Cicero with a reference to the Pythagoreans, who when pressed for an underlying reason on a matter of argument felt that *ipse dixit*, 'He himself [i.e. Pythagoras] has said so' was sufficient evidence. This argument from authority does not sit well with Cicero. Indeed, he states that his motive for writing the dialogue arises from what he sees as the inevitability of a rise of autocracy in Rome, the text being dated to sometime around 44/45 BCE. This dogmatic approach is contrasted with Cicero's own

¹¹² DG, pp. 529-50; On the traditions of Epicurean doxography and Lucretius see W.J. Tatum, 'The Presocratics in Book 1 of Lucretius' *De Rerum Natura*', in *Oxford Readings in Lucretius*, ed. by Monica Gale (Oxford: Oxford University Press, 2007), pp. 132-45.

¹¹³ P. L. MacKendrick and K. L. Singh, *The Philosophical Books of Cicero* (London: Duckworth, 1989), p. 289.

views, grounded in Academic Scepticism, in particular his rejection of dogmatic explanations and his epistemological objections to the Stoics and the Epicureans. Though the Stoic and Epicurean schools seem disparate in their doctrines, both asserted that all sensations are true as an epistemological principle. Cicero, being more sceptical, maintains that sensations are merely probable. After introducing this dispute in the introduction, Cicero introduces his *dramatis personae* at the scene of a Latin festival, echoing Plato's dialogues.

The speakers each represent a different school, but more fundamentally each stands on different sides of the divide established at the beginning. Velleius and Balbus represent the Epicurean and Stoic schools respectively, while Cotta and Cicero stand for Scepticism against these two dogmatists. At the outset of his speech Velleius dismisses Plato's demiurge God and Stoic Providence on the grounds that they fail to account for the means through which the world came to be, before moving on to attacking the views of earlier philosophers. His speech is peppered with dramatic irony, with Cicero deriding the confidence with which the Epicureans speak on all matters, as in his view they fear appearing doubtful more than being incorrect. Velleius then gives an account on the opinions of the philosophers from Thales onwards on matters of theology, before attacking the theologies of Stoic philosophers. After dismissing all preceding philosophical opinions on God, he goes on to lay out the Epicurean position on the matter.

Both the form and the function of this passage are of interest for our present purpose. With regards to its layout, the speech is a series of brief summaries of the opinions of individual philosophers followed by a critique of the particular *doxa*, often as a rhetorical question. The presentation is almost formulaic and reminiscent of Aristotle's presentation of the opinions of past philosophers in the *Metaphysics*. This similarity has not gone unnoticed in scholarship. Diels used the passage to reconstruct a portion of Theophrastus' lost text.¹¹⁴ As to how it functions in terms of Velleius' overall argument, there is good cause to believe that its purpose is also part of a formula. The opinions of philosophers of the past are invoked in order for them to be critiqued and dismissed. Therefore it follows that all previous opinions on the matter of the gods were flawed. This paves the way for Velleius' description of the Epicurean stance on the theology, which with all other explanations dismissed stands as the sole valid explanation at the end of his speech. However, his argument is with Lucilius Balbus, a Stoic, which raises the question

¹¹⁴ DG, pp. 119-32.

of why he needs to provide a near exhaustive list of early philosophers to dismiss fully the Stoic position. The most apparent reason would appear to be that Velleius' speech is drawing on the Peripatetic doxographical tradition. Just as Aristotle invoked the opinions of past philosophers to use them to support his own system of causation, Velleius states their opinions in order to find fault with them and make the Epicurean position seem stronger by comparison. Yet this is not the effect of his speech, as Velleius makes many mistakes throughout his summary. His opinions on the theologies of Anaximander, Anaximenes, and Empedocles (at least) are inconsistent with the doxographic tradition and with the extant fragments of their works. MacKendrick & Singh note that this may be deliberate on Cicero's part, in order to make the Epicurean stance seem foolish.¹¹⁵ Quoting Pease, they say that '[Eduard] Zeller "suggests that Cicero and his Epicurean source perhaps considered among the gods of any philosopher all that he had, even broadly, designated as divine"'. This strategy may be more than Cicero's way of mocking the Epicurean position, as Diels argued that similar fragments from Philodemus' *On Piety* bear similarities to this passage, suggesting that this was informed by the Greek doxographical tradition.¹¹⁶ Whether Cicero was deliberately skewing the information or faithfully representing an Epicurean interpretation of doxography, it is clear that he drew on the doxographical tradition in writing this speech. With this passage we see the entry into the Latin textual tradition of the Greek epitome of the opinions of the philosophers.

Another doxographical list is to be found in one of Cicero's dialogues, in the revised edition of his *Academica* or *Lucullus*.¹¹⁷ Like the *De Natura Deorum*, the central conflict is the tension between dogmatic philosophy and the sceptical position of the New Academy, with Cicero preferring the latter. The Academic Sceptic argument presented in the text lays out the problems with taking philosophical matters on the authority of the philosopher alone. Arguments for and against a position are presented in the dialogues and in the end the interlocutors use their reason to decide which position was the most likely. The opinions of the philosophers are invoked by Cicero in his speech against the dogmatists to highlight the paradoxical nature of arguing in favour of relying purely on authority: the fact that none of the authorities agree with each other. In a concise speech, Cicero makes a list of historical philosophers and states their respective doctrine as to the ἀρχή or *principium*. In terms of the opinions stated, the list is uncontroversial and in line

¹¹⁵ MacKendrick and Singh, p. 345 n.4.

¹¹⁶ DG, pp. 529-50.

¹¹⁷ Cicero, *Academica Priora siue Lucullus* II 118-128.

with Aristotle's similar lists from the *Metaphysics*, though they differ in the philosophers whom they mention.

We see in Cicero's dialogues examples of how he drew upon the Greek doxographical tradition and continued the Aristotelian legacy of outlining past opinions prior to outlining one's own. These speeches, given by interlocutors of Sceptic and Epicurean background, highlight that such recitals of the opinions of past philosophers was a practice common to philosophical rhetoric in the first century, common to philosophers of different schools.

6.3 Vitruvius

De Architectura, M. Vitruvius Pollio's manual on construction, addressed to Octavian, was published some time before 27 BCE.¹¹⁸ The text covers a wide range of subjects in architecture: town planning, land surveying, building materials, and design. However, in the prefaces to two chapters, he presents two short doxographical lists. Prior to 800 the text was not widely circulated, thus its influence on later doxography is of little direct interest to us.¹¹⁹ However, it is worth briefly reflecting upon as the text resonates with the other first century texts we have seen so far, as it was almost certainly derived from the same Aristotelian-Theophrastean tradition as the others. Granger notes that Vitruvius likely took this list from Varro, the ultimate source of which would have been Greek doxography belonging to the Peripatetic tradition.¹²⁰ This discussion of first principles follows on from a discussion about the origin of building and leads into discourse on the fundamental materials of construction: bricks, lime, sand, pozzolana, and stone.¹²¹ By first introducing the elements of nature Vitruvius creates a comparison between the elements of nature and the elements of building. This comparison suggests that if an architect is to understand how building materials behave, then they ought to understand how the elements of nature behave.¹²²

His short doxography is noteworthy for the parallels it has with Cicero's list. Both Cicero and Vitruvius note that Heraclitus was known by the nickname σκότεινος 'the

¹¹⁸ M. Vitruvius Pollio, *On Architecture*, ed. by Frank Granger, LCL, 280, 2 vols (London, New York: Harvard University Press, 1934), II, p. xiv.

¹¹⁹ Reynolds, p. 440.

¹²⁰ M. Vitruvius Pollio, *On Architecture*, ed. by Frank Granger, LCL, 251, 2 vols (London, New York: Harvard University Press, 1931), I, p. 87.

¹²¹ Pozzolana is a type of silicate ash found in volcanic regions which was used in the production of cement.

¹²² 'Vitruvius (Pol(l)io)' *The Oxford Classical Dictionary* Date Accessed 16 Jun. 2016 <http://www.oxfordreference.com/view/10.1093/acref/9780199545568.001.0001/acref-9780199545568-e-6840>>

obscure', which suggests that they both drew on some common source material, or else that Cicero's own *De Finibus* informed Vitruvius's text.¹²³ Yet despite this similarity there exists enough disparity between the two texts to suggest that the authors drew on common source material rather than Vitruvius using Cicero. The presentation of the history of philosophy is quite different in Vitruvius, who portrays the discoveries of the philosophers as a cumulative succession rather than difference or disagreement as in Aristotle and Cicero. Per Vitruvius, Thales thought the principle to be water; Heraclitus follows this monism and believes it to be fire. Then Democritus introduces atomism and finally the Pythagoreans introduce earth and air to the first two principles to make the four.¹²⁴ This stands in contrast to Cicero's account, and also to the tradition attested in Lucretius and Cicero that the four elements were the work of Empedocles, rather than the Pythagoreans.

A second doxographical passage is seen at the beginning of Book VIII of *De Architectura*. Its key difference from other texts seen so far is its inclusion of non-philosophers. Alongside material monists like Heraclitus and Thales, Vitruvius includes the priests of the Magi, the playwright Euripides (who he claims was a student of Anaxagoras) and the material pluralists, Pythagoras, Empedocles and the dramatist and philosopher Epicharmus of Kos. The broad selection of writers in this doxography is reflective of the difference between Cicero's dialogues and this handbook on construction. The former is largely for literary-philosophical consumption while the latter is somewhat broader in its scope.

We see from these examples that in the first century BCE the influence of Greek doxography on Latin reached out across literary genres and held appeal in both philosophical and technical circles. The traditions from which these examples were drawn continued to influence Latin literature over the centuries, and we see them appear in other literary contexts.

7. BACKGROUND TO CHRISTIAN RECEPTION: PHILOSOPHY AND EARLY CHRISTIANITY

It is fair to say that the first two centuries of our era present scholars with a convoluted intellectual history. These represent the formative decades of Early Christianity, Gnosticism, and other new religious movements, as well as calamity for Judaism with the

¹²³ Cicero, *De Finibus* II 5.28; Vitruvius *De Architectura* II 2.1.

¹²⁴ Vitruvius, *De Architectura* II 2.1.

destruction of the second temple in 70 CE. While it may be tempting to view this period as the beginning of the slow but inevitable march of Christianisation, this perspective is not particularly helpful for scholarship. We may like to think of Christian and non-Christian as well-defined and mutually exclusive categories, but upon closer scrutiny, this dichotomy breaks down. In particular, we have good reason to believe that the identities of ‘Christian’, ‘Pagan’, and ‘Philosopher’ were not far removed from one another. For example, the Bishop Synesius of Cyrene (c. 365-413/4) studied Neo-Platonist Philosophy under Hypatia of Alexandria, and the rules passed by the Council of Elvira in 305/6 bear witness to the fact that Christians at that time were holding the office of *flamines*, priests of the Imperial cult.¹²⁵

Nevertheless, within Christian literature we are often presented with a tension between philosophy and Christianity. The letters written by and attributed to Paul of Tarsus (c.5-c.64 CE) bear witness to these tensions. Over the course of about ten years, he composed letters to the assemblies which he helped establish across the eastern Mediterranean, providing authoritative comments on the functioning of these communities. The letters touched on topics ranging from the status of Mosaic Law within the nascent movement to the resurrection of the dead. Scholars doubt that all the letters in the Christian canon now attributed to him are authentic but nevertheless they provide insight into the relationship early Christian had with philosophy.

In the Epistle to the Colossians—one of the earliest Deutero-Pauline epistles—the author offers a warning to the community.¹²⁶ ‘See to it that no one takes you captive through philosophy and empty deceit, according to human tradition, according to the elemental spirits of the universe (or the rudiments of the world) and not according to Christ’.¹²⁷ Philosophy in this context is presented as a force which can cause someone to stray from the path of the new faith. The philosopher’s tradition is that of the world and of humans and is set in opposition to the tradition of God and Christ. Elsewhere in the New Testament, philosophers play a very minor role, but again one which is set in opposition to the Christians. In Acts 17:18 Paul has travelled from Thessalonica to Athens and is disputing at the Synagogue and with certain philosophers from among the

¹²⁵ Douglas Boin, *A Social and Cultural History of Late Antiquity* (Hoboken, NJ: Wiley-Blackwell, 2018), p. 96.

¹²⁶ Robert M. Royalty, *The Origin of Heresy: A History of Discourse in Second Temple Judaism and Early Christianity* (New York: Routledge, 2013), p. 121.

¹²⁷ NRSV. The translator has taken a very broad reading of ‘τὰ στοιχεῖα τοῦ κόσμου’, meaning ‘the elements of the world’, and understands it to refer to animate or malevolent spirits, perhaps in reference to an allegorical interpretation of the polytheistic gods.

Epicureans and Stoics. The philosophers deride him as a *σπερμολόγος*, an empty chatterer, while others suggest that he is proclaiming strange gods. This contrast between philosophy and faith in the New Testament is emphasised as part of a broader division highlighted in I Corinthians. Paul contrasts the ‘wisdom of the world’, that is earthly or secular traditions of learning with the ‘wisdom of God’, wisdom which is made known through divine revelation and prophesy.¹²⁸ At the outset it would seem that antagonism was the standard mode of interaction between Christians and philosophers. And yet, the reality may not have been quite as stark as that. Michael Erler offers a fascinating overview of the convergences and divergences between Christians on the one hand and Epicureans, the philosophical school with the least superficial resemblance or doctrinal similarities to the Christians, on the other.¹²⁹

The relationship of Christianity and philosophy did develop in a vacuum. Despite the novelty of their movement Christians did not make a clean break with the Greek, Roman or Jewish milieus from which they began, all of which were influenced by philosophy to varying degrees. Early Christianity was a Roman and Greek and Jewish movement, not something which sprang up *ex nihilo*. As such we must examine interactions between Christians and the Roman state, especially in Christian apologetic, as drawing on the culture common to them as Romans. In other words, we must think of Christianity as a hybrid culture of sorts, one which draws on a variety of sources to synthesise a new identity. In relation to philosophy we see this manifest in the development of a conception of history which subverts the chronologies of the Greco-Roman world and its first discoverers and inventors to that of the Hebrews.

This endeavour is not original with the Christians themselves, but stems from Hellenistic Jewish efforts to bridge the gap of the Greek-Barbarian dichotomy and demonstrate the wisdom to be found in non-Greek culture. In the works of Philo of Alexandria, this manifests itself in a subordination of philosophy to scripture, a theme which Christian authors would later adopt. According to Wolfson, this subordination is expressed through an allegorical reading of the relationship of Abraham’s wife Sarah to her handmaid Hagar.¹³⁰ Among Christian authors this subordination appears most noticeably with a particular synthesis of biographical lore about the philosophers with the Hebrew tradition. The Greek society of the fifth and sixth centuries BCE in which

¹²⁸ Harry Austryn Wolfson, *The Philosophy of the Church Fathers* (Harvard MA: Harvard University Press, 1956), p. 7-8.

¹²⁹ Erler, pp. 46–64.

¹³⁰ Wolfson, pp. 97-101.

Presocratic philosophy flourished in a society on the periphery of much older civilisations in Egypt and Mesopotamia, with which they were constantly engaged in trade, warfare and diplomacy. The first Greek philosophers came from Ionia, situated much closer both geographically and politically to the East, and the memory of the eastern influences on these philosophers is preserved in the biographical lore about them. A journey to the 'east' became a standard element of the lives of many philosophers and wise men in Antiquity. For example, Diogenes Laërtius has accounts of voyages to the East by Thales, Pythagoras, and Democritus in his *Lives*. Plato's *Timaeus* recounts a journey to Egypt by the Athenian lawmaker Solon and the revelation of the lost continent of Atlantis.¹³¹ With regards to Pythagoras, while the earliest account of his journeys, that of Herodotus', does not have him visiting the east, his teachings are cast as having been particularly Egyptian.¹³² Although Martin West did not believe that these stories of travels to Egypt and the East had merit as matters of historical fact, he was, I would argue, mistaken in his assessment that they should not be taken seriously.¹³³ While these accounts, in particular Plato's account of Solon's journey to Egypt, are rather unlikely, they do stand to tell us how the Greeks conceived of the relationship of philosophy to the wider world. The reception of these stories by Christian and Jewish authors stands to shed light on how they viewed the past. Within a Christian context these references to sojourns abroad by philosophers are reinterpreted to include contact with the Hebrew prophets, through which the philosophers acquired knowledge from divine revelation, thus subordinating the origins of Greek learning by shifting its source from the world to God. We see in this a synthesis of Greek and Hebrew traditions within a new Christian category which draws upon both sources but presents them in a hierarchical manner, subordinating the secular sources and, through the lens of Christian supersessionism, elevating the Hebrew sources.

8. THE DOXOGRAPHICAL TRADITION IN LATIN CHRISTIANITY

Like their literary predecessors, Latin Christian writers drew on and interacted with the doxographical tradition for a variety of purposes, although primarily for apologetic and polemic.

¹³¹ Plato, *Timaeus* 21E.

¹³² Herodotus, *Histories* II, 123; see also KRS pp. 219-222.

¹³³ M.L. West, *Early Greek Philosophy and the Orient* (Oxford: Oxford University Press, 1971), p. 3.

8.1 Irenaeus

Irenaeus of Lyons (130-202CE) was a Christian bishop in Gaul and author of an anti-Gnostic treatise. Originally a disciple of Polycarp from Smyrna, his *Adversus Haereses seu Detectio et Eversio falso cognominatae Gnoseos* is one of the earliest extant works of heresiology, though it follows in the footsteps of a text mentioned by Justin Martyr (100-165 CE) in the middle of the second century, the *Syntagma* or *Catalogue against All the Heresies*. The Greek original only survives in a Latin translation dated to the fourth century.¹³⁴ The text features a doxographical section, linked by Diels to the *Compendium* of Eusebius.¹³⁵

8.2 Tertullian

Quintus Septimius Florens Tertullian (c.160-240CE) was a Christian writer from Carthage in the Roman province of Africa Proconsularis and is regarded as the father of Latin Christianity, being the first to write apologetic in the language. His relationship with philosophy in general is ambiguous, reflecting the caveats of the Pauline letters against the practice and expressing fear that the practice of philosophy may lead to heresy, while at the same time demonstrating knowledge of the philosophers and using this knowledge in his apologetic. He compares philosophers in general to the first physicist, Thales of Miletus. There is an anecdote from Plato's *Theaetetus*, in which Thales falls into a well while stargazing.¹³⁶ Thales' error is that of all philosophers in Tertullian's assessment. They are so occupied with the study of nature and meteorology that they fail to notice something as obvious as a hole in the ground. For Tertullian, this obvious matter that escapes their notice (to their detriment), is God.¹³⁷

He finds use for the doxographical tradition in his writings, with the characteristic lists of doctrines on a given topic appearing throughout the corpus of his work.¹³⁸ These lists were examined by Diels who found parallels between Tertullian's list of philosophers' opinions on the location of the ἡγεμονικόν, the governing 'seat' of the soul and in his reconstruction of Aëtius' *Placita*.¹³⁹ Similar lists are made throughout the *De Anima*, and

¹³⁴ G. S. Smith, *Guilt by Association: Heresy Catalogues in Early Christianity* (Oxford University Press, 2014), p. 4.

¹³⁵ DG, pp. 169-71.

¹³⁶ Plato, *Theaetetus* 174A.

¹³⁷ Tertullian, *Ad Nationes* II 4.18.

¹³⁸ See also Tertullian, *Adversus Marcionem* I 13.3; *De Anima* III 2, V 5; *Ad Nationes* II 11-18; *Apology* XLVII.

¹³⁹ DG, pp. 203-4.

Diels observed more passages dependent on the doxographical tradition throughout the book.¹⁴⁰

8.3 *Lactantius*

Living in North Africa two generations after Tertullian, Lactantius (c. 240-320) began his career of Christian apologetic after the outbreak of persecutions under Diocletian and Galerius in 303. His *Divine Institutions* is a refutation of the attacks by the philosopher Hierocles against the Christians, and features a short section with strong resemblances to the doxographical tradition. His doxographical list on the teachings of the philosophers about the gods is brief but its relationship to the doxographical tradition is readily apparent. It is a succinct list of *placita* of various philosophers on a single topic: theology. The similarities are more than just structural, and when compared with an earlier Latin doxographical list on the same topic, Cicero's *De Natura Deorum*, their mutual dependence on a doxographical source becomes clear. In the side-by-side comparison below, Lactantius' text is presented in order but the much longer passage from Cicero's dialogue is given in short extracts so as to highlight their common doxographical features:

Lactantius, *Divine Institutions* I 5.

Cicero, *De Natura Deorum* I 25-39

Thales Milesius, qui unus e septem sapientium ¹⁴¹ numero fuit quique primus omnium quaesisse de causis naturalibus traditur, aquam esse dixit ex qua nata sint omnia, deum autem esse mentem quae ex aqua cuncta formauerit. ita materiam rerum posuit in umore, principium causamque nascendi constituit in Deo.

25.) **Thales enim Milesius, qui primus de talibus rebus quaesivit, aquam dixit esse initium rerum, deum autem eam mentem quae ex aqua cuncta fingeret:** si dei possunt esse sine sensu; et mentem cur aquae adiunxit, si ipsa mens constare potest vacans corpore?

Pythagoras ita definiuit quid esset deus: animus per uniuersas mundi partes

28.) **Nam Pythagoras, qui censuit animum esse per naturam rerum omnem intentum et commeantem,** ex quo nostri animi carperentur, non vidit distractione humanorum animorum

¹⁴⁰ DG, pp. 205-15.

¹⁴¹ See also Cicero, *Academica Priora sive Lucullus* II 118 'Princeps Thales unus e septem, cui sex reliquos concessisse primas ferunt, ex aqua dixit constare omnia'.

omnemque naturam commeans atque diffusus, ex quo omnia quae nascuntur animalia uitam capiunt. discerpi et lacerari deum, et cum miseri animi essent, quod plerisque contingeret, tum dei partem esse miseram, quod fieri non potest. Cur autem quicquam ignoraret animus hominis, si esset deus?

Anaxagoras deum esse dicit **infinitam mentem** quae per se ipsam moueatur: 26.) Inde **Anaxagoras**, qui accepit ab Anaximene disciplinam, primus omnium rerum descriptionem et modum **mentis infinitae** vi ac ratione designari et confici voluit.

Antisthenes **multos** quidem esse **populares deos, unum** tamen **naturalem** id est summae totius artificem. 32.) Atque etiam **Antisthenes** in eo libro qui physicus inscribitur **popularis deos multos naturalem unum** esse dicens tollit vim et naturam deorum.

Cleanthes et Anaximenes aethera esse dicunt summum deum, cui opinioni poeta noster adsensit: tum pater omnipotens fecundis imbribus aether coniugis in gremium laetae descendit et omnis magnus alit magno permixtus corpore fetus. 37.) **Cleanthes** autem, qui Zenonem audivit una cum eo quem proxime nominavi, tum ipsum mundum deum dicit esse, tum totius naturae menti atque animo tribuit hoc nomen, tum **ultimum et altissimum atque undique circumfusum et extremum omnia cingentem atque complexum ardorem, qui aether nominetur**, certissimum deum iudicat; idemque quasi delirans in his libris quos scripsit contra voluptatem tum fingit formam quandam et speciem deorum, tum divinitatem omnem tribuit astris, tum nihil ratione censet esse divinius.

26.) Post **Anaximenes aera deum statuit**, eumque gigni esseque inmensum et

infinite et semper in motu: quasi aut aer sine ulla forma deus esse possit, cum praesertim deum non modo aliqua sed pulcherrima specie deceat esse, aut non omne quod ortum sit mortalitas consequatur.

Chrysippus naturalem vim diuinam ratione praeditam, interdum diuinam necessitatem deum nuncupat, item Zenon naturalem diuinamque legem.¹⁴²

39.) Iam vero **Chrysippus**, qui Stoicorum somniorum vaferrimus habetur interpres, magnam turbam congregat ignotorum deorum, atque ita ignotorum ut eos ne coniectura quidem informare possimus, cum mens nostra quidvis videatur cogitatione posse depingere. **Ait enim vim diuinam in ratione** esse positam et in universae naturae animo atque mente, ipsumque mundum deum dicit esse et eius animi fusionem universam, tum eius ipsius principatum qui in mente et ratione versetur, communemque rerum naturam universam atque omnia continentem, tum fatalem + umbram et necessitatem rerum futurarum, ignem praeterea et eum quem ante dixi aethera, tum ea quae natura fluerent atque manarent, ut et aquam et terram et aera, solem lunam sidera universitatemque rerum qua omnia containerentur, atque etiam homines eos qui immortalitatem essent consecuti.¹⁴³

¹⁴² Lactantius, *Divinae Institutiones et Epitome Divinarum Institutionum*, ed. by S. Brandt, CSEL, 19 (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 1890).

¹⁴³ Marcus Tullius Cicero, *On the Nature of the Gods. Academics*, trans. by Harris Rackham, LCL, 268 (London: Harvard University Press, 1933).

The similarities between the two texts are readily apparent, with overlaps in content, wording, though there is some divergence in structure. The presence of Hellenistic philosophers suggests that the ultimate source of both was a later or updated version of Theophrastus' lost book. This ground has been tread before by Diels, who made the connection between Cicero and the fragments of the Epicurean Philodemus (c. 110-40/35 BCE) whose *On Piety* was recovered from the Villa of the Papyri at Herculaneum.¹⁴⁴ The intertexts with Cicero are so apparent, especially concerning Thales, that Lactantius may have even used *De Natura Deorum* as a source for his own doxography, in conjunction with other sources. The opening of Philodemus' *On Piety* however, suffered the most damage from the eruption of Vesuvius in 79 CE so an exact comparison between these sections is not possible. Nevertheless, it is clear that Lactantius, like his countryman Tertullian before him, continued to make use of the doxographical tradition in a Christian context.

8.4 Pseudo-Clement

Among the various texts attributed to Pope Clement I (c. 35-99 CE) of uncertain origins is the ten books of the Ἀναγνωρισμοί which survives only in a Latin translation, the *Recognitiones*, by Rufinus of Aquileia in the fourth century. The text is a dialogue which features debate between the Apostle Peter and an old man called Nicetas over matters of religion and prayer. Book VIII features a short doxographical section, in which the opinions of the philosophers on the origins of the world are outlined. Once again, the text has many of the characteristics of a doxography, being a list of the first principles of various philosophers. Diels compared the text to the *Pyrrhoniae Hypotypoes* of Sextus Empiricus (second or third century) and found parallels between them.¹⁴⁵ The text appears to be the source of a passage on mechanics in the eighth-century Irish text *Anonymus ad Cuimnanum*:

Pseudo-Clement, *Recognitiones* VIII 15 *Anonymus ad Cuimnanum* 1.247.

Denique	Pythagoras	elementa	Denique	Pithagoras	aelimenta
principiorum	numeros	esse dicit,	principiorum	numeros	esse dicit,
Callistratus	qualitates,	Alcmeon	Qualistratus	qualitates,	Alcimon
contrarietates,		Anaximandrus	contrarietates,		Anaximandrus
inmensitatem,	Anaxagoras	aequalitates	inmensitatem,	Anaxigoras	eualitates

¹⁴⁴ DG, pp. 531-545.

¹⁴⁵ DG, pp. 250-1.

partium, Epicurus atomos, Diodorus partium, Aepichorus atomos, Diodorus amere, hoc est [ex his] in quibus partes amire (id est indiuisibile, hoc est ex his, non sint, Asclepiades oncos, quod nos in quibus partes non sunt), Ascliades tumores vel elationes possumus dicere, oncos (id est eleuationes siue tumores), geometrae fines, Democritus ideas, Thales geometrici fines, Demotritus aquam, aquam, Heraclitus ignem, Diogenes Hiraclitus ignem, Diogenes aerem, Plato aerem, Paraenides terram, Zenon ignem aerem aquam terram; Aristotilis Empedocles Plato ignem aquam aerem etiam quintum introducit aelimentum, terram; Aristoteles etiam quintum quod acotonomaston (id est introducit elementum, quod inconplectabile) nominauit, sine dubio acotonomaston, id est inconpellabile illum indicans, qui in unum quatuor nominavit, sine dubio illum indicans, qui elimenta coniungens mundum fecerit.¹⁴⁷ in unum quattuor elementa coniungens mundum fecerit.¹⁴⁶

8.5 Augustine

Augustine of Hippo (354-430 CE), the Christian bishop and prolific writer from Roman North Africa was deeply versed in ancient philosophy. Before his famous conversion from Manichaeism to Christianity, Augustine underwent another conversion of sorts, inspired to the study and practice of philosophy by his reading of Cicero's *Hortensius*, now lost.¹⁴⁸ In his philosophical pursuits he encountered the ideas of Epicureanism, Neo-Platonism, Stoicism and Scepticism, all of which influenced his thinking over the course of his lifetime to varying degrees. It would be an oversimplification to describe Augustine as a Christian Neo-Platonist, the ideas of Plato and Plotinus were certainly of great use for him. Although he later changed his mind on the matter, he did once speculate that 'Plato made a journey into Egypt at the time when Jeremiah the prophet was there' in an attempt to show his philosophy to be derivative of scripture.¹⁴⁹ As to philosophy as a

¹⁴⁶ Pseudo-Clement, *Die Pseudoklementinen, Vol II: Rekognitionem*, ed. by B. Rehm and F. Paschke, *Die Griechische Christliche Schriftsteller Der Ersten Drei Jahrhunderte*, 51 (Berlin: Akademie Verlag, 1965).

¹⁴⁷ *Anonymus Ad Cuimnanum Expositio Latinitatis*, ed. by Bernhard Bischoff and B. Löfstedt, CCLSL, 133D (Leiden: Brepols, 1992).

¹⁴⁸ Carol Harrison, *Augustine: Christian Truth and Fractured Humanity*, *Christian Theology in Context* (Oxford: Oxford University Press, 2000), pp. 6-7.

¹⁴⁹ Augustine, *On Christian Doctrine*, trans. by J. J. Shaw (Benediction Classics: Oxford, U.K., 2010), p. 59.

whole, he regarded it as insufficient for happiness, wisdom and—most importantly within a Christian context—salvation.¹⁵⁰

He shows familiarity with the doxographical tradition as a source of philosophical teachings for the Presocratics, most prominently in Book VIII of *De Civitate Dei*, which contains a list of philosophers and doctrines on nature and on God.¹⁵¹ He credits Varro as his main source for the passage and the list serves as a preamble to his discussion of Plato. His doxographical list is noteworthy as it combines sects and successions genres of doxography with the tenet-list. The Presocratics are presented in terms of institutionalised schools or schools of thought, akin to the schools of Augustine's day. The division is twofold. On the one hand there is the Italian school and on the other the Ionian school. In addition to his institutionalising of early philosophy, he presents the history of these schools as a succession of teachers and students. He then presents a line of succession spanning from Thales through Anaximander, Anaximenes, Anaxagoras and Archelaus to Socrates in an unbroken line. Within this history, the Italian school produces the Pythagoreans, whom Plato, Socrates' student, encounters on his travels. With Plato, the two schools are unified (along with the teachings of Egyptian hierophants) into a single tradition. Socrates himself is still presented as a watershed moment for philosophy. According to Augustine, 'Socrates, then is remembered as the first to direct the entire effort of philosophy towards the correction and regulation of morals, whereas all his predecessors had devoted their efforts specifically to the physical world, that is, of nature'.¹⁵²

8.6 Summary

From the similarities in structure and wording of discussions of the Presocratics in Christian Latin literature, it is clear that these various authors across different times and places were drawing on a common pool of source material and replicating the format and content of this material, just as Classical authors before them had done. It is clear from the above examples that the doxographical tradition was a major resource used in the transmission of philosophical doctrines from Greek into Latin in Antiquity. While it is

¹⁵⁰ Johannes Brachtendorf, 'Augustine on the Glory and Limits of Philosophy', in *Augustine and Philosophy*, ed. by P. Cary, J. Doody, and K. Paffenroth (Plymouth: Lexington Books, 2010), pp. 3–22.

¹⁵¹ Augustine, *De Civitate Dei* VIII 1-3.

¹⁵² Augustine, *The City of God against the Pagans*, ed. by R.W. Dyson (Cambridge: Cambridge University Press, 1998), pp. 312-6.

not the only source for information about the Presocratics, it is undeniably prominent, especially with regards to their physical teachings.

In addition to drawing on doxographies and antique receptions of the doxographical tradition, Patristic and Late-Antique authors even referred back to the origins of the doxographical tradition in Aristotle. Compare, for example, these three passages from Aristotle's *Metaphysics* A, the Latin translation of Irenaeus' *Against Heresies* and Chalcidius' *Commentary on Plato's Timaeus*:

Aristotle, *Metaphysics*

Irenaeus, *Adv. Haer.* II 14

Chalcidius, II, 280

A983b20-35

ἀλλὰ **Θαλῆς** μὲν ὁ τῆς
τοιαύτης ἀρχηγὸς
φιλοσοφίας ὕδωρ φησὶν
εἶναι... **Ὠκεανόν** τε γὰρ
καὶ **Τηθὺν** ἐποίησαν τῆς
γενέσεως πατέρας, καὶ τὸν
ὄρκον τῶν θεῶν ὕδωρ,
τὴν καλουμένην ὑπ' αὐτῶν
Στύγα.

Thales quidem Milesius
uniuersorum generationem
et initium aquam dixit
esse: idem autem est
dicere aquam et Bythum.

Homerus autem poeta

Oceanum deorum

genesim et matrem

Tethyn dogmatizauit:

quae quidem hi in Bythum
et Sigen transtulerunt.

Sed hi quidem omnes
informem eam et sine ulla
qualitate constituunt, alii
formam dederunt, ut

Thales, quem ferunt ante

omnes naturalia esse

secreta rimatum, cum

initium rerum aquam esse

dicat, opinor ideo quod

omnem uictum quo

utuntur quae uiuunt

humectum uideret; inque

eadem sententia **Homerus**

esse inuenitur, cum

Oceanum et **Tethyn** dicat

parentes esse geniturae,

cumque **iusiurandum**

deorum constituat aquam,

quam quidem ipse appellat

Stygem, antiquitati

tribuens reuerentiam et

iureiurando nihil

constituens reuerentius.

We can see quite clearly the legacy of Aristotle’s account in the two Latin texts. Both authors move from Thales and his principle to the primordial deities Ocean and Tethys as Aristotle did. We may discern a certain degree of ‘cross-pollination’ in the later texts. Irenaeus does not include the reference to the river Styx from the *Metaphysics* but Chalcidius does and does so in the exact context as Aristotle did, referring to the Styx as a *iusiurandum*, the thing by which the gods swear their oaths. Irenaeus and Chalcidius both make explicit Aristotle’s allusion to the *Iliad* by referring to Homer by name.¹⁵³ This raises three possibilities. Either the later author, Chalcidius, drew on both Irenaeus and Aristotle, or both authors made use of a gloss on the *Metaphysics*, or both independently understood Aristotle to be alluding to Homer and chose to include him in their texts. In any case, the intertextual relationship is readily apparent from the verbal echoes in these three texts, and we can say with some confidence that the reception of doxographies could still harken back to its origins in Aristotelian dialectic.

The principle aim of this thesis is to examine the reception of the doxographical tradition in Latin literature. This tradition served as the primary medium for the transmission of Presocratic ideas through the centuries.

9. DOXOGRAPHICAL HOMOGENEITY: THALES AND HIS PRINCIPLE

The teachings of the Presocratics in Antiquity and Late Antiquity were known through the doxographical tradition. While the tradition was certainly not static between its origins in the Peripatetic school—over time Hellenistic philosophers and schools were added to these doctrinal lists—the earliest philosophers’ teachings were rather fossilised. For example, let us look at the figure who is often remembered as the first philosopher in the tradition, Thales of Miletus and his principle as it is represented in the Latin reception of the doxographical tradition and compare it to the earliest historiography of philosophy in Aristotle’s *Metaphysics A*:

a. Aristotle, *Metaphysics* 983b20-1

ἀλλὰ Θαλῆς μὲν ὁ τῆς τοιαύτης ἀρχηγὸς φιλοσοφίας ὕδωρ φησὶν εἶναι

b. Aëtius, *Placita* I 7, 11

Θαλῆς νοῦν τοῦ κόσμου τὸν θεόν, τὸ δὲ πᾶν ἔμψυχον ἅμα καὶ δαιμόνων πλήρες. διήκειν δὲ καὶ διὰ τοῦ στοιχειώδους ὑγροῦ δύναμιν θεῖαν κινητικὴν αὐτοῦ.

¹⁵³ Cf. *Iliad* XIV 201

c. Cicero, *De Natura Deorum* I 25

Thales enim Milesius, qui primus de talibus rebus quaesivit, aquam dixit esse initium rerum, deum autem eam mentem quae ex aqua cuncta fingeret.

d. Cicero, *Academica Priora* II 118

Princeps Thales unus e septem, cui sex reliquos concessisse primas ferunt, ex aqua dixit constare omnia.

e. Vitruvius, *De Architectura* II 2.1

Thales primum aquam putavit omnium rerum esse principium.

f. Vitruvius, *De Architectura* VIII 1

De septem sapientibus Thales Milesius omnium rerum principium aquam est professus

g. Tertullian, *Against Marcion* I 13.3

Vt ergo aliquid et de isto huius mundi indigno loquar, cui et apud Graecos ornamenti et cultus, non sordium, nomen est, indignas uidelicet substantias ipsi illi sapientiae professores, de quorum ingeniis omnis haeresis animatur, deos pronuntiauerunt, ut Thales aquam...

h. Irenaeus, *Adversus Haeresis* II 14.2

Thales quidem Milesius uniuersorum generationem et initium aquam dixit esse: idem autem est dicere aquam et Bythum.

i. Lactantius, *Divine Institutions* I 5

Thales Milesius, qui unus e septem sapientium numero fuit quique primus omnium quaesisse de causis naturalibus traditur, aquam esse dixit ex qua nata sint omnia, deum autem esse mentem quae ex aqua cuncta formauerit.

j. Augustine, *De Civitate Dei* VIII 2.12

Ionici uero generis princeps fuit Thales, Milesius, unus illorum septem, qui sunt appellati sapientes. Sed illi sex uitae genere distinguebantur et quibusdam praeceptis ad bene uiuendum accommodatis; iste autem Thales, ut successores etiam propagaret, rerum naturam scrutatus suasque disputationes litteris mandans eminuit maximeque admirabilis extitit, quod astrologiae numeris comprehensis defectus solis et lunae etiam praedicere potuit. Aquam tamen putauit rerum esse principium et hinc omnia elementa mundi ipsumque mundum et quae in eo gignuntur existere.

k. Chalcidius, *In Platonis Timeum* 280 13-15

Sed hi quidem omnes informem eam et sine ulla qualitate constituunt, alii formam dederunt, ut Thales, quem ferunt ante omnes naturalia esse secreta rimatum, cum initium rerum aquam esse dicat.

All of these examples are taken from doxographical sections of their respective texts, and they all have common features. Most notably, they all record the same fact about Thales: that he believed the origin of all things to be water. Aristotle's assertion in the *Metaphysics* was repeated down through the centuries via the doxographical tradition. The only real variation here is in sample g., which has water as God rather than as material cause. However, with reference to examples b. and c. we may understand this as not being a very dramatic change. Both Aëtius and Cicero link Thales' principle quite closely with Thales' God, so Tertullian, writing in a Christian context equating the two does not represent a break in this tradition but a reimagining or if one is less generous, an error.

The additional trends in Thales' depictions are his *sagesse* and his primacy in the history of physics. The first of these which features in the depiction of Thales throughout the ages is the story of his sagehood in d., f., i. and j. The other six sages were said in these accounts to have conceded first place among themselves to Thales, owing to his practical wisdom and ingenuity. His status as first physicist dates back to Aristotle, where he is named as the founder of the 'school' of material monism. Cicero, Vitruvius, Lactantius, Chalcidius and, in one sense, Augustine, all repeat Aristotle's assertion. Augustine stands apart from the others slightly and displays a tendency to institutionalise these early philosophers, and to categorise them into clear lineages of masters and disciple. Within this systematisation, Thales, in addition to being a sage is the first of the Ionian philosophers, but not necessarily the first philosopher. That honour goes to Pythagoras, the 'founder' of the Italian lineage of philosophers.

We can note in the examples that Christian authors are often concerned with matters of Presocratic theology. Tertullian, Irenaeus and Lactantius all mention theological opinions of the philosopher in connection with his physics. When compared with b. from Aëtius, we see that this was a feature of the doxographical tradition, even though the interpretations are quite different from one another, with Tertullian equating Thales' God with his principle, Irenaeus linking the principle with a Gnostic Aeon (see chapter 2 below) and Lactantius presenting it in more neutral terms. Even though there is slight variation in the reception, there is little to suggest that these doctrines were received from sources external to the doxographical tradition, and certainly nothing to suggest that they came from a primary rather than secondary source.

In the case of Thales in particular, it is very unlikely that he ever set out a thesis of material causation as the doxographical tradition preserves. The earliest account about Thales does mention water, but in the context of hydro-engineering. Herodotus (c. 485-

25 BCE) asserted in his *Histories* that Thales diverted the river Halys to allow King Croesus' army to cross it.¹⁵⁴ Aristotle, for reasons known only to himself, may well have taken this feat as evidence of some such theory of material monism. Certainly, it suits his narrative in the *Metaphysics* A of progression from simple material monism to his own system better than the indefinite principle of Anaximander, conspicuous by its absence in Aristotle's historiography.

It is safe to say that with the possible exception of Aristotle, who might have read something by Thales but took liberties with the text, that not one of these authors discussing Thales above read his own works, if indeed he wrote anything at all. Diogenes Laërtius and Galen both cast doubt on the idea that he left behind other writings.¹⁵⁵ It should therefore come as no surprise to us that later accounts of his teachings are rather homogenous.

9.1 Other Presocratics

What then of the other Presocratics? Just because Thales was not read in Antiquity certainly does not mean that others were not. Cicero claims to have read some of the Presocratics and the influence of Empedocles on Lucretius' poem is well established. However, these two authors, as discussed above, still made use of doxographies in their works. The indirect transmission co-existed with the direct transmission and at some point overtook it. When it comes to their physical teachings though, they are understood in a very particular light, one which links them to the portrayals of Aristotle and Theophrastus. In other words, the doxographical tradition, with its brief summaries of opinions, was the major vehicle for transmission of all of Presocratic physics throughout Antiquity.

9.2 Final Remarks

This thesis is a study in the Late Antique and Early Medieval reception of Presocratic physics as transmitted by the doxographical tradition. Since the transmission of these physical doctrines was relatively consistent across the centuries, any variations which we encounter occurred at the point of reception rather than of transmission. When an author read the doxographical text they generated meaning from it and reflected that meaning in their own work. Lucretius read the doxographies as flawed systems of physics which only atomism could refute. Cicero saw in them the reputable opinions of predecessors on physics and theology to be used in rhetorical and philosophical debate. Vitruvius read

¹⁵⁴ Herodotus, *Histories* 1.75.

¹⁵⁵ Diogenes Laërtius, *Lives* I 23; Galen *Commentary on Hippocrates' On the Nature of Man* 1.27.

into them advice pertinent to architecture. Irenaeus saw the germ of Christian heresy. Augustine saw a unified tradition of philosophy against which he could argue. Tertullian saw inconsistency and infighting which self-evidently bore witness to the superiority of the universal Church. As the scope of this thesis is focused on Late-Antique and Early-Medieval reception it will be the Patristic receptions such as these which we will be for the most part focused on.

Much of this work is grounded on the premise that much of the knowledge of Presocratic physics during these periods stems not from direct contact with the primary sources but with the second-hand accounts in the doxographical tradition. As well as looking at the direct reception of the doxographical tradition, this thesis will venture into its indirect reception, where certain Presocratic physical tenets are received in later periods. In other words, this project will look to the reception of Presocratic δόξαι in the absence of the directly cited characteristic tenet-list.

10. CONCLUSION

Throughout Latin literature we see similarities in how the Presocratic philosophers are discussed time and time again. They are consistently discussed in groups, in brief lists of philosophers and their tenets. Though these texts bear only slight similarities to one another, we can see some clear connections between them in terms of their content, which rarely deviates from the standard conventions set by Aristotle and Theophrastus in the fourth century BCE. These consistent similarities in content and less frequent but still significant correspondences between texts attest to the eminence of the doxographical tradition in Latin texts from the first century BCE up until the Early Medieval period. The doxographical tradition clearly remained the standard source of information about these early Greek physicists and their doctrines across the centuries.

The impact which this has for the study of the reception of Presocratic physics in Latin texts is significant. It means not only were Latin authors informed about Presocratic doctrines from a tradition which dates back to the early years of institutionalised philosophy, but also that they could find this information from a wide range of literary sources including commentaries, encyclopaedias, dialogues and poetry, all of which being remarkably consistent in their handling of the material. This ensured that the limited information they had about the Presocratics was largely self-consistent.

Thus any variations in the tradition arise from their reception at particular points in time, as the tradition which transmitted the doctrines was rather homogenous. Now that we

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have a firmer grasp on how the teachings of the Presocratics were transmitted across the centuries from the early Hellenistic period through to the Roman period and onwards, we can begin to analyse how Latin authors engaged with these *placita*.

Chapter Two: The Relationship between Presocratic Physics and Christian Heretical Sects in the 2nd & 3rd Centuries

1. INTRODUCTION

Since its beginnings in the first century Christianity has been deeply interconnected with philosophy despite mutual antagonism between Christians and philosophers. Both have exerted influence upon each other over the centuries, with Platonism, Stoicism and Hellenic Jewish philosophy having made contributions to the nascent religion.¹⁵⁶ After its rise to prominence within the Roman world and beyond, Christianity altered the practice and theory of philosophy. However, for Christian and indeed Jewish authors in the early centuries CE there was some awareness about the common ground shared with philosophers, which necessitated explication. Plato, for example, was (allegedly) declared by Numenius, the second-century Pythagorean, to have essentially been Moses speaking Attic Greek.¹⁵⁷ Similar Hellenistic Jewish strategies were taken up by Christian authors, including speculations of contact between Greek philosophers and the Hebrew prophets. The pursuit of commonality between faith and philosophy was not limited to the orthodox. Indeed, there emerged in the early days of Christianity a tendency to highlight common ground between philosophy and heresy. One hitherto unexamined aspect of their relationship is the existence of a link between physics—the study of the natural world—and Christian heresy, a connection which dates back to second century and endures well into the sixth.

1.1 Overview

In the anti-heresy writings of Irenaeus of Lyons and Tertullian of Carthage there are connections drawn by the authors between the physical teachings of early Greek philosophers and then-current Christian sects, the Gnostic Valentinians and dualist Marcionites. Irenaeus accuses the Gnostics of plagiarism of secular learning, in particular (though not exclusively) plagiarism of the physicists, while Tertullian proclaimed the physicists' first principles to have been the origin of all heresy. These accounts stand to provide a wealth of information about the early Christian reception of Greek philosophy which was not readily apparent from a superficial reading. To that end, I aim to closely

¹⁵⁶ Everett Ferguson, *Backgrounds of Early Christianity* (Grand Rapids, Mich.: W.B. Eerdmans, 1987), pp. 260-4; 293-4; 380-5.

¹⁵⁷ Mark Edwards, 'Atticizing Moses? Numenius, the Fathers and the Jews', *Vigiliae Christianae*, 44.1 (1990), 64-75 (p. 67).

analyse Irenaeus and Tertullian's use of doxographical lists and examine the relationship between physics and heresy in their works.

Typically, texts such of these—heresy catalogues—have been read by scholars as though they were accurate representations of the beliefs of Christian sects and little more. If we take these passages at face value we would overlook their relationship to the doxographical tradition as well as what they can tell us about the early Christian understanding of the Presocratics as well as the Gnostics. This chapter will examine these sections of Irenaeus and Tertullian and argue that they must be understood as anti-heresy polemic rather than as accurate historical accounts.

1.2 Text Selection

The subject of this thesis, the *Nachleben* of the Presocratics, was the driving force behind the selection of these texts for study. However there are two further reasons behind the decision to study these two texts over others. Firstly, as noted in chapter one, both texts bear structural similarities to the Greek doxographical tradition, and were likely informed by it. Thus in these texts we see some of the earliest Christian engagement with doxography and some of the first examples of Latin Christian reception of Presocratic physics. In particular, the chapter from Irenaeus features strong intertexts with Aristotle's *Metaphysics*, meaning that we have an early Christian reception of material from the very outset of the Peripatetic tradition of doxography. Alongside their engagement with doxographical source material, the other determining factor in their selection was thematic. Both Irenaeus and Tertullian portray an intricate relationship between physics and heresy and appear to be the first to do so in Latin literature. This connection between physics and heresy, between philosophical sects and religious sects is one which endures for centuries after these texts were written, but by examining the beginning of this theme we can better understand its legacy in later centuries.

In terms of Tertullian's engagement with ancient philosophy, his *De Anima* is noteworthy. The text is a discussion of the nature of the soul, aimed at converting the heretic Hermogenes. The work opens with an admission that in discussing the nature of the soul, Tertullian will have to contend with the philosophers on many questions, owing to the fact that this ground has been well-trod by the philosophers before now. Beginning with Socrates, he discusses Plato's dramatization of his final moments in the dialogue the *Phaedo*. He addresses the fact that the philosophers have, at times, taught certain things about the soul's nature which are concurrent with Christian teachings. He explains this with reference to both chance and the intelligence common to all humanity. Tertullian

sets out his opinion on philosophy in the text in particular examples and more generally. He levels accusations of demonic influences citing Socrates' *daimonion* and lays the blame for heresies about the soul on the philosophers. Essentially, Tertullian seeks to present a Christian psychology in response to Hermogenes and to locate the origin of the opinions on the soul advocated by Gnostics, heretics and philosophers outside of scripture.

This work is not focused on in this thesis as the criteria for the selection of texts surveyed was based on the presence of lists of the opinions of philosophers on a given topic. However, it should be noted that Tertullian does make recourse to such lists, in the third and fifth chapters of *De Anima*:

The various schools reflect the character of their masters, according as they have received their impressions from the dignity of Plato, or the vigour of Zeno, or the equanimity of Aristotle, or the stupidity of Epicurus, or the sadness of Heraclitus, or the madness of Empedocles.¹⁵⁸ (*De Anima* 3)

Now I am not referring merely to those who mould the soul out of manifest bodily substances, as Hipparchus and Heraclitus (do) out of fire; as Hippon and Thales (do) out of water; as Empedocles and Critias (do) out of blood; as Epicurus (does) out of atoms, since even atoms by their coherence form corporeal masses; as Critolaus and his Peripatetics (do) out of a certain indescribable quintessence, if that may be called a body which rather includes and embraces bodily substances;—but I call on the Stoics also to help me, who, while declaring almost in our own terms that the soul is a spiritual essence (inasmuch as breath and spirit are in their nature very near akin to each other), will yet have no difficulty in persuading (us) that the soul is a corporeal substance. (*De Anima* 5)¹⁵⁹

By way of commentary there are a few things to be noted about these examples. In the first example, this does not appear to be a list derived from a doxography, but a list of Tertullian's own coining, featuring not a statement of doctrine but an assessment of the character of the founders of schools of philosophy. The homoeoteleuton of the characteristics of these founders (*honor...uigor...tenor...stupor...maeror...furor*) suggests that the terms are Tertullian's own, rather than a quotation or paraphrase from

¹⁵⁸ J. Donaldson, A. Roberts. (eds) *The Ante-Nicean Fathers, Volume I*. (Grand Rapids, Michigan: Eerdmans 1885), p. 184.

¹⁵⁹ *The Ante-Nicean Fathers*, p. 184. *Nec illos dico solos qui eam de manifestis corporalibus effingunt, ut hipparchus et heraclitus ex igni, ut hippon et thales ex aqua, ut empedocles et critias ex sanguine, ut epicurus ex atomis (si et atomi corpulentias de coitu suo cogunt), ut critolaus et peripatetici eius ex quinta nescio qua substantia (si et illa corpus, quia corpora includit), sed etiam stoicos allego, qui spiritum praedicantes animam paene nobis cum, qua proxima inter se flatus et spiritus, tamen corpus animam facile persuadebunt.*

a handbook. In any case, given that these are not doctrines, they are *per se* beyond the scope of a study on the reception of doxography.¹⁶⁰

With regards to the second passage, the content certainly appears to be doxographic in nature, being a list of philosophers grouped according to their opinion on the constitution of the soul. This passage is not so much polemic against Gnostics or heretics but affirms that the Stoic view on the spiritual essence of the soul approximates the Christian view. Prior to explaining the correct view, Tertullian first outlines the incorrect opinions that the soul is either incorporeal, or that made of this or that matter before settling on its corporeal and spiritual nature. However, as this material does not pertain to the overall subject of this chapter—the connections between physics and heresy—it is not subject to further scrutiny, despite being derived from a doxographic source.

In terms of its argument, Tertullian's *De Praescriptione Haereticorum* is certainly grist to my mill, in that Tertullian states philosophy to be the origin of all heresies, and locates several specific heresies within philosophical teachings. He alludes to *Corinthians* when he names *philosophia* as '*Ea est enim materia sapientiae saecularis, temeraria interpretes diuinae naturae et dispositionis*'.¹⁶¹ The text itself is legalistic argument, a *praescriptio*, which argues that the plaintiff has no right to bring the matter before the court, or that the plaintiff has no standing or *locus standi* in modern Common Law terms. In this case, Tertullian sets out that heretics have no standing to appeal to scripture when arguing with Christians, as *inter alia*, these texts are only within the purview of the Churches founded by the apostles. As a result of this, the heretic is excluded from partaking in a legitimate Christian identity and thus is not entitled to use scripture to expound their worldview to the faithful.

The faithful, he argues, have sought and have found, while the heretic continues to seek, and turns to other methods of inquiry rather than accepting on faith. Thus, the heretic is akin to the philosopher, who continues to inquire and dispute rather than accepting that which has been made known through divine revelation. It is here that Tertullian makes his famous statement '*Quid ergo Athenis et Hierosolymis? Quid academiae et ecclesiae?*', highlighting the uselessness of philosophical inquiry for the

¹⁶⁰ A question going forward is which schools are being referred to here as having been founded by Presocratics. While the other correspondences are plain enough (i.e. Plato, the Academy; Aristotle, the Lyceum; Epicurus, the Garden and Zeno of Citium, the Stoa.) the schools of Heraclitus and Empedocles are less clear here. Conspicuous *in absentia* in a list of founders is Pythagoras.

¹⁶¹ *De Praescriptione*. 7.32.

understanding of scripture, and indeed its uselessness for salvation. Faith for Tertullian is characterised by acceptance, while philosophy and heresy share a common pursuit of further knowledge, which leads philosophers to their endless disputations and varied doctrines, and the heretics and Gnostics to apply philosophical methods to religion.

While these arguments must be borne in mind throughout this chapter, the text itself has not been selected for close scrutiny, owing to the absence of doxographical lists. While chapter VII of *De Praecriptone Haereticorum* in particular draws links between heresies and philosophical doctrines, they are more concerned with placing the heretics within Hellenistic schools. For example, he accuses Valentinus of being a Platonist and Marcion of being a Stoic. The only Presocratic discussed is Heraclitus, who is said to be the source of any statement to the effect that God is fiery in nature.¹⁶² Although he connects certain doctrines such as this with philosophers, the text lacks the characteristic treatment of a doxography with respect to early Greek philosophers

2. HERESY CATALOGUES & DOXOGRAPHY

2.1 *Origins of the Heresy Catalogue*

Heresy catalogues developed in the late-first and early-second century out of a need to identify enemies within the Christian Church. Faced with opponents like Simon Magus, Menander, and Marcion, Justin Martyr (c. 100-165) sought to expose as frauds those whom he did not consider to preach legitimate Christianity. Around the middle of the second century, Justin composed a text identifying and denouncing these so-called Christians as imposters, whose teachings were those of demons and not of Christ. The *Syntagma* of Justin, now lost, set in motion this practice of cataloguing un-Christian teachings masquerading as Christian ones.¹⁶³

The similarities between this Christian process of collecting opinions of teachers and groups on certain topics and doxography have been noted in scholarship, with some placing the origins of the heresy catalogue within the doxographical tradition. Bentley Layton has described it as a ‘Christianised doxography’.¹⁶⁴ In *La notion d’Hérésie dans la littérature grecque IIe-IIIe siècles*, Alain Le Boulléc explored the relationship between the two and argued that doxographical literature on particular philosophical schools,

¹⁶² A statement which certainly has precedent and longevity. See, for example Isidore *Etymologies* VIII 6.20.

¹⁶³ Royalty, pp. 3-29.

¹⁶⁴ Bentley Layton, ‘The Significance of Basilides in Ancient Christian Thought’, *Representations*, 28 (1989), 135–51 (pp. 135-6).

whether schools of thought or institutional schools, was the origin of the heresy catalogue.¹⁶⁵ Geoffrey Smith, in his critique of past approaches to the relationship between doxography and heresy catalogue, pointed out such subcategories of philosophical schools or successions which Jaap Mansfeld posited did not have an isolated existence, with most accounts having mixtures of the various types of doxography. In the absence a well-defined archetype to imitate, how could the origins of heresy catalogues lie in these texts?¹⁶⁶ I broadly agree with Smith's conclusions that the origins of the heresy catalogue are not as clear-cut as a Christianised doxography, principally on the grounds that the function of the catalogue and doxography are fundamentally different. Whereas heresy catalogues record teachings so that others may identify and condemn them where they arise, doxography records teachings to preserve them for use in dialectic and pedagogical ends.

Although doxography and heresy catalogues can be said to have some structural similarities their functions are quite different. Yet at the same time there is a relationship between these two types of texts to be seen in certain contexts. Namely, when heresy catalogues present a connection between philosophers and heretics it tends to draw upon the doxographical tradition, something which this chapter will explore in two cases from the second and third centuries. The two texts below were selected for study based on their engagement with the doxographical tradition in their portrayal of a relationship between philosophy and heresy. Both Irenaeus' *Against Heresies* and Tertullian's *Five Books against Marcion* make use of lists characteristic of the doxographical tradition in order to construct this relationship.¹⁶⁷

2.2 Heresy Catalogue as Polemic

The study of Christian heresies as historical movements, their teachings, and their practices, faces similar problems as Presocratic studies, though in the case of heretics the problems are perhaps more striking. The primary evidence for the doctrines of some Christian movements is, as with the Presocratics, limited and fragmentary. However, since the 1930's Presocratic scholars have been coming to terms with the possibility that our secondary sources may not always be reliable, something which heresiological studies are now beginning to address. For any study of sects like the Marcionites and

¹⁶⁵ Alain Le Boulluec, *La Notion d'hérésie Dans La Littérature Grecque, IIe-IIIe Siècles* (Paris: Études augustiniennes, 1985), pp. 40-1.

¹⁶⁶ Smith, pp. 11-3.

¹⁶⁷ DG, pp. 169-72; 203-7.

Valentinians, a major problem is that our only sources for these groups are the secondary sources written by authors hostile to these movements. Because of the limited evidence, much of scholarship on these groups for the past two centuries has proceeded under the assumption that the accounts presented in heresy catalogues were *bona fide* accounts of their beliefs and practices. Smith's 2014 study took this assumption to task and highlighted the polemical context of these texts, an argument to which the present chapter aims to contribute.¹⁶⁸

It may well be the case that these sects did preach a philosophised or syncretic version of Christianity. However when heresy catalogues are read as polemic rather than intellectual histories we can see how these allegations function. The connections between physics and heresy serve to expose the secular origins of the heretics' beliefs and in doing remove the legitimacy from their claim that they alone are privy to divine truth. That is not to say that there were no philosophical influences on Christianity, whether orthodox or heretical, but that the means in which the particular influences portrayed in heresy catalogues are improbable.

A recurring theme in Patristic writings is the accusation that the true origin of heresy lies not within Christianity, but without. This charge is levelled in one of two ways. One, which suggests that philosophy shares a common intellectual heritage with divine revelation from which philosophy has deviated, and another, which argues that heresy is derivative of secular wisdom unrelated—or largely unrelated—to divine revelation. Both authors under discussion here, Tertullian and Irenaeus, make reference to these strategies in service of delegitimising heretics as Christians.

The charge that philosophy is derivative of divine revelation is considerably older than Christianity itself, finding its origins in Hellenistic Jewish rebuttals of anti-Semitism. In his book *Post-Hellenistic Philosophy*, George Boys-Stones posits that Alexandrian Jews, faced with an inclement political climate, sought to demonstrate the antiquity of their customs and nationhood in response to Greek claims that they were a young people whose customs were derivative of the Egyptians.¹⁶⁹ In response to these accusation, the Jews turned the Greek argument of Jewish-derivativeness on its head; it was not the Jews who are derived from the Gentiles, but *vice-versa*. Taking up Stoic views of anthropology,

¹⁶⁸ Smith, p. xii.

¹⁶⁹ George R. Boys-Stones, *Post-Hellenistic Philosophy: A Study of Its Development from the Stoics to Origen* (Oxford: Oxford University Press, 2001) pp. 76-95.

Jewish laws and customs represent (or approximate) the ancient wisdom of primitive man, who was by nature, both philosophically inclined and closer to the divine.

These arguments were taken up enthusiastically by Christians, faced with similar accusations of novelty. In later times this would be conceptualised as all of the arts and sciences being innate in Adam, with the Jewish scriptures preserving the account of the pre-lapsarian and antediluvian world better than the Gentiles, who rediscovered such things after the flood *via* contact with Jewish knowledge.

Parallel with this argument from the antiquity of Jewish culture is the highlighting of similarities between philosophy and heresy to imply a connection between the two. This connection can be a result either of contact and borrowing of teachings directly, or indeed as a result of the similar methodologies pursued by the philosophers and the heretics (i.e. continuing with inquiry and disputation above and beyond what is necessary. We will see both of these polemical strategies employed by Irenaeus and Tertullian in this chapter to attack and alienate heresies from any claim to being Christian.

3. IRENAEUS

3.1 Against Heresies II 14: Context & Intertextuality

The *Against Heresies* of Irenaeus was written in Greek in the second century. The Greek original is preserved only in some fragments of papyri from Oxyrhyncus and a handful of fragments in Eusebius, but a Latin translation of the work, dated to the late fourth century, survives to this day. There are three manuscripts of this text and the edition by Doutreleau, Rousseau et al. is the most recent and authoritative version of the text.¹⁷⁰ To give a broad outline of the work, the first book sets out the diverse beliefs of the Gnostics and in the second book Irenaeus goes on to refute them. The remaining three books contain defences of specific points of doctrine such as the succession of the Apostles, the Incarnation and the unity of the creator God of Genesis and God the Father.

In terms of its source material, the extract below from Book II of *Against Heresies* is unmistakably derived from the Greek doxographical tradition, as noted in chapter one. Irenaeus sets out a list of philosophers and their respective teachings on nature, in this case, their teachings on the first principle. His account for the beliefs of the philosophers bears similarities to Aristotle's account in the *Metaphysics* which places his source

¹⁷⁰ Osborn, p. 1.

material within the Aristotelian-Theophrastean tradition. In the passage from the *Metaphysics A* examining the opinions of past physicists, Aristotle begins his account of the material monists, opening with the ‘founder’ of that philosophy, Thales of Miletus. However, after expanding upon Thales’ reasoning he appears to diverge for a moment to reflect on the views of certain ancient men who first engaged in theological inquiry. These men, he claims, said that the primordial water deities Oceanus and Tethys were the begetters of all things. It is not a great leap of the imagination to take this as a nod to the Homer, as the later allusions to this passage in Irenaeus and Chalcidius make made explicit, especially when we consider the exact lines from *Iliad* 14 ‘Ὠκεανόν τε θεῶν γένεσιν καὶ μητέρα Τηθύν’, which Aristotle echoes with the ‘τέ...καὶ’ construction and the noun ‘γένεσις’.¹⁷¹ Before returning to the material monists, Aristotle makes a brief mention of the waters of the river Styx, by which all the gods swear their oaths.¹⁷²

Aristotle, *Meta.* A983b20-35.

ἀλλὰ **Θαλῆς** μὲν ὁ τῆς τοιαύτης ἀρχηγὸς φιλοσοφίας ὕδωρ φησὶν εἶναι...εἰσὶ δὲ τινες οἱ καὶ τοὺς παμπαλαίους καὶ πολὺ πρὸ τῆς νῦν γενέσεως καὶ πρώτους θεολογήσαντας οὕτως οἴονται περὶ τῆς φύσεως: **Ὠκεανόν** τε γὰρ καὶ **Τηθύν** ἐποίησαν τῆς **γενέσεως** πατέρας, καὶ τὸν ὄρκον τῶν θεῶν ὕδωρ, τὴν καλουμένην ὑπ’ αὐτῶν Στύγα.

Irenaeus, *Adv. Haer.* II 14

Thales quidem Milesius uniuersorum generationem et initium aquam dixit esse: idem autem est dicere aquam et Bythum. **Homerus** autem poeta **Oceanum** deorum **genesim** et matrem **Tethyn** dogmatizauit: quae quidem hi in Bythum et Sigen transtulerunt.

What is the purpose of this interruption to the philosophical historiography in the *Metaphysics*? Put simply, it is not so much an interruption as a reflection on the parallels between the first poets and the first physicist, who held water to be the primordial substance. Thales through his material monism, and the ancients through the primeval water gods who gave rise to all things. Mansfeld has given this passage and similar ones from the doxographical tradition a detailed treatment. He has argued, that unlike in the later tradition, Aristotle’s statements here do not alter the status of Homer (or any other ancient) to that of a first philosopher.¹⁷³ However, just because Aristotle draws distinctions between the two that does not mean that his later readership understood these

¹⁷¹ *Iliad* XIV 201, cf. 246.

¹⁷² See a similar passage in Chalcidius, *In Timaeum* II 280 which, unlike Irenaeus, preserves Aristotle’s reference to the river Styx.

¹⁷³ Jaap Mansfeld, ‘Aristotle and Others on Thales’, in *Studies in the Historiography of Greek Philosophy*, by Jaap Mansfeld (Assen/Maastricht: Van Gorcum, 1990), pp. 126–46.

distinctions clearly. Indeed, as Mansfeld pointed out, many later authors contradict the Aristotelian account and count Homer as an early physicist. Thus, as Pseudo-Plutarch, Sextus Empiricus, and others attest, Homer as a physicist was not an alien concept before, during, or after Irenaeus' lifetime.¹⁷⁴ We can read in this passage an implication that early physics and ancient theology have certain parallels, and considered water to be a generative substance as well as having a sacred function (i.e. the river Styx was the object by which the gods swear their oaths).

Irenaeus then goes on to argue that just as the Gnostics derived Bythus from Thales, they looked to Homer to find him a partner. After revealing that Bythus himself is in reality the water which Thales named as first principle, he goes on to reveal that the syzygy of Bythus and Sige were likewise inspired by a worldly rather than divine source. The origins of this divine union are to be seen in the same line of the *Iliad* to which Aristotle makes subtle reference in which the primordial water gods Oceanus and Tethys are named as parents of all creation. Irenaeus' account differs slightly from Aristotle, as the Latin translation suggests. The translation's use of *matrem Tethyn* rather than Aristotle's *pateras* hints that the Greek was originally a paraphrase of the *Iliad*, especially likely given the absence of the reference by name to Homer by name in Aristotle. Just as the Gnostics took Thales' water and turned it into Bythus, they take the divine progenitors Oceanus and Tethys and translate them from one context, that of Homer, to another, that of their own heresy.

3.2 Text & Translation

Irenaeus *Against Heresies* ii, 14.2-4

Thales quidem Milesius uniuersorum generationem et initium aquam dixit esse: idem autem est dicere aquam et Bythum. Homerus autem poeta Oceanum deorum genesim et matrem Tethyn dogmatizauit: quae quidem hi in Bythum et Sigen transtulerunt. Anaximander autem hoc quod immensum est omnium initium subiecit, seminaliter habens in semetipso omnium genesim, ex quo immensos mundos constare ait: et hoc autem in Bythum et in Aeonas ipsorum transfigurauerunt. Anaxagoras autem, qui

For instance, Thales of Miletus affirmed that water was the generative and initial principle of all things. Now it is just the same thing whether we say water or Bythus. The poet Homer, again, held the opinion that Oceanus, along with mother Tethys, was the origin of the gods: this idea these men have transferred to Bythus and Sige. Anaximander laid it down that infinitude is the first principle of all things, having seminally in itself the generation of them all, and from this he declares the immense worlds [which

¹⁷⁴ Mansfeld, 'Aristotle and others on Thales', p. 131.

et atheus cognominatus est, dogmatizavit facta animalia decidentibus e caelo in terram seminibus: quod et hi ipsi in Matris suae transtulerunt semina, et esse hoc semen seipsos, statim confitentes apud eos qui sensum habent et ipsos esse quae sunt Anaxagoris irreligiosi semina.

Vmbram autem et vacuum ipsorum a Democrito et Epicuro sumentes sibimetipsis aptauerunt, cum illi primum multum sermonem fecerint de uacuo et de atomis, quorum alterum quidem quid esse uocauerunt, alterum uero quod non est appellauerunt: quemadmodum et hi esse quidem illa quae sunt intra Pleroma uocant, quemadmodum illi atomos, non esse autem haec quae sunt extra Pleroma, quemadmodum illi vacuum. Semetipsos ergo in hoc mundo cum sint extra Pleroma, in locum qui non est deputauerunt. Quod autem dicunt imagines esse haec eorum quae sunt sursum, manifestissime Democriti et Platonis sententiam edisserunt: Democritus enim primus ait multas et uarias ab uniuersitate figuras expressas descendisse in hunc mundum, Plato uero rursus materiam dicit et exemplum et Deum. Quos isti sequentes, figuras illius et exemplum imagines eorum quae sunt sursum uocauerunt, per demutationem nominis semetipsos inuentores et factores huiusmodi imaginariae finctionis gloriantes.

exist] were formed: this, too, they have dressed up anew, and referred to Bythus and their Æons. Anaxagoras, again, who has also been surnamed "Atheist," gave it as his opinion that animals were formed from seeds falling down from heaven upon earth. This thought, too, these men have transferred to "the seed" of their Mother, which they maintain to be themselves; thus acknowledging at once, in the judgment of such as are possessed of sense, that they themselves are the offspring of the irreligious Anaxagoras.

Again, adopting the [ideas of] shade and vacuity from Democritus and Epicurus, they have fitted these to their own views, following upon those [teachers] who had already talked a great deal about a vacuum and atoms, the one of which they called that which is, and the other that which is not. In like manner, these men call those things which are within the Pleroma real existences, just as those philosophers did the atoms; while they maintain that those which are without the Pleroma have no true existence, even as those did respecting the vacuum. They have thus banished themselves in this world (since they are here outside of the Pleroma) into a place which has no existence. Again, when they maintain that these things [below] are images of those which have a true existence [above], they again most manifestly rehearse the doctrine of Democritus and Plato. For Democritus was the first who maintained that numerous and diverse figures were stamped, as it were, with the forms [of things above], and descended from universal space into this world. But Plato, for his part, speaks of matter, and exemplar, and God. These men, following those distinctions, have styled

what he calls ideas, and exemplar, the images of those things which are above; while, through a mere change of name, they boast themselves as being discoverers and contrivers of this kind of imaginary fiction.

Et hoc autem quod ex subiecta materia dicunt Fabricatorem fecisse mundum, et Anaxagoras et Empedocles et Plato primi ante hos dixerunt, ut uidelicet datur intellegi, et ipsi a Matre sua inspirati. Quod autem ex necessitate unumquidque in illa secedit ex quibus et factum esse dicunt, et huius necessitatis seruum esse Deum, ita ut non possit mortali immortalitatem addere uel corruptibili incorruptelam donare, sed secedere unumquemque in similem naturae suae substantiam, et hi qui ex porticu Stoici appellantur et uniuersi quotquot Deum ignorant poetae et conscriptores adfirmant.¹⁷⁵

This opinion, too, that they hold the Creator formed the world out of previously existing matter, both Anaxagoras, Empedocles, and Plato expressed before them; as, forsooth, we learn they also do under the inspiration of their Mother. Then again, as to the opinion that everything of necessity passes away to those things out of which they maintain it was also formed, and that God is the slave of this necessity, so that He cannot impart immortality to what is mortal, or bestow incorruption on what is corruptible, but every one passes into a substance similar in nature to itself, both those who are named Stoics from the portico (στοῶν), and indeed all that are ignorant of God, poets and historians alike, make the same affirmation.¹⁷⁶

3.3 Overview

The primary focus of chapter 14 of *Against Heresies* is the Gnostic doctrine of the aeons, the aspects of the Godhead akin to the three persons of the Trinity in the Christian orthodoxy. The aeons emanate from a single divinity whom Irenaeus describes in the first book of his work. Aeon—from Greek αἰών, meaning an age or time—comes to mean emanations or aspects of God in the Gnostic tradition. Just as orthodox Christianity is Trinitarian, the versions of Gnosticism described by Irenaeus range from what we might term ‘octonaritarianism’—i.e. an eightfold god—or else a single God with between 28 and 30 aspects. As he presents it, the aeons are divine emanations of God, which ultimately stem from a single being who is everlasting and unbegotten. This being is

¹⁷⁵ A. Rousseau, L. Doutreleau *Contre Les Hérésies Livre II: Tome II, Texte et Traduction*, Sources Chrétienne 294 (Paris: Les Éditions du Cerf. 1982).

¹⁷⁶ *The Ante-Nicean Fathers*, pp. 376-7.

known as the Proarche, Propator, or Bythus, and is identified with God the Father.¹⁷⁷ The heavenly abode of the manifold Gnostic deity is called the Pleroma, meaning ‘fullness’. This realm is considered by the Gnostics to be the ‘true being’ or the only thing to exist *per se*, and it is in the Pleroma that the other aeons emanate from Bythus. Paradoxically, although all of aeons are aspects of God which stem from Bythus, he is entirely unknown to them and furthermore unknowable to them, even to his divine consort. Sige or Ennoia, the partner of Bythus, emanates from him and from their coupling six other aeons in syzygies or male-female pairs making eight in total, from which they are named the Ogdoad.¹⁷⁸ Two of these unions gave rise to larger groups of Aeons, including the youngest and most important aeon for the Gnostic creation narrative, Sophia-Achamoth. In Irenaeus’ account of the narrative Sophia sought to know Bythus and as a result of her paradoxical effort to know the unknowable being she sets in motion a series of events which results in the creation of the world, and the creation of Christ and the Holy Spirit by the Bythus.¹⁷⁹

Irenaeus, after presenting these Valentinian doctrines at the outset of his work, moves on to attack and discredit them. As part of his strategy of refutation he casts doubt on any claim the Gnostics have to truth or originality and in doing so he undermines the Gnostics credibility. His refutation functions by presenting Gnosticism and its cosmic hierarchies as derivative of secular learning, rather than inspired by divine revelation or secret knowledge. To achieve this, Irenaeus links their beliefs to the teachings of the Greek philosophers. The specific philosophical doctrine which he connects to the aeons is that of the first principle. Irenaeus’ portrayal of the first principle is in line with the KRS definition, as we see at ii 14.2, where he calls Thales’ principle *uniuersorum generationem et initium*, ‘the generative and initial principle of all things’. He lays out the perceived connections between the first principles and Gnostic aeons clearly. From the first philosopher and the archaic beliefs of the poets he moves through the Presocratic physicists through to Plato and the Stoics, showing how wide ranging the Gnostic plagiarism is.

¹⁷⁷ Irenaeus, *Aduersus Haereses* i, 1.1.

¹⁷⁸ From Greek ὀγδοάς, eighth or eightfold.

¹⁷⁹ Irenaeus sets out the Gnostic cosmology and cosmogony in detail in Book I, chapters 1-7. His primary focus throughout is the Valentinian heresy, based on the teachings of Valentinus (c.100-160 AD), though he also presents variant versions of the account of Sophia’s passion either from within the Valentinian sect or from other Gnostic traditions.

The intertext with Aristotle in his description of Thales is the strongest one in the passage. Beyond this the exact source of the rest of the doxographical passage is less clear. Two sections contain some peculiarities. First, there is the claim of Anaxagoras' atheism, and second the claim of a connection between Democritus and Plato. If we look to Aëtius, we will find named ancient atheists, like Protagoras or Euhemerus but Anaxagoras is not among them.¹⁸⁰ Indeed, Anaxagoras's opinion about the divine is stated as 'Anaxagoras says that at the beginning the bodies were at rest, but the mind of God gave them an orderly arrangement, and brought about the births of all things'.¹⁸¹ His proposed connection of Democritus and Plato is quite striking. While the two were roughly contemporaries, Irenaeus claim is not credible. Famously, Plato called for all of the books of Democritus to be burnt.¹⁸² Bollack argued against the interpretation of this passage of the *Lives* which states that Plato bore Democritus any particular ill-will.¹⁸³ Ferwerda's survey of the external evidence for and against animosity between the two presents evidence that their ethical teachings overlapped, despite their different systems of physics.¹⁸⁴ In the *Against Heresies*, this connection may not originate in doxographical tradition itself but can be understood as Irenaeus' own conclusion based on their mutual use of the term εἶδωλα in radically different contexts. In the Platonist context the term refers to the Ideas or Forms used by the demiurge as models for the world while in an atomist context it is a technical term in the theory of sense perception, referring to microscopic films which emanate from bodies facilitating sense perception, thought and dreams. We see what appears to be a departure from the content of the doxographical tradition, but presented in a similar format.

3.4 Philosophy and Heresy in Irenaeus

What scholarship there is on the topic of philosophy and heresy in Irenaeus revolves around the discussion of philosophy's role in his work and has primarily focused on Stoicism and Neo-Platonism in his writing, with the Presocratics being largely overlooked. HB Timothy's monograph on philosophy and the Early Church Fathers covers doctrinal issues, epistemology and the developments of *logos* from the Hellenistic

¹⁸⁰ Aëtius, *Placia* I 7.1-10.

¹⁸¹ David Runia, 'Atheists in Aëtius: Text, Translation and Comments on De Placitis 1.7.1-10', in *Aëtiana: The Method and Intellectual Context of a Doxographer. Vol. 3: Studies in the Doxographical Traditions of Ancient Philosophy*, Philosophia Antiqua, 118, 4 vols (Leiden: Brill, 2010), III, 343-74 (p.349).

¹⁸² Diogenes Laërtius, *Lives* IX 40.

¹⁸³ Jean Bollack, 'Un Silence de Platon', *Revue de Philosophie*, 41 (1967), 242-46.

¹⁸⁴ R. Ferwerda, 'Democritus and Plato', *Mnemosyne*, 25.4 (1972), 337-78.

period through Philo of Alexandria and ultimately to the differences between orthodox and Gnostic Christian *logos*.¹⁸⁵ His chapter on Irenaeus is closely focused on the *logos* of the Gnostics and Irenaeus' attacks on it. With the exception of Xenophanes, the Presocratics do not feature in this discussion. This focus on the Stoics and Neo-Platonists is understandable, as they make up the bulk of discussion of philosophy in Patristic writings, to say nothing of the deep interconnections between Hellenistic philosophy and Christianity. One need only look to the works of Porphyry, Plotinus, and Iamblichus to see the common ground which they shared with the early Christians.¹⁸⁶ Where this chapter diverges from existing research is in its focus on the Early Greek philosophers in early Christian anti-heresy writings.

Meijering's paper 'Some observations on Irenaeus' Polemic against the Gnostics' places Irenaeus' attacks against Platonist and Hellenistic philosophy within the context of Book II of the *Against Heresies* and within the text as a whole. Meijering argues that Irenaeus cleverly attacks the Gnostics for having derived doctrines from philosophical schools with arguments used by those same schools.¹⁸⁷ He argues that 'we understand that the main purpose [of the engagement with philosophy] is to show that the Gnostics have not only taken their theories from the philosophers, but they have sometimes distorted philosophical theories so that they are even worse than the philosophers'. However, he focuses only on the Platonist, Neo-Platonist, and Hellenistic schools of philosophy in Book II, and the passage concerning the Gnostic aeons and the Presocratic philosophers are not included in his discussion.

The most recent major work on Irenaeus is by Eric Osborn and deals with philosophy in the *Against Heresies* in passing.¹⁸⁸ Osborn focuses on two major aspects of philosophy in the text, namely Irenaeus' use of philosophical arguments and secondly the relationship of philosophy and Gnosticism. Firstly he notes philosophical arguments made against the Gnostics, for example Irenaeus' use of the *consensus gentium* argument to dismiss the Gnostic claim to special knowledge.¹⁸⁹ Secondly, he observes that Irenaeus holds Platonism responsible for the doctrine of the aeons, though without reference to the

¹⁸⁵ H.B. Timothy, *The Early Christian apologists and Greek philosophy: exemplified by Irenaeus, Tertullian and Clement of Alexandria* (Assen: van Gorcum 1973).

¹⁸⁶ Mark Edwards, *Religions of the Constantinian Empire* (Oxford University Press, 2015), pp. 1-64.

¹⁸⁷ Eginhard Peter Meijering, 'Some Observations on Irenaeus Polemics Against the Gnostics', in *God, Being, History: Studies in Patristic Philosophy* (Amsterdam: North-Holland Publishing Co., 1975), pp. 31-37.

¹⁸⁸ Eric Osborn, *Irenaeus of Lyons* (Cambridge University Press, 2001).

¹⁸⁹ Osborn, pp. 29-31.

text.¹⁹⁰ While the Presocratics do not feature majorly in Osborn's writings on the text, they are not completely neglected. At pages 237-8 Osborn describes Irenaeus' opinion on his conjectured Gnostic appropriation of Presocratic teaching at II 14.2-4 as "a patchwork" which the Gnostics claim as divinely inspired work. While I think this is a fair assessment of Irenaeus' treatment of the Gnostics, I differ from Osborn's approach to the section in two ways. Firstly, this chapter focuses on Irenaeus' engagement with Presocratic teachings. Secondly, I seek to analyse the polemical nature of the passage in light of Smith's arguments and in doing so to outline the consequences of this for Irenaeus' portrayal Presocratic philosophers. The links that Irenaeus draws between Platonism and Gnosticism are plain to see (e.g. the Gnostic demiurge and its parallels in Plato's *Timaeus*), as is his view of Gnosticism as a Hellenised or philosophised Christianity. However I think the section of text at II 14.2 gives us scope to examine the role of Presocratic philosophy as an inspiration of heresy in Irenaeus, brief though the passage may be.¹⁹¹

4. TERTULLIAN

Though the political climate and persecutions faced by early Christians may lead one to suspect that their chief concerns laid in defending themselves from external threats, early Christian authors were quite vigilant against internal threats to the nascent movement.¹⁹² The identification and condemnation of heresy was a concern of early Christians in North Africa during the second and third centuries. It is a historical irony that the father of Latin Christianity, who viewed himself as a champion of orthodoxy and spilled much ink against heretics, was himself later condemned as one. A near contemporary of Irenaeus and Hippolytus, Tertullian pursued similar endeavor and wrote treatises against Christian heretics and at times drew on the doxographical tradition in the pursuit of his goals.¹⁹³

4.1 Context

The *Five Books Against Marcion* were composed sometime in the early third century. The target of Tertullian's polemic was the teachings of Marcion of Sinope, a Christian heretic active in the middle of the second century. Marcion rejected the Old Testament

¹⁹⁰ Osborn, p. 29.

¹⁹¹ The only Presocratic subject to detailed discussion in Osborne's work is Xenophanes, who is discussed at length because of his theological teachings, parallels to which can be seen in the *Against Heresies*. As Xenophanes is not invoked in relation to the doctrine of the Gnostic aeons, he will not be discussed in detail in this chapter.

¹⁹² Royalty, pp. 119-145.

¹⁹³ B. D. Shaw, *Sacred Violence: African Christians and Sectarian Hatred in the Age of Augustine* (Cambridge University Press, 2011), pp. 307-8.

and any part of the New Testament which disagreed with this rejection. Similarly to the Gnostic Valentinians he drew a distinction between the creator God of the Old Testament and God the Father of the Gospels. He edited the Gospels to reflect this distinction, resulting in a restricted canon consisting of the Gospel of Luke and some letters of St. Paul. He broke away from the Roman Church around 144 AD, over half a century before Tertullian composed his polemic against him. Tertullian's book seeks to refute the Marcionite teachings, with the first two books tackling his distinction between the God of the Hebrew Bible and the God of the New Testament, and the remaining three books arguing for further concordance between the two halves of the Bible and addressing the restricted Marcionite canon. As no Marcionite works survive, Tertullian is the only primary source for their teachings.

The text below of the *Against Marcion* is from Kroymann's 1954 edition. The work is attested in three manuscripts from the *Corpus Cluniacense* manuscript family, derived from a lost archetype. The earliest text, the incomplete eleventh-century *Codex Montepessulanus* H.54, contains seven works of Tertullian. The fifteenth-century *Codex Florentinus BNC Conv. Soppr. J. VI. 11* (formerly known as *Codex Florentinus Magliabechianus*) contains twenty-seven works. The final manuscript, the *Codex Gorziensis*, is lost but its existence is attested in the edition of sixteenth-century German humanist and classical scholar Beatus Rhenanus.

The primary focus of Book I is the refutation of Marcion's rejection of the Old Testament, and the denial of the benevolence of the creator God of the Genesis narrative. The Marcionites, according to Tertullian, consider the creator to be an evil being and his creation to reflect that nature. Thus they denounce creation as something evil. The passage features a description of the alleged deification of mundane materials by various philosophers. The passage below is one in which Tertullian employs is the argument from the *consensus gentium* fallacy, which alleges that if something is universally accepted by all nations of the world then it must be true for if all humanity is unanimous on a topic it must be obvious and apparent to all. This argument is not novel with Tertullian, though the context in which it is used appears to be. In the *De Natura Deorum* of Cicero, the Epicurean interlocutor Velleius follows a similar line of reasoning at I 43 where he states that consensus among all nations proves the existence of the gods. The argument is refuted by the Academic Cotta at I 57, who cites examples of atheists and calls into question how Velleius could possibly know what all nations of the world believe. Tertullian employs a similar argument, not to affirm the existence of God but rather to

confirm that the world is not evil. His reasoning is as follows. The Marcionites are mistaken in their belief about the nature of the world that virtually everyone else, the Christians, the physicists and philosophers, the various priests and magicians of Egypt, Persia, and India, perceives the opposite of the Marcionite doctrine to be true.

4.2 Text & Translation

Tertullian *Adversus Marcionem* I 13, 3

Vt ergo aliquid et de isto huius mundi indigno loquar, cui et apud Graecos ornamentum et cultus, non sordium, nomen est, indignas uidelicet substantias **ipsi illi sapientiae professores, de quorum ingenii omnis haeresis animatur, deos pronuntiauerunt, ut Thales aquam, ut Heraclitus ignem, ut Anaximenes aërem, ut Anaximander uniuersa caelestia, ut Strato caelum et terram, ut Zeno aërem et aetherem,** ut Plato sidera, quae genus deorum igneum appellat, cum de mundo, considerando scilicet et magnitudinem et uim et potestatem et honorem et decorem open fidem legem singulorum elementorum, quae omnibus gignendis alendis conficiendis reficiendisque conspirant, ut plerique physicorum, formidauerint, [initium ac finem mundo constare] ne substantiae eius, tantae scilicet, minus dei haberentur, quas colunt et persarum magi et aegyptiorum hierophantae et indorum gymnosophistae.¹⁹⁴

To say somewhat, then, concerning the alleged unworthiness of this world's fabric, to which among the Greeks also is assigned a name of ornament and grace, not of sordidness, **those very professors of wisdom, from whose genius every heresy derives its spirit, called the said unworthy elements divine; as Thales did water, Heraclitus fire, Anaximenes air, Anaximander all the heavenly bodies, Strato the sky and earth, Zeno the air and ether,** and Plato the stars, which he calls a fiery kind of gods; whilst concerning the world, when they considered indeed its magnitude, and strength, and power, and honour, and glory,—the abundance, too, the regularity, and law of those individual elements which contribute to the production, the nourishment, the ripening, and the reproduction of all things,—the majority of the philosophers hesitated to assign a beginning and an end to the said world, lest its constituent elements, great as they undoubtedly are, should fail to be regarded as divine, which are objects of worship with the Persian magi, the Egyptian hierophants, and the Indian gymnosophists.¹⁹⁵

¹⁹⁴ Tertullian, *Opera I: Opera Catholica. Adversus Marcionem.*, ed. by E. Dekkers and others, Corpus Christianorum Series Latina, 1, 2 vols (Tournhout: Brepols, 1954), 1.

¹⁹⁵ Tertullian, *Latin Christianity: Its Founder, Tertullian. Three Parts: I. Apologetic; II. Anti-Marcion; III. Ethical*, ed. by Alexander Roberts and James Donaldson, Ante-Nicean Fathers, 3 (Grand Rapids, MI: Eerdmans, 1973), p. 280.

4.3 Sources

The passage may strike anyone familiar with the doxographical tradition on the gods as quite curious, in particular, with respect to Thales' opinion on God. Thales is often represented as having believed in either animism, as Aristotle claims, in a noetic divinity, as Cicero depicted in *De Natura Deorum* or as Tertullian himself once claimed that he had no opinion on the gods.¹⁹⁶ His depiction here represents a problem for us. Although the passage is clearly derived from a doxographical source, the exact source is not readily apparent.

He furnishes his argument with several specific examples centred on a common theme of the divinity of the elements. He alleges that the philosophers Thales, Heraclitus, Anaximander, Anaximenes, Strato, Zeno, and Plato were each so filled with awe and respect for the beauty of the world that they proclaimed the world's elements to be divine. This claim presents a problem for interpreting Tertullian's understanding of the early Greek philosophers. On the one hand, in its form the passage follows a familiar pattern. It is a list of philosophers and their respective doctrines of the first principle. The four Presocratics are represented mostly accurately, with the ambiguity of Anaximander's *apeiron* taken as a rather more defined *uniuersia caelestia* 'all of the heavenly bodies' in contrast with Cicero's translation of *infinitae natura*. This format of the list would suggest that the information was derived from a doxographic source. However, on the other hand there is a fundamental problem with the list in that it interprets the first principles of the philosophers, unambiguously, as deities.

This touches on a question about Presocratic theology in the doxographical tradition. Were the various Presocratic principles one and the same with their gods? Focusing on the Presocratic philosophers named here by Tertullian we can say with some confidence that this was unlikely. Thales' theology is represented in several ways. Per Aristotle, possibly in reference to magnetism, he claimed the entire world was full of gods.¹⁹⁷ Aëtius, following Theophrastus, recorded that Thales said that the mind of the world is God.¹⁹⁸ Tertullian himself elsewhere records that when asked about the nature

¹⁹⁶ Tertullian, *Ad Nationes* II 2. It is worth bearing in mind that Tertullian, a trained rhetorician and possibly a lawyer, can be expected to make different arguments in different contexts depending on the nature of his audience and his goals. While he may contradict himself between the two texts, the *Ad nationes* is apologetic directed at a non-Christian audience and the *Against Marcion* is polemic directed at a Christian one.

¹⁹⁷ Aristotle, *De Anima* A2 405ba19. On Thales, soul and magnesian stone, see KRS, pp. 95-7.

¹⁹⁸ Aëtius, *Placita* I 7.11.

of the gods, Thales replied that he thought nothing.¹⁹⁹ The same can be said about Anaximander. Gregory Vlastos has argued that there is no evidence that he called his principle God as Tertullian suggested.²⁰⁰ While Heraclitus held fire to be the origin of all things, he likewise did not proclaim fire to be god. Since none of the Presocratic philosophers named had pronounced the elements to be gods, where does this leave Tertullian's claim?

Looking to Aëtius' *Placita*, we may find a resolution to the disparity between the fragments of the Presocratics and Tertullian's account. In the passages concerning the opinions of the philosophers on the gods in Aëtius, we find the following statements about the above philosophers:

Aëtius *Placita* I

Τίς ἐστὶν ὁ θεός;

11. Θαλῆς νοῦν τοῦ κόσμου τὸν θεόν, τὸ δὲ πᾶν ἔμψυχον ἅμα καὶ δαιμόνων πλήρεις. διήκειν δὲ καὶ διὰ τοῦ στοιχειώδους ὑγροῦ δύναμιν θεῖαν κινητικὴν αὐτοῦ.

12. Ἀναξίμανδρος (ἀπεφήνατο) τοὺς ἀπείρους οὐρανούς θεούς

13. Ἀναξίμενης τὸν ἀέρα. δεῖ δ' ὑπακούειν ἐπὶ τῶν οὕτως λεγομένων τὰς ἐνδιηκούσας τοῖς στοιχείοις ἢ τοῖς σώμασι δυνάμεις.

22. Ἡράκλειτος τὸ περιοδικὸν πῦρ αἰδίων, εἰμαρμένην δὲ λόγον ἐκ τῆς ἐναντιοδρομίας δημιουργὸν τῶν ὄντων.

What is God?

Thales said that the mind of the world is god, and that the sum of things is besouled, and full of daimons; right through the elemental moisture there penetrates a divine power that moves it.²⁰¹

Anaximander (made it known) the unbounded heavens are the gods.

Anaximenes (said God is) the air. In the case of the things said in this way, it is necessary to interpret them as the powers that are inherent in the elements or in the bodies.

Heraclitus (said that God) is the recurring fire, eternal, and that destiny is a *logos*, a craftsman of beings out of the counter currents.

¹⁹⁹ Tertullian, *Ad Nationes* II 11-18.

²⁰⁰ Gregory Vlastos, 'Theology and Philosophy in Early Greek Thought', *The Philosophical Quarterly* (1950-), 2.7 (1952), 97-123 (p. 113 n. 75).

²⁰¹ Adapted from KRS, p. 97 n1.

In these sections from Aëtius we see a similar interpretation of Presocratic theology as seen in Tertullian, with the principles of Anaximander, Anaximenes and Heraclitus being presented as divine. Thales however stands out somewhat among these examples, as his first principle and god are not one and the same. His theology is more in line with the fragments and testimonies noted above than they are with Tertullian's claim. The corresponding passage from Pseudo-Plutarch simply asserts the stance that God is the mind of the world, while the longer passage seen above from Stobaeus combines Aristotle's summary of Thales' theology and adds a Stoic reinterpretation of his God.²⁰² Whether or not Tertullian would have been aware of this reinterpretation is another matter. Some similarities are to be seen in the suggestion of Cicero in *De Natura Deorum* with the suggestion that per Thales, God is a mind which shaped all things out of water. However, these examples from the doxographical tradition do not leave us with an exact correspondence in Tertullian's account, even though the evidence that the passage made use of such sources is now stronger.

In order to resolve this matter it is necessary to consider the interpretation of the source material. KRS considered the additional lines in Stobaeus but absent in Pseudo-Plutarch to be a Stoic interpretation of Thales and it is well known that Aristotle's reading of Thales' opinions on water is a Peripatetic one, more in line with his own system of causation than with the historical reality of Thales' physics. As such, I would suggest that what we are seeing here in *Against Marcion* is a Christian interpretation of the doxographical tradition, where the source material is understood in light of Christian scripture.

I refer to two passages from the Pauline letters which draw a connection between philosophers and 'the elements of the world' and set these two in explicit opposition to Christ. Colossians 2:8 contains a warning to Christians against philosophers who might try to trick them 'according to the elements of the world'. This is open to a variety of interpretations, most obviously with reference to the four elements of earth, water, air, and fire. However, there are other interpretations. It could refer to letters or to literature as a whole, or indeed it could mean, as has been argued, that στοιχεῖα may refer here to some animate genius or demonic force. Tertullian offers alternative interpretation of the Colossians passage in *Against Marcion* where he takes the στοιχεῖα as letters (according to the Romans), or days, months and years (i.e. the elements of time, according to various

²⁰² KRS, p. 97 n1.

scriptural foreshadowings).²⁰³ The second passage from Paul's letters is Galatians 4:2-8, which discusses these elements of the world briefly, asserting that during childhood, we are slaves to these elements. This seems to be an attack on traditional Greek education, as Paul talks about fathers assigning tutors to their children who cause them to be enslaved to the elements. But through Christ, the faithful are adopted by a new father, God, and freed from this slavery to the elements. He goes on to berate those who would turn their backs on this freedom and return to the elements after knowing God. Unpacking all the context of this passage and its exegesis would take me too far off topic but it suffices to say there is scope for reading these passages as colouring Tertullian's views on the role of philosophy in Christian heresy.²⁰⁴ In his *Against Hermogenes* Tertullian uses the passage from Galatians to berate the heretic Hermogenes for his teachings about matter, which suggests that he views the passage as foreshadowing the conflict between orthodox Christians and heretics. Taking this into account there is scope to suggest that his readings of scripture may have also coloured his views of the philosophers, giving rise to the doxographical material being interpreted not entirely in accordance with the tradition.

5. ANALYSIS AND THEMES

5.1 *Connecting Physics & Heresy*

Both authors took different approaches to establishing connections between philosophy and heresy in their works. Irenaeus engages in a methodological comparison between physical tenet and heretical beliefs, while Tertullian simply asserts there to be a connection which relies on the broader cultural conceptions of philosophers and philosophy. A comparison of the two authors reveals both the differences in their approach and the similarities in their conclusions, and ultimately serves to highlight the legacy of the Presocratics during this period and broader opinion of Christians on philosophy.

While I argue Irenaeus' approach is methodological or systematic, that is not to say that it is sophisticated by any means. Indeed, even by the standards of etymological and grammatical analysis of his era it is quite rudimentary. However there is an underlying process which he presents in his exposé rather than simply making declarations of connections between unconnected matters. This may not seem readily

²⁰³ Tertullian, *Against Marcion* V 4.15.

²⁰⁴ Clinton E. Arnold, 'Returning to the Domain of the Powers: *Stoicheia* as Evil Spirits in Galatians 4: 3, 9', *Novum Testamentum*, 38.1 (1996), 55–76.

apparent in the English translation or indeed in the Latin, but it must be born in mind that the text was originally in Greek but not all of the Greek terms have been translated. Of particular note is the treatment of proper names in the Latin translation.

Each of the Gnostic aeons whom Irenaeus discussed are named with proper nouns with plain meanings in Greek. For example, Sophia simply means ‘wisdom’ and Ecclesia means ‘assembly’. Yet because these names are not translated into Latin in the text, their precise connection to a physical teaching is not as readily apparent as it would have been in the Greek. The connections rely on similarity between the semantic meanings of the names and the qualities of the first principles. In Latin, the connection between *Bythus* and *aqua* is not obvious. Without knowing that in Greek βυθός means ‘deep’ it would be difficult to see how these two relate to one another. The word is used almost exclusively of the depths of the sea; indeed this is how it is used by Paul in the Letter to the Corinthians.²⁰⁵ The connection between Valentinian’s Bythus and Thales’ water rests on the fact that the adjective refers almost exclusively to a body of water. The Gnostic aeon is thus revealed to be a repackaged or obscured version of the Presocratic principle. Irenaeus concludes by making the connection between the two explicit in saying ‘*idem autem est dicere aquam et Bythum*’. For Irenaeus, it does not matter whether we call this thing water or Bythus, the ideas are one and the same.

After Thales, Irenaeus moves to his fellow Milesian Anaximander, drawing further connections between Greek physics and Gnostic theology. As with Thales and Homer, we see that Irenaeus is willing to show that the Valentinians drew on multiple secular sources for their heresy. Once again his connections depend on a semantic meaning of the name of the aeon Bythus, in this case moving from the core semantic meaning of the watery depths of the ocean to a different type of profundity, that of the heavens. Citing Anaximander’s unbounded principle, Irenaeus then draws a connection between the physical principle upon which Anaximander’s world is founded and the aeon Bythus. The Gnostics took this principle of infinitude and used it as inspiration for their primordial deity. Just as many worlds (*immensos mundos*) came to be from Anaximander’s unbounded infinitude, the many aeons of the Godhead came to be from the Valentinian Deep. Anaximander’s opinion, like that of Thales, is co-opted by Irenaeus as evidence for the non-Christian nature of allegedly Christian doctrines, and the philosopher himself is understood as their inspiration and intellectual predecessor.

²⁰⁵ 2 Cor. 11.25 τρις ἔρραβδίσθην, ἅπαξ ἐλιθάσθην, τρις ἐναυάγησα, νυχθήμερον ἐν τῷ βυθῷ πεποιήκα.

Anaxagoras is the next to undergo this treatment, though we can see a more intense polemic in this section. Irenaeus moves onto another aspect of the Gnostic deity, Sophia, the youngest of the aeons and the mother of souls. Sophia, in a cosmic version of the story of Adam and Eve, sought knowledge of something unknown to her. While the first humans in Genesis sought knowledge of good and evil, Sophia desired, paradoxically, to know the unknowable father Bythus. This desire set into motion the enthymesis of Sophia, in which she is expelled from the divine realm and accidentally creates the substance of creation as a by-product of her expulsion. She descends into the created world as a fallen aeon and mother of souls, Achamoth who must later be redeemed by another aeon, Christ. The comparison with Anaxagoras is more tenuous than that of Thales and Anaximander, which were grounded in semantics. This comparison revolves around the idea of descent and zoogony, which per Anaxagoras' opinion, was caused by the descent of seeds from the sky. Just as Anaxagoras argued that animals are generated from seeds which have fallen to earth from heaven, Irenaeus argues that the Gnostics mirrored this in two ways, firstly Sophia's descent as Achamoth and secondly in the zoogony which results from her actions. Through her enthymesis, souls and matter come to be in the created world, and in the narrative (according to Irenaeus) she created the Demiurge who crafted living beings from these materials. While the connection is considerably weaker than the others, this would appear to be how it functions. It is not only the common image of descent that connects Anaxagoras and Achamoth but the result of the two processes, the generation of animal life.

What is perhaps more important here is the polemical nature of the passage. The Gnostic plagiarism of Thales, Homer, and Anaximander is presented in a polemic context. The immediate goal of Irenaeus in this appears to be to expose the non-Christian origins of teachings of people who claim to be Christians themselves. The idea that alleged Christians are in fact simply teaching philosophical opinions repackaged as Christian truths undermines their claims, but the further claim which Irenaeus makes here, that the sources are not only non-Christian, that the Gnostics derived their beliefs from a godless man highlights the nature of this document as an attack on the Gnostics. According to Irenaeus, Anaxagoras was not simply a physicist but also an atheist, a man who did not even believe in a god, as other philosophers and poets did. So while their theft of a secular source for zoogony is condemnable, this act is confounded by their theft of a teaching of an alleged atheist.

Having exposed Bythus and Sophia—the two most important aeons in the Gnostic creation narrative—as having secular origins Irenaeus moves on to the divine realm in which the Valentinian godhead resides, which the Gnostics term the Pleroma. Once again, Irenaeus relies on the meaning of the name used by the heretics in order to link it to a secular source. In this case the everlasting abode of the Gnostic God and the created world, a shadow of the divine realm, are likened to the materialist duality of the Atomists, the Presocratic Democritus and the Hellenistic Epicurus. This connection rests on a comparison between the names of these cosmic realms and the qualities of the primary bodies in atomist thought. The name of the divine realm is the *Pleroma*, from πλήρωμα ‘fullness’ ‘completeness’ from πλερώω, to fill. One can see the term’s use as a quality of the divine in a Christian context from the Letter to the Ephesians 3:19 ‘γῶναί τε τὴν ὑπερβάλλουσάν τῆς γνώσεως ἀγάπην τοῦ Χριστοῦ, ἵνα πληρωθῆτε εἰς πᾶν τὸ πλήρωμα τοῦ θεοῦ’, which alludes to the fullness of God. In the Gnostic context it is the place in which the Godhead dwells and the created world outside of this fullness by contrast is empty. Irenaeus calls it the Shadow. The contrast between these two worlds is likened to the contrast between the two parts of the Atomist duality, atoms and the void. The fullness of the Pleroma is revealed to be an imitation of the fullness of atoms, the infinity of particles which compose all compound bodies which are indivisible by virtue of their solidity. The Shadow in which the created world exists is revealed to be the void of the atomists. Just as the void is everything other than the atoms, the Shadow is everything outside of the Pleroma. This comparison is made by the connection between the names and qualities, but Irenaeus briefly expands on the matter on an ontological level. The early Atomists, Democritus in particular, were said to have called atoms being and the void non-being, and Irenaeus alleges that the teachers of Gnosticism say the same of the *Pleroma* and Shadow, making the comparison more than superficial.²⁰⁶

So far, Irenaeus has largely followed the doxographical tradition with a reasonable level of accuracy. His methodology of finding connections between concepts with similarities in their names or meanings has thus far been used to expose Early Greek physics as the source of Gnostic ideas. In the next section of the passage however he uses the same strategy to link two unrelated ideas from physics in order to further his argument for the worldly origins of Gnostic theology.

²⁰⁶ Aristotle, *Metaphysics* 985b4-10.

He dwells on Democritus briefly, and mentions his mechanism of sense perception, the εἶδωλα, microscopic films which emanate from bodies, causing perception when they impact on the soul through pores in the body.²⁰⁷ This atomist theory of sense perception is conflated by Irenaeus with the Platonist theory of Forms, the perfect models of physical objects, which in Plato's *Timaeus* dialogue were used as the blueprints for the physical world by the creator God, the Demiurge. Why are these two very different philosophical ideas considered to be one and the same by Irenaeus? The simplest explanation appears to be that they share the same name in Greek, εἶδωλα. Democritus' atomic films are presented as the intellectual predecessor of the *exempla* from which the craftsman god of the *Timaeus* shapes all matter. Democritus and Plato form part of the same intellectual tradition according to Irenaeus, a tradition which culminated in Valentinus and the Gnostics.

The final part of this section leads on from the last and dwells briefly on the Demiurge and a problem which would dog Christian exegesis for centuries to follow: the problem of pre-existent matter. The Christian creation narrative expands on the creation of all things by God *ex nihilo*. All matter came to exist with the act of creation over the narrative beginning with the creation of heaven and earth at Gen. 1.1. Presocratic physics, as discussed in the introduction to this thesis, rests on an underlying principle of conservation: nothing comes from nothing and nothing is returned into nothing. The Valentinians deviate from the orthodoxy in their assessment of the creation of the world in two ways. Firstly, they distinguish between two figures, the manifold God in the Pleroma, and a creator God who was made by the fallen aeon Sophia-Achamoth, whom the Gnostics all the Demiurge. The aeon Bythus is equated with God the Father, and the Demiurge with the God of the Pentateuch. Secondly, they reject that God created anything *ex nihilo*. Rather matter and souls came to be by accident from the enthymesis of Sophia, and in the created world in the shadow of the Pleroma, she made the Demiurge who shaped this matter into all mundane things. According to the Gnostics, the world is a cosmic accident, and its creator is malevolent. Irenaeus draws parallels here between three philosophers, Anaxagoras, Empedocles and Plato, and the Gnostics on the grounds that all allege that matter pre-existed the formation of the cosmos. The idea is represented in Anaxagoras through his seeds, in Empedocles through his four elements (eternally mixing and separating according to Love and Strife), and in Plato through his account in the

²⁰⁷ C.C.W. Taylor, *The Atomists, Leucippus and Democritus: Fragments: A Text and Translation with a Commentary*, Phoenix Pre-Socratics, 5 (London: University of Toronto Press, 2010), pp. 108-10.

Timaeus. All three philosophers are linked through this concept to the Gnostics and like the others discussed already, become the intellectual predecessors to the Valentinians and their heresy.

At the end of this exposé we are left with two conclusions. Firstly, the aim of Irenaeus' polemic in this section and in the wider work, that of exposing the Gnostics as not being true Christians but *heterodidaskoi*, teachers of other things outside of the universal Church. Secondly we are left with the conclusion that the physicists named above are the intellectual forbearers to these Christian heretics. What does this mean for the Christian understanding of the philosophers and their legacy? With Irenaeus, it is somewhat ambivalent. The target of his polemic is, after all, the Gnostics and not the physicists. If their reputation is diminished at all by his use of them in the text it would be incidental to the main goal of the text which is to discredit the Valentinians. If Christian heresy has its origins in philosophy, can we say that the Presocratics (and Homer and Plato) are culpable for leading Christians astray? I think not. They are simply used by Irenaeus as a tool for challenging the Gnostic's own narrative (which we sadly lack, except through the lens of Irenaeus' account in Book I). The physicists' opinions simply act as an alternative explanation for the source of the heretics' beliefs, with the argument designed to undermine their claims to secret divine revelation through alternative readings of scripture. Yet, undeniably, we see in this account by Irenaeus an early instance of the tradition of philosophy as the source of Christian heresy, a theme which we will see again in Irenaeus' near contemporary Tertullian's own anti-heresy writings.

Tertullian's presentation of a connection between philosophy and heresy lacks this methodological approach. Rather than expose individual teachings of the heretics as being philosophy in disguise, Tertullian simply asserts that the connection exists. In the above passage from the *Against Marcion*, Tertullian employs a doxographical list to show that the philosophers had preferable views to the Marcionites, even though it is from the teachings of the philosophers that all heresies came to be. The Marcionites believe the world to be the wicked creation of an evil God, but the philosophers at least believed in the essential goodness of the world. The philosophers however take things too far by asserting the divinity of the base elements rather than worshipping the elements' creator. The Christian orthodox stands between heresy and philosophy, but the connection between the two extremes is established by his assertion that from the genius of the philosophers all heresies were set in motion.

On its own this assertion can seem quite weak. Unlike Irenaeus' connections there are no obvious connections between these philosophical opinions and the heretics more generally. Fortunately, this is not an isolated assertion. In the *Against Hermogenes*, Tertullian proclaims the philosophers to be the *patriarchae haereticorum*, the patriarchs of heresies.²⁰⁸ In the *Ad Nationes*, we see a glimpse of what Tertullian appears to mean by these assertions. For Tertullian argued that when the philosophers found God they did not accept what they found as given but instead debated the nature, traits and location of God among themselves.²⁰⁹ Because their reaction was to dispute rather than to accept, the philosophers came to a variety of conclusions about God. This appears to be the foundation of the connection between philosophy and heresy in Tertullian. Because the philosophers disputed among themselves about the nature of the divine and did not accept God on faith alone their ideas introduced heresy to the Church.

This places the accusation within a wider framework seen in Tertullian's writings, best summed up by his often misquoted words: *credibile est, quia ineptum est*.²¹⁰ Wolfson terms Tertullian a 'single faith theorist' with regards to his attitude to philosophy generally. Building on the idea from Philo of Alexandria that philosophy is subordinate to scripture, Wolfson argues that there are two types of responses to philosophy in the Church fathers. The double-faith theorists, of whom Clement of Alexandria and Augustine are representative, believe that true philosophical inquiries will inevitably lead one to the same conclusions as faith. Belief simply allows one to bypass the need for such inquiries.²¹¹ Single faith theorists like Tertullian believe not only that faith alone is all one needs but also that such philosophical inquiries, while they may reach the truth by chance, will lead one into heresy.²¹²

Tertullian's approach to the philosophy-heresy nexus is therefore quite different from Irenaeus. Irenaeus relied upon similarities between individual teachings of the philosophers and heretics to establish a connection whereas Tertullian simply asserts there to be a connection based on the philosophers knowledge of God. The matter of whether or not the philosophers know that God exists is another point of divergence between the two authors.

²⁰⁸ Tertullian, *Against Hermogenes* VIII 3.

²⁰⁹ Tertullian, *Ad Nationes* II 3.

²¹⁰ Tertullian, *De Carne Christi* V 4.

²¹¹ Harry Austryn Wolfson, *The Philosophy of the Church Fathers* (Harvard MA: Harvard University Press, 1956), pp. 112-40.

²¹² Wolfson, pp. 102-111.

5.2 *Philosophers & Knowledge of God*

A noteworthy difference between the two authors is their stance on the question of the philosophers' knowledge of God. For Irenaeus, the philosophers are ignorant of God, while Tertullian asserts that there is no one among the poets or the wise who 'has not drank from the same well as the prophets'.²¹³ Exploring these ideas will help us to better understand how these authors viewed the relationship between philosophy and faith.

For Irenaeus, the matter is straightforward. The philosophers have no knowledge of God. Within the context of the argument which he is creating against the Gnostics this is a particularly powerful statement to make because of the effect which it has on the targets of his polemic. The goal of the *Against Heresies* is to teach the reader how to identify Gnostic beliefs and to discredit them. Much of Christian Gnosticism is grounded in the idea of knowledge, so Irenaeus demonstrates at II 14 that the knowledge which the Gnostics profess to have through secret divine revelation is in fact secular learning from sources who are entirely ignorant of God.²¹⁴ This undermines the Gnostic claims and weakens their position. For Tertullian, in contrast, the philosophers do have knowledge of God and their connection to heresy lies partially in their lack of faith but also in how the philosophers acquired this knowledge, which he suggests is through contact with the Hebrew prophets.

The idea of a connection between the Greek philosophers and the Hebrew prophets is far from novel with Tertullian, but traces its origins to Hellenistic Jewish philosophy, Philo of Alexandria in particular. Chronologically, Philo placed Moses ahead of the Greek philosophers and could therefore argue that any similarities between the Torah and philosophy could be explained away as having been derived from Moses by one means or another. As Mansfeld puts it, within this Mosaic conception of history, the philosophers are not independent thinkers but rather 'fellow-exegetes' of Philo and his predecessors.²¹⁵ The endeavours of the Hellenic Jewish biblical exegete and the Greek philosopher are thus seen to be the same, but because the exegete remains closest to the source material, they are also closest to the truth, and the philosopher furthest removed.

The notion of Greek wisdom as derivative of 'barbarian' sources is a useful one for Roman Christians. It not only subordinates the *summa* of secular inquiry and learning to divine revelation on an epistemological level but also gives Christians a very Roman

²¹³ Tertullian, *Apology* XLVIII 5.

²¹⁴ Irenaeus, *Against Heresies* II 14.4.

²¹⁵ Jaap Mansfeld, 'Philosophy in the Service of Scripture: Philo's Exegetical Strategies', in *Studies in Later Greek Philosophy and Gnosticism* (London: Variorum Reprints, 1989), pp. 70–102.

defence against accusations of impiety. Tertullian seized this opportunity in the *Ad Nationes*, taking up this argument to defend Christians against the claim that they were breaking with tradition. It is the philosophers, he claims, who have taken things from scripture and altered them beyond recognition. Timothy examines this train of thought in Tertullian's work in detail and concludes that the philosophers are guilty of theft from the Israelites.²¹⁶ To this I would add that there is a pre-existing cultural phenomenon always in the background of these claims which is not made explicit: the tradition of the acquisition of knowledge from the East.

Stories circulated from the fifth century BCE up until Late Antiquity that the sages, wise men, and philosophers of Greece visited lands to the south and to the east, acquiring knowledge and demonstrating their wisdom abroad. Stories exist of Thales, Pythagoras, Empedocles, Democritus, Solon and Plato having travelled to the East and came back with new knowledge.²¹⁷ Although Tertullian does not make the reference to such stories explicit, it is not hard to see how one can read his claims as alluding to an understanding that Greek learning was always acknowledged to have had external influences. Later, Augustine of Hippo would reject on chronological grounds the idea that Plato met with the prophet Jeremiah on his journey to Egypt but does not dismiss the idea that there may have been some intermediary influences to account for similarities in the accounts of creation.²¹⁸

Through Christian supersessionism, Tertullian takes up the argument against the philosophers, first posed by Jewish exegetes, that the Hebrew prophets predated philosophers and uses this to subordinate secular learning. Philosophy is thus dependent on divine revelation and his claims that the philosophers are the source of heretical thought are made quite clear. Through their distortion of the divinely revealed wisdom which they acquired from the prophets the philosophers themselves are the original heretics. Since Irenaeus' arguments seek to distance the heretics from any claim to divine truth, such concepts hold little use for his goals. His polemic depends on the secular sources following the 'wisdom of the world' and being removed from 'wisdom of God'.

5.3 Heresies and Sects

This is not the only source of connection between philosophy and heresy. Before drawing this chapter to a close I wish to examine another link between the two seen in the terms

²¹⁶ Timothy, pp. 40-58.

²¹⁷ See, for example, Plato, *Timaeus* 21a-26e2; Pliny, *Natural History* 30.2; Diogenes Laertius IX 7.35-7.

²¹⁸ Augustine, *City of God* VIII 11.

haeresis and *secta*, terms for heretical sects. The ideas of *haeresis* and *secta* were not novelties of the Christian era, but were bound up with the idea of philosophical schools centuries before the first heresy catalogues were composed. For example, over half a century before Christ, in a letter to Cassius Longinus, Cicero refers to the Epicurean school as a *αἵρεσις*, although like most references to Epicureanism by Cicero it is in a highly negative context.²¹⁹ In the *De Bello Iudaico*, Flavius Josephus uses the term to describe the three movements within the Jewish religion.²²⁰ In Greek, *αἵρεσις* has a range of meanings all of which revolve around the notion of taking, choosing or electing something or someone. In the context of philosophical schools it is the choice of which school or school of thought one chooses to follow. The term gives the sense of a group separated from a broader whole. Just as in Josephus the Pharisees, Sadducees and Essenes are subdivisions within the broader Jewish religious and ethnic group, the Stoics, Sceptics, Epicureans etc. are subdivisions within the wider group of *philosophi*. This concept of separation is seen too in the Latin equivalent, *secta*, from *seco*, to cut. By the second century, opponents of subdivisions within the Christian Church adopted this vocabulary to describe groups like the Gnostics and Marcionites, setting them in contrast to the universal Church which (in theory) does not admit division or choice. Once again, the origin of heresy within the Church can be traced to the philosophers who disputed among themselves and cut themselves off into separate movements and institutions.

The link between philosophy and heresy in Tertullian's writings can be understood in light of these ideas. Unlike Irenaeus' methodological approach, Tertullian's statements are subtler. Tertullian made assertions about the interconnectedness of philosophy and heresy which on their own may seem outlandish, but when they are read within the context of his understanding that philosophy is ultimately derivative of scripture the reasoning behind the assertions becomes clearer. For him, the philosophers were not ignorant of God but knew God through the prophets and tried to understand him through philosophical inquiry rather than through faith. The philosophers in this context, through their distortion of scripture and their schismatic infighting among themselves, are not just the inspiration behind later Christian heresies as in Irenaeus, but the first heretics.

²¹⁹ Cicero, *Ad Familiares* XV 16.3.

²²⁰ Josephus, *De Bello Iudaico* II 8.1-2.

6. CONCLUSION

The problematic nature of heresy catalogues as sources for heretical doctrines is manifest in their status as polemic. Taking this into account any accusations that the heretical sects knowingly took their lead from philosophers must be viewed critically. Some overlaps, like the Platonic and Gnostic Demiurge, the Stoic and Christian conceptions of *logos* or Hellenistic Jewish and Gnostic *Sophia* must be viewed in their proper historical context. It is a context in which ideas about theology were shared by philosophers and religious groups in the Greco-Roman world. Just because there is some common ground between philosophy and religion does not lead to the conclusion that all commonalities arose from plagiarism or borrowing any more than it lead Christian authors to conclude the philosophers plagiarised Moses or the prophets.

Bearing this caveat in mind, it becomes clear that the conjectured relationship between physicists and heretics in Irenaeus and Tertullian cannot be divorced from the polemical context of their anti-heresy literature. Indeed, when closely examined these connections, in contrast to the more plausible connections between Platonist and Stoic philosophy and Christian sects, should arouse suspicions about their historical accuracy. In Irenaeus' case, he drew on doxographical information about the physicists to forge connections between their teachings and the Valentinians. The commonalities which he found were not selected arbitrarily but were selected based on similarities in names or the semantic range of words describing doctrines. The effect of this is that the connections appear plausible, and his argument at *Against Heresies* II 14 concludes with the revelation that the Gnostics' beliefs are not divinely inspired but taken from mundane sources and renamed. Tertullian on the other hand took a different strategy to draw the same conclusion. Rather than comb individual doctrines for points of semantic overlap, Tertullian asserted the relationship existed between the two groups based on a Christianised view of history inherited from Hellenistic Jewish exegetes and his understanding of the nature of *haeresis* among philosophers and heretics.

The net result of this in both contexts is clear. The revelation of the physics-heresy relationship delivers a blow to the heretical sects in favour of the orthodoxy. A central claim of early Christian rhetoric was the superiority of their wisdom, revealed by God, over earthly wisdom discerned through inquiry or stolen from the prophets and corrupted. Thus, if the teachings of a group within the Christian church, a group who claim not only superior knowledge over the Greeks but also secret *gnosis* apart from the rest of the faithful are exposed as being mere plagiarism of inferior worldly learning, it weakens

their claim to that *gnosis* and also their claim to being Christians. Irenaeus' argument does this doctrine by doctrine, while Tertullian's focuses on their schismatic nature in what was (nominally at least) a universal Church which admitted no divergence in doctrine.

While the information within the lists was sourced from doxographies, from the point of view of textual criticism they hold little interest. However, this is not to say that this study is fruitless. Rather, it shows us what authors were using doxographies for at a particular point in time. In this case doxographical material was being used by authors in the second and third centuries to construct polemic in order to delegitimize their Christian opponents. These attacks change the reader's perspective about the Valentinians, Marcionites, and other sects but also contribute to a shifting view of history, one of synthesis between the Greek and Hebrew historiographical tradition into a new Christian one which appropriates and supersedes both. In this we see the role of the early physicists and their contributions to the development of philosophy shift. In Aristotle's *Metaphysics* we saw the material monism of Thales and the Milesians develop into the dualist system of Parmenides and the Eleatics, then the four-fold system of Empedocles' elements and lastly Aristotle's own system of causation and his addition of a fifth element. A similar developmental system is hinted at by Lucretius though it is Epicurus' atomism that is the summit of philosophical process. In these pre-Christian texts the earlier philosophers are seen to contribute through a dialectic process to the development of the Hellenistic schools of philosophy, but in these Christian texts we see the focus begin to shift. The end result of this doxographic dialectic is not the development of philosophy from physics but the development of heresy within the Christian Church.

This is of course, not the sole development. Early Christian authors drew on biographical traditions about the philosophers in order to subordinate Greek wisdom to divine revelation. In a different vein, as the Liberal Arts tradition developed in Late Antiquity and the Early Middle Ages, the early philosophers acquired roles of first inventors of the various disciplines and status as the ones who added the study of astronomy, music, rhetoric, and geometry to the curriculum. These are other avenues for exploration of the dynamic historiographical roles of the Presocratics in the early centuries of the first millennium of the Common Era.

Chapter Three: The Christianisation of Empedocles' Roots: Elemental Physics in Genesis Commentaries

1. INTRODUCTION

Empedocles is unique among the Presocratic philosophers in terms of his work's legacy in the natural sciences, with his ideas holding sway for over a millennium after his death. From Aristotle onwards it was understood that his primary contribution to natural philosophy was his proposal that there are four primary bodies from which all material bodies are generated and into which they eventually decay, uniting through the influence of Love and separating through Strife. Of all physical theories of the Presocratics, his was arguably the most influential as modified versions of Empedocles' thesis came to be incorporated into the physics and world-systems of many schools of philosophy during the Hellenistic and Roman periods. The success of the theory is due in part to its adaptability, and different groups adapted the theory to suit their circumstances. Plato, Aristotle, and the Hellenistic schools modified the theory to suit their natural philosophies. Through its reception in the Islamic world it would form a fundamental part of the study of alchemy in the Middle East and Europe during the Middle Ages. While Christian authors were typically reticent to endorse any theories of natural philosophy, the idea of the four elements is taken as a given in Patristic works, attesting to the centrality of the theory to ancient understanding of nature. This chapter seeks to examine early examples of Latin Christian discourse on the four elements and in doing so, shed light on the efforts to reconcile a theory of ancient science with the Christian account of creation.

Following the rise of Christianity, the theory found its way into the exegetical works of Ambrose of Milan (337-397) and Augustine of Hippo (354-430) where it was incorporated into a Christian cosmology. Subsequent generations of Christian authors accepted the existence of the four elements as a given fact based on these works and the theory's place as a cornerstone of the science, natural philosophy, and esotericism was cemented for centuries to follow. Hexaemeral literature, or exegesis and commentary on the six days of creation in the book of Genesis was initially the pursuit of Jewish writers such as Philo and Josephus before the rise of Christianity.²²¹ The theory of the four

²²¹ F.E. Robins, *The Hexameral Literature: A Study of the Greek and Latin Commentaries on Genesis*, (Chicago: University of Chicago Press, 1912), p. 24. Robins touches on this history of the Jewish origins of Christian hexaemeral writings though it is not the main subject of his book. He devotes a chapter to the influences of the philosophers on the genre but his focus is primarily on the reception of Platonic theory of forms. The role of the theory of elements in the text of *De Genesi ad Litteram* is discussed briefly. His

elements stands out among theories of the natural sciences among Christian authors because it was integrated into the Christian worldview with relative ease. Whereas the other material first principles were dismissed by Christian authors as the deification of base matter (see chapter two 5.1 above), the four elements were seamlessly woven into the creation story of Genesis, although as I shall argue, not without modification. This ‘Christianising’ of the elements is seen in the various changes made to the theory, specifically the appearance of *caelum* (heaven) as an element, the responses to Aristotle’s theory of quintessence, and the legacy of Empedocles’ causal elements, Love and Strife in Hexaemeral literature. The subject of this chapter is the transformation which the theory underwent in the exegesis of Ambrose in his *Hexaemeron* and Augustine in his *De Genesi ad Litteram*. More specifically, this chapter will present evidence for the Christianising of the elements by these authors within the context of natural philosophical discourse of their era, and examine the legacy of Empedocles in this transformation.

2. THE ADAPTABILITY OF EMPEDOCLES

2.1 Empedocles’ System

Empedocles, the fifth-century BCE philosopher, poet, and magician was a high-ranking citizen of the Sicilian city of Acragas, most famous in Antiquity for his conception of matter. In his extant poetic fragments he explores the nature of things and revealed to his audience that every body which exists is a combination of four fundamental bodies.²²² These primary bodies, which he termed ῥιζώματα ‘roots’, were thought to combine and separate, giving rise to all material natural phenomena in the world. These material principles combine and dissolve over time under the influence of Love and Strife. The four classical elements—earth, water, air, and fire—have been considered to have their

main observation is that all four elements were created simultaneously by God in Genesis 1:1 though he does not relate this to the text of *De Gen.* or to the theory itself (p. 68 n. 2).

²²² The question of whether or not Empedocles fragments belong to two poems or one is not relevant to the current argument, which will focus on the reception of Empedocles through indirect sources and the doxographical tradition. The more esoteric fragments of his work were divided into a second poem, the *Purifications*, while the ‘scientific’ study of matter was classified as the poem *On Nature*. In his article ‘Über die Gedichte des Empedokles’, *Sitzungsberichte Der Preussische Akademie Der Wissenschaften*, 63 (1898), 396–415, Diels set out the case for dividing the fragments along religious and scientific lines, arguably imposing then current notions about the differences between science, religion, magic and philosophy on a Sicilian poem from the fifth century BCE. In the twentieth century, scholars began to question these divisions and the boundaries drawn between the two poems and while the debate about dividing the poems in two is far from resolved, it need not be addressed for the purposes of this chapter. Translations of the fragments are taken from Brad Inwood’s edition which treats the fragments as belonging to a single poem. For more on this question see Catherine Rowett (Osborne) ‘Empedocles Recycled’ *The Classical Quarterly* 37 (1987), 24-50 (pp. 24-32).

basis in Empedocles' system since at least the time of Aristotle. While they are certainly grounded in Empedocles' work, the precise identity of the four roots has not been without controversy, in particular Empedocles' αἰθήρ and its interpretation by later authors has been a bone of contention for some time now. Aristotle and the doxographical tradition perpetuated the idea that Empedocles' roots were earth, water, air (ἄήρ rather than αἰθήρ, with the latter being interpreted as a fifth element) and fire as well as that he was the first to propagate this four-element doxography.

In fr. 6, Empedocles introduces the four roots of all things, naming them after four gods and hinting at their attributes. The four are named as Zeus, Hera, Nestis, and Aidoneus, (i.e. Hades), and three are supplied either with epithets or further descriptions. Zeus, we are told is bright or shining; Hera is called the bringer of life, an epithet of the goddess Gaia in Hesiod's *Theogony*.²²³ The allusion to moisture in Nestis' tears is taken as a sign that she represents the aquatic element in this system. Nothing further is said of Aidoneus. The interpretation of the passage has generated controversy in the ancient world as it does today, giving rise to differing interpretations rooted in mythology, word-play and intertextuality.

While the identities of two elements—earth and water—are clear, a persistent problem for scholars has been the precise identities of the last of Empedocles' roots. The cause of this problem is the distinction between ἄήρ and αἰθήρ and their relationship to fire. Between Empedocles and Aristotle, the meaning of the word αἰθήρ had changed. Initially referring to air, it had become a poetic word and technical term referring to the bright shining upper airs. Through his understanding of the term Aristotle's specific meaning, Aristotle favoured the word ἄήρ as a general term for air, using αἰθήρ as a name for the outer boundary of the cosmos. Aristotle's understanding has coloured later readings and even textual criticism of Empedocles.

In the extant fragments of Empedocles, he introduced the idea that generation and corruption are illusory in nature.²²⁴ As with the other Presocratics we can understand there to be an underlying principle of conservation that nothing comes to be from nothing and conversely nothing returns unto nothing. The reality of the world is that bodies are compounds made of different stuffs and ultimately they dissolve into their primary bodies, in his account, the four roots. Like the roots of a plant in soil, these particles interlock and weave together, ultimately forming compounds. Though initially introduced in the guise

²²³ Hesiod, *Theogony* 693.

²²⁴ DK 8; 17.

of gods, throughout the poem these four roots take on more familiar names of γαῖα, ὕδωρ, πῦρ, and αἰθήρ (earth, water, fire and *aither*), which combine to form compound bodies through Love, and separate into isolation through Strife.²²⁵ The matter of the identity of the elements has been contested continuously for over two thousand years.²²⁶ For example, Aristotle interpreted *aither* in a very different way. Empedocles' *aither* was interpreted by Aristotle as air, which fed into the doxographical tradition. Aristotle, understanding *aither* as a poetic word for the shining upper airs, used it as a term for a fifth element which composed the outer boundary of the cosmos. Such interpretations informed the doxographical tradition, and by extension, how Empedocles was understood throughout Antiquity.

Empedocles introduced the four roots at fr.6, not as inanimate matter but as four gods: 'Gleaming Zeus, life-bringing Hera and Aidoneus and Nestis, who moistens with tears the spring of mortals'.²²⁷ Both ancient and modern interpreters of this passage, reading it in the light of the later reception by other philosophers, have sought to identify which root corresponds to which deity drawing on the qualities of the gods and the elements to connect the two. Peter Kingsley offers a survey of these attempts over the past two millennia and identifies different strands of interpretation.²²⁸ Zeus, because of his associations with the thunderbolt, is assumed by many to be fire and Nestis, a seldom-discussed nymph, is often taken as representing water. The Theophrastean interpretation, presented by Diels, asserts that Hera is air and Hades is earth, but this stance is not without its difficulties. The problems arise when the text is analysed intertextually, as the epithet of Hera, 'life-bringing', a clear allusion to the earth goddess Gaia, and thus the element of earth.²²⁹ Conversely, later Stoic etymological strategies resulted in an allegorisation of the goddess as the element of air because in Greek, *Hera* is an anagram of ἀήρ.²³⁰ The other line of reasoning, found in Diogenes Laërtius, asserts that Hera must be earth because of the allusion to Hesiod, leaving Hades as air by process of elimination.²³¹

²²⁵ DK 109.

²²⁶ I have left the elements of *aither* and *aer* untranslated deliberately, to reflect the ambiguity which exists around these terms.

²²⁷ Translations of the fragments of Empedocles are from Inwood's edition, but I have used the Diels-Kranz numbering of the fragments. A table of concordance is found in Inwood pp. 295-99.

²²⁸ Peter Kingsley, 'Empedocles and His Interpreters: The Four-Element Doxography', *Phronesis*, 39.3 (1994), 235-54.

²²⁹ Hesiod, *Theogony* 693.

²³⁰ Cicero, *De Natura Deorum* II 66.

²³¹ Diogenes Laërtius, *Lives* VIII 2.76.

None of these lines of reasoning are without objections. Why does Zeus represent fire because of the thunderbolt but not air when his domain is heaven?²³² What does Hades have to do with air? Who is this otherwise unknown divinity, Nestis and what is she doing in the company of Zeus, his brother and his sister-wife? Kingsley has proposed an alternative interpretation in his 1995 treatise.²³³ He places these lines in the context of the place and time of the poem's composition, and argues that there is ample evidence, textual, archaeological and geographical, that points to an entirely different reading of Empedocles's roots. He sets out the case that *aither* is the substance out of which the heavens are formed while the air which we breath is understood as a compound of *aither* and water rather than a separate primary body. Kingsley's work brought a unique perspective to the study of Empedocles, and transported the poem from the context of its later readership and interpretation to its original *locus* of Sicily in the fifth century BCE.²³⁴ Responses to Kingsley tend to stress the differences between his reading of Empedocles and the wider Hellenic conceptions of the nature of Hades and Tartarus, setting aside the Sicilian setting and Italian religious, mystical and philosophical context of the poem. Indeed, this is one of Michael Shaw's main criticisms.²³⁵

Kingsley's thesis has been subject to some criticism since its publication, attracting many reviews as well as more detailed responses in published works, ranging from praise to dismissal. In a 1998 review, Denis O'Brien pointed out some anomalous evidence from Plutarch which may contradict his conclusion that in fr. 6, Zeus represents *aer* and his discussion and subsequent emendation *aer* to *aither* in fr. 100.²³⁶ O'Brien takes exception to some of Kingsley's use of later witnesses to Empedocles, namely the ninth-century Arabic alchemic work *Turba Philosophorum* which Kingsley used to bolster his position that Empedocles' cosmology featured a central fire *vis à vis* other ancient cosmologies. In contrast with O'Brien's detailed refutation of parts of Kingsley's argument, another reviewer, Anne Shepherd, praises the work as a remarkable achievement, though has some reservations about the author's tendency to be dogmatic.²³⁷ Shepherd by contrast does not object to the examination of the later tradition

²³² Homer, *Iliad* XV 187-92.

²³³ Peter Kingsley, *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean Tradition* (Clarendon Press ; Oxford, 1995).

²³⁴ Kingsley, pp. 13-213.

²³⁵ Michael M. Shaw, 'Aither and the Four Roots in Empedocles', *Research in Phenomenology*, 44 (2014), 170-93.

²³⁶ Denis O'Brien, 'Review. *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean Tradition* by Peter Kingsley' *Isis*, 89.1 (1998), 122-24.

²³⁷ Anne Sheppard, 'Empedoclea', ed. by P. Kingsley, *The Classical Review*, 46.2 (1996), 269-71.

as a source of information for Empedocles, and sees much potential in the examination of the Presocratics as religious figures, within certain limits.

Jonathan Barnes offered an erudite but highly critical response to Kingsley's book.²³⁸ He is particularly critical of Kingsley's approach to Zopyrus of Tarentum, the fifth century Pythagorean author of the Orphic poem the *Krater*, which Kingsley argued was influential on the topographical description of the Underworld in Plato's *Phaedo*. In a nutshell, Barnes objected to the suggestion that fifth century Tarentum and Athens are in any ways comparable in terms of their cultural capital, suggesting that he views Athenian superiority as self-evident, rather than as a result of fifth-century Athens' military imperialism and cultural hegemony on the Greek world. One cannot help but discern a rose-tinted view of the past in Barnes' assertion that 'what makes the Presocratics genial figures is not the darkness in which, like the rest of mankind, they stumbled about but the candle of reason which they lit and which fitfully illuminated their landscape'.²³⁹

In contrast to the philhellenic undertones of Barnes' review, Guy G. Stroumsa placed Kingsley's work within the wider academic context, and the trend towards breaking down the distinctions between the Greek and wider Near Eastern world.²⁴⁰ In Stroumsa's view, Kingsley's work belongs with the works of Walter Burkert and Kingsley's *Doktorvater* Martin West. Although these ideas have gained more currency among scholars today, at the time it was a minority position, with the world of scholarship having been scandalised by Bernal's *Black Athena: The Afroasiatic Roots of Classical Civilisation* a little more than a decade prior. In this vein, Kingsley's work identifies not only the influences of Near Eastern cultures on Greek thought but then looks to how these ideas were transmitted in both the West and the East via philosophy, hermeticism and alchemy. Michael L. Morgan too places Kingsley's work in a wider academic context, situating it in the tradition of Harold Cherniss, noting their shared criticism of Aristotle's reliability on the Presocratics, and among those who emphasise the more esoteric aspects of Presocratics as a hermeneutic tool for understanding them.²⁴¹ The main shortcoming which Morgan sees in Kingsley's work is that the consequences for applying these views

²³⁸ Jonathan Barnes, 'Review. *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean Tradition* by Peter Kingsley', *International Journal of the Classical Tradition*, 4.3 (1998), 460–62.

²³⁹ *ibid.* p. 462.

²⁴⁰ Guy G. Stroumsa, 'Review. *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean Tradition* by Peter Kingsley', *Numen*, 44.2 (1997), 211–13.

²⁴¹ Michael L. Morgan, 'Review. *Ancient Philosophy, Mystery, and Magic: Empedocles and Pythagorean Tradition* by Peter Kingsley', *The American Historical Review*, 102.4 (1997), 1129–31.

to the other Presocratics is never broached in detail beyond Parmenides, raising the question of whether or not Empedocles and Parmenides are exceptional cases or not.

Richard Janko, in his discussion of the relation between the physicist and the hierophant in Aristophanes' *Clouds* draws on Kingsley's work, and argues that the book has "radically revised our understanding of this thinker [i.e. Empedocles]".²⁴² Kingsley's work proves grist to his mill, arguing that early philosophy was steeped in the mystic and initiatory language.

Although the reactions to Kingsley's work have been wide ranging, nevertheless the utility of his work as a lens through which we can view the fragments of Empedocles is attested in scholarship. Taking on board the criticisms, O'Brien's in particular, I will proceed with caution, and identify certain points where Kingsley's approach may prove fruitful for our current endeavour.

After the above introduction to the roots as divinities, Empedocles refers to the four by his standard names for them. At fr. 109 he tells us 'By earth we see earth; by water water; by aither shining aither; but by fire blazing fire; love by love and strife by baneful strife.'²⁴³ It is this term αἰθήρ which has posed some problem for interpretation, not least of all because later in Aristotelian usage, it means a fifth element which is neither earth nor water nor air nor fire. In later Greek usage, it is the bright shining upper airs, as opposed to the dense and humid lower airs. Ἄήρ was said to occur in the fragments of Empedocles five times, but in his survey of the word in the fragments and the history of their editions, Kingsley concludes that there is only one authentic Empedoclean use of the word and that αἰθήρ was his standard term for the primary body. Ἄήρ is a compound rather than a root. Over the centuries, αἰθήρ was read as a poetic synonym for ἄήρ or in the Peripatetic context, as a fifth element.

In various fragments of Empedocles, we are given some insight into the nature of the four roots, and they appear to be alluded to under different guises. In fr. 109 he names them plainly as earth, water, *aether* and fire. In fr. 6 they are alluded to under divine personages as Zeus, Hera, Nestis and Aidoneus, and in fr. 22 Empedocles points to the four on a more cosmic scale as the sun, land, sky and sea. Empedocles presents the four roots with reference to the divine (either metaphorically or literally), the microcosmic and

²⁴² Richard Janko, 'The Physicist as Hierophant: Aristophanes, Socrates and the Authorship of the Derveni Papyrus', *Zeitschrift Fur Papyrologie Und Epigraphik*, 1997, 61–94, p. 69.

²⁴³ Kingsley, p. 221.

the macrocosmic bodies which they form the bulk of, giving us a sense of how fundamental these four roots are to all things.

Metaphor/Divinity	Primary Body	Macrocosmic Body
Zeus	<i>Aether</i>	Sky
Hera	Earth	Land
Nestis	Water	Sea
Aidoneus	Fire	Sun

The only problematic association here is between Hades, fire and the sun, for further explication of which we must turn to Peter Kingsley's treatment of this matter. Hades, of course, is the god of the underworld, more likely to be at home with damp and dark mists than with fire and light of the sun and thus appears to be the odd one out. Contextualising the matter to the poem's location of Sicily, where fires are to this day seen to arise from Mount Etna, the notion of subterranean fires is an uncontroversial one within the context of the poet's *locus*, and is indeed attested by Empedocles himself at fr. 52, which asserts that there are many fires beneath the earth. Indeed, the sun itself has many connections with the underworld and the world of the dead, paradoxical thought it may seem. Richard Seaford has argued that the practise of mystic initiation was deeply interconnected with early Greek philosophy, including the idea of unity between initiates and the cosmos in death, and has documented attestations of the presence of the sun in the underworld.²⁴⁴ The two are not nearly as far removed from as one might expect and connections were drawn between the sun and the underworld, both in Greek literature and in the wider world of the ancient Near East.

What then are the qualities of aither? We know from fr. 109 that it is shining, which may lead us to think it is fiery. At fr. 22 we get a glimpse of the parts of the world formed mostly from a single root: the sun, the land, the sky and sea. The sun is plainly composed of fire, the land earth, the sea, water and the sky, *aither*. In this system we see that the macrocosm reflects the microcosmic order of the roots. The aither extends from the surface of the earth up to the boundary of the cosmos, the sky, which in the doxographical tradition is said to be solid, composed of 'air solidified in the manner of ice by fire'.²⁴⁵ This is not to say that the heat of the sun froze air into a solid mass but can

²⁴⁴ Richard Seaford, 'MYSTIC LIGHT IN AESCHYLUS' BASSARAI', *The Classical Quarterly*, 55.2 (2005), 602–6.

²⁴⁵ Aëtius, II 11.2; tr. Brad Inwood, *The Poem of Empedocles: A Text and Translation with an Introduction*, Phoenix Pre-Socratics, 3 (London: University of Toronto Press, 2001), p. 180.

be likened to Empedocles' statements regarding the solidifying of salt from seawater by the heat of the sun.²⁴⁶

Empedocles's system of physics includes two additional features, which since Aristotle have been understood as his explanation of causality. Various terms 'forces' as part of a 'cosmic cycle', Love and Strife have central roles to play in Empedocles' cosmos.²⁴⁷ Love acts as a binding agent for the four roots, bringing them together and forming complex compounds from the simple bodies. Strife acts contrary to Love and separates the four roots. The agents of combination and separation appear to reach extremes over time, with a total union under Love resulting in a sphere and a total separation under Strife.²⁴⁸

In addition to the four roots, two further principles feature in Empedocles' cosmos, known as Love and Strife. I follow Gregory in avoiding referring to Love and Strife as forces.²⁴⁹ Aristotle interpreted these as Empedocles' adding an efficient cause to the material cause of the four elements, thus synthesising his predecessor's principles. In the fragments, these two agents appear to alternate in dominance, affecting the extent of mixture, separation and motion of the four roots. The long fr. 17, found in Simplicius' commentary on Aristotle's *Physics*, expands on the nature of the agents. Love, whom mortals call Gethosyne (Joy) and Aphrodite, serves to explain generation without contravening the principle of conservation which we see in fr. 12: 'For it is impossible that there should be coming to be from what is not and what is should be destroyed is unaccomplishable and unheard of'.²⁵⁰ Aphrodite, we are told plays a role in uniting bodies together. At fr. 22 we are told:

'For all these things—the [sun's] gleam and earth and sky and sea are fitted together with their own parts, which were separated from them and born among mortal things. In the same way, as many as are apt for blending have come to be loved by each other, made alike by Aphrodite; but those are most hostile which are most separate from each other in birth and blend and moulded forms, completely unaccustomed to come together and very mournful, due to their birth in strife, since their births were in anger.'²⁵¹

²⁴⁶ James Longrigg, 'Κρυσταλλοειδῶς', *The Classical Quarterly*, 15.2 (1965), 249–51.

²⁴⁷ KRS, pp. 287-96.

²⁴⁸ On the interpretation of these extremities, see McKirahan, pp. 262-266; Denis O'Brien, 'Empedocles' Cosmic Cycle', *The Classical Quarterly*, 17.1 (1967), 29–40.

²⁴⁹ Gregory, *Ancient Greek Cosmogony*, p. 82.

²⁵⁰ Brad Inwood, *The Poem of Empedocles: A Text and Translation with an Introduction*, Phoenix Pre-Socratics, 3 (London: University of Toronto Press, 2001) p. 221.

²⁵¹ *ibid.* p. 235.

The four macrocosmic bodies—the sun, land, sky and sea—are compounds stemming from the four roots. The roots in turn, are separated from these four masses—fire from the sun, earth from the land, *aither* from the sky and water from the sea—and from there give rise to the processes of generation and decay. These bodies, separated off from the larger masses, are made alike by Aphrodite, and love each other (ἀλλήλοις ἔστερκται ὁμοιωθέντ' Ἀφροδίτη), combining into the compound bodies of mortal things. This process however, appears to have its limits in that not all things are accustomed to combining. Presumably, outside of the total dominance of Love and the formation of the sphere, certain compounds do not unite with others. Strife separates bodies and roots from larger masses, and Love makes them alike and combining into masses.

For our present purposes, his point about the distinction between the primary body *aither* and compound body *aer* will prove useful when interpreting the portrayal of the four elements in Ambrose of Milan's *Hexaemeron*.

2.2 Plato's Kinds

In Plato's dialogue the *Timaeus*, the eponymous speaker sets out a geometrical conception of matter which blends Empedocles' four roots with Platonist geometry. The four elements or γεναί 'kinds' are described as polyhedron forms some of which are interchangeable on account of their similar composition. At 53c-55c the transmutation of the kinds is explained in terms of triangles. The tetrahedron fire, octahedron air and icosahedron water are all formed from planes of half-equilateral triangles and may mutate from one to another.²⁵² Cubic earth is made of square planes (which can be bisected into two right-angled isosceles triangles) and is therefore not interchangeable with the other three. This sets out a physical system of transmutability through which the primary bodies, with the exception of earth, can change into one another, a system which Aristotle would build upon in his own physics.

Plato does not accept the existence of these four kinds on Empedocles' authority, but instead offers an argument for why these primary bodies must exist and why there must be four of them. Fire and earth are reasoned to exist because in order for bodies to be visible and tangible they require the light of fire and the firmness of earth. These two primary bodies are joined with a third to bind them together and the fourth is introduced

²⁵² Plato, *Timaeus* 53c4-8.

on the grounds that a fourth kind is required to form three dimensional space.²⁵³ His grounds for the use of the four kinds, as well as their description, do not make overt reference to Empedocles.

In addition to the four polyhedra mentioned above the *Timaeus* discusses another regular solid—the dodecahedron—for Plato's craftsman god to put to use in his creation. At 55c we are told that this was used for the whole of the world and inscribed with the symbols of the zodiac. The cosmos itself is a sphere, and of all the regular solids the dodecahedron most closely approximates the sphere in volume.²⁵⁴ Plato's depiction of the kinds as the regular solids raises begs the question as to whether the spherical/dodecahedral cosmos constitutes a fifth kind or is composed of the other four. The matter was not elaborated on in the dialogue, and the exact composition of the outer heavens is left unclear.

2.3 Aristotle's Elements

In contrast to Plato's conception of geometrical primary bodies, Aristotle defines these bodies not by their shape but by their qualities, locations, and motions. While he acknowledged in *Metaphysics* A that Empedocles was the first to say the primary bodies were four, rather than roots or kinds, he referred to these bodies as στοιχεῖα, that is elements or syllables, and categorises them based on four qualities which they may possess: hotness, coldness, dryness and wetness. The elements are thus defined by the two qualities which they possess e.g. fire is hot and dry, air hot and wet, etc.²⁵⁵ These elements are not immutable in this system, and like with Plato's kinds in the *Timaeus*, they may change into one another through processes of rarefaction and condensation. The four qualities are not the sole features of these elements, which possess natural motions and locations in the cosmos. The lighter elements of fire and air tend to move upwards to the periphery of the cosmos, while the heavier elements water and earth have a downward motion towards its centre. Compound bodies, being aggregates of these elements with differing trajectories, were ultimately fated to be pulled apart, accounting for decay. These natural vertical motions towards and away from the centre of the world however, did not account for the apparent circular motion of the heavens, prompting Aristotle to

²⁵³ The mathematical aspects of this reasoning are explained in *Plato's Cosmology: The Timaeus of Plato Translated with a Running Commentary*, ed. by Francis Macdonald Cornford (London: Routledge, 1966), pp. 43-52.

²⁵⁴ Cornford, pp. 218-9. Cf. Plato *Phaedo* 110B.

²⁵⁵ Aristotle, *De Gen. et Cor.* 330b.

propose a solution in the form of an additional element with a differing motion and location.²⁵⁶

Aristotle's fifth element differed from the other four significantly. Its motion was circular rather than linear so it did not interact with the elements. Because of this, the body composed of it (the boundary of the cosmos) was unmixed and not subject to decay like the sublunary bodies. Thus his element could account for the celestial motion and the apparent unchanging nature of the heavens. Etymologising αἰθήρ as ἀεὶ θεῖν 'always runs', he rationalized the uncertainty in the meaning of the word to demonstrate that αἰθήρ is distinct from ἄήρ both in its nature as a separate element and in its natural motion.²⁵⁷ The celestial αἰθήρ of Aristotle is described as divine, everlasting and by virtue of the fact that it is unmixed with the other elements, not subject to corruption.

2.4 Aristotle's Empedocles

Aristotle's *Metaphysics* A, in particular its representations of the Presocratics, influenced the secondary reception of Presocratic philosophy through the doxographical tradition. Ever since Cherniss, scholars have seen the need to approach both Aristotle's and Theophrastus' interpretations of their predecessors with caution.²⁵⁸ In the *Metaphysics*, Aristotle presented his philosophical predecessors in a way which warrants scepticism from the reader. At A983b-4b Aristotle represented the first principles of the philosophers in a quasi-Hegelian dialectical process of thesis-anti-thesis-synthesis. There is a clear narrative of progress from simple ideas to more complex ones. Thales, he tells us, said the principle was water. Anaximenes and Diogenes disagreed and said it was air. Then Hippasus and Heraclitus said it was fire, before at last Empedocles brought this dispute to its end by synthesising all three principles with the addition of a fourth, earth. Shortly after in the treatise, he presents a similar process of dialectical development with regards causation. The material monists only considered the material cause of things but then Empedocles introduced the efficient cause in the unifying and separating influences of Love and Strife. This dispute is then brought to its end with Aristotle's fourfold system, synthesising the material, efficient, formal, and final causes. Empedocles' four roots, combining and separating through Love and Strife were reformed by Aristotle into material causes, elements and alongside this their nature is altered, owing to the change

²⁵⁶ Aristotle, *De Caelo*, 269b-270b.

²⁵⁷ Aristotle, *De Caelo* 270b21-6.

²⁵⁸ Cherniss, pp. 1-144.

in meaning of αἰθήρ and ἄήρ which occurred over the intervening century.²⁵⁹ In essence, what this means is that there was ambiguity surrounding the interpretation of Empedocles for ancient readers as well as modern.

2.5 Stoic Adaptation

The Stoics were no exception to this trend of adapting the theory to suit their cosmology or ontology.²⁶⁰ Diogenes Laërtius records that Zeno of Citium, Chrysippus, and Archedemus all wrote on the topic of elemental physics. Unlike the Epicureans they took the elements to be primary bodies but drew on the Aristotelian concept of elemental qualities and natural location.²⁶¹ They differed from Aristotle however in conceiving *aither* and fire to be one and the same but also in that they did not conceive of the elements as sempiternal with the cosmos. Rather they were primary bodies which endured through each iteration of the cosmic cycle but were ultimately destroyed at the conflagration.²⁶² Furthermore, the Stoics ascribed primacy to fire, viewing God as a designing and providential fire. For the Stoics fire marked the beginning and end of the cosmos, with the other elements condensing from fire at the start and being consumed by fire at the end. Again, we see that the theory proved to be quite adaptable across a range of cosmologies and doctrines in the ancient world.

2.6 Latin Reception and Adaptation

The earliest extant Latin discourse on Empedocles' four elements comes to us from the Epicurean poet Lucretius in his extensive poem on nature, *De Rerum Natura*. In the first book he scrutinises other Presocratic philosophical theories and offers atomist critiques of Anaxagoras' *homoeomeria*, Pythagorean harmony and the Empedoclean theory of the four elements. There is a degree of mockery in his depiction of Anaxagoras and Heraclitus, but Empedocles is addressed in a more reverential tone. As Robert Brown puts it, Lucretius shows us Empedocles as 'the flawed visionary', whose discoveries are steeped in oracular terms yet fall short in the end in the face of atomist criticism.²⁶³ While he acknowledges Empedocles as having been so brilliant a philosopher that he could scarcely

²⁵⁹ Kingsley, pp. 15-35.

²⁶⁰ The Epicurean source for atomist discourse of Empedocles and the four elements is Lucretius, so the Epicurean stance is discussed below under the heading of Latin Reception.

²⁶¹ Diogenes Laërtius *Lives* VII 137.

²⁶² A. A. Long and D. N. Sedley, *The Hellenistic Philosophers: Volume 1, Translations of the Principal Sources with Philosophical Commentary* (Cambridge: Cambridge University Press, 1987), p. 268.

²⁶³ Robert D. Brown, 'Lucretian Ridicule of Anaxagoras', *The Classical Quarterly*, 33.1 (1983), 146–60 p. 148.

have been a mortal, he points out several flaws in the theory and offers both atomist objections to the theory and an explanation for why Empedocles may come to form it from a cultural, or perhaps even geographical relativist perspective.²⁶⁴ Substantially the main difference between the Lucretian and earlier adaptations is the introduction of a distinction between primary bodies and the four elements. He argues that there must be something beyond the four elements in the grand scheme of things because of what he perceives as flaws in elemental theory (e.g. I 782-93 if the elements can mutate into one another, then they cannot be said to be imperishable *per se* and must be composed of some other essence because fire and water, for example, are noted as being mutually destructive at 757-63). He does not rule out the possibility that the elements exist or that other bodies are composed of them, but following the atomist theory the four by their tangible and perceivable nature are composite bodies and are thus subject to decay. This atomist view of the four elements was the exception rather than the norm, with most of Empedocles' interpreters understanding the elements as primary bodies rather than compound ones.

Lucretius hints at a worldview in which the four elements of Empedocles are useful compounds for growth and life (I. 803-13), and on a larger scale compose the sky, sea, earth, and sun. The four elements in Lucretius have a microcosmic role of sorts (despite their compound nature) as well as a macrocosmic role. David Sedley discusses the Empedoclean nature of this connection between these bodies and their chief components.²⁶⁵

Cicero, in a letter to his brother Quintus, briefly discussed Lucretius' *opus* in connection with another work, the *Empedoclea* of one otherwise unknown figure Sallustius.²⁶⁶ Sedley has argued that the title of this poem suggests that it is a Latin translation of Empedocles, given that Cicero calls his own translation of the *Phaenomena*, Aratus' didactic poem on astronomy, the *Aratea*.²⁶⁷ Although the question of titles in Antiquity is a thorny subject, Sedley suggests that this may well be a Latin translation of

²⁶⁴ At I 716-33 Lucretius argues that between the fertile land of the island of Sicily, the winds and storms which batter it, the sea which surrounds it on all sides and the fires which rise from Mount Etna (to say nothing of the heat of the Mediterranean sun) it was only natural that Empedocles' surroundings, in the absence of the explanations offered by atomism, would lead him to conclude these to be the four primary constituents of all nature.

²⁶⁵ D. N. Sedley, *Lucretius and the Transformation of Greek Wisdom* (Cambridge University Press, 2003), pp. 14-5.

²⁶⁶ Cicero, *Ad Quintum Fratrem* 2.9.4.

²⁶⁷ David Sedley, 'The Proems of Empedocles and Lucretius', *Greek, Roman and Byzantine Studies*, 30.2 (1989), 269-296.

Empedocles, indicative of first hand knowledge of the work on Cicero's part. However, his presentation of the four elements of Empedocles in the *De Natura Deorum* is one which suggests a superficial understanding of the work. The Epicurean interlocutor Velleius refutes the views of the Presocratics on the divine prior to setting out the Epicurean stance on theology. The passage itself is informed by the doxographical tradition, and as Diels showed it bears strong similarities to the fragments of Philodemus's *On Piety*.²⁶⁸ Curiously, Empedocles is reprimanded by the speaker for elevating the four elements to godhood, likely a reference to fr. 6 interpreted very literally by an Epicurean.²⁶⁹ As seen in Lucretius, the Epicurean stance on the four elements maintains that since they are compound bodies, they are subject to dissolution, a quality ill fitting of immortal gods.

Yet in interpreting this we must bear in mind two important details. Firstly, that this work is a dialogue, and in the spirit of Plato, dialogues often made use of irony. Secondly, it was no secret that Cicero was hostile to Epicureanism, which he viewed as dogmatic and hostile to republican political life. Accordingly, that he might have placed a superficial reading of Empedocles in the mouth of an Epicurean should not come as a surprise to us. Indeed, MacKendrick & Singh note that this particularly narrow reading of Empedocles (e.g. that Empedocles said Zeus is really aither, Hera earth etc.) may be a deliberate change on Cicero's part to make the Epicurean speaker seem very literally minded, given the school's traditional aversion to poetry.²⁷⁰ While Cicero does not engage in detail with the physical theories enough to show any sign of modifying it, there is some circumstantial evidence that he was at least familiar with the theory and with Empedocles, to say nothing of Aristotle's or Plato's interpretations (whose *Timaeus* he translated into Latin).

By the first century AD, there is some evidence that elemental theory had become somewhat of a consensus among literate Romans. Pliny the Elder (23 BCE-79 CE) claimed that the existence of the four elements was disputed by no one in his day.²⁷¹ In his account of the theory, he observes that the four elements are dispersed according to their weight, with the heavy and spherical earth at the centre of the cosmos, water

²⁶⁸ The section in question occurs close to the start of Philodemus' treatise, which being nearer to the exterior of the papyrus roll was more badly damaged and fragmented than the inner parts which make the parallels apparent. Diels, *Doxographi Graeci*, pp. 119-131.

²⁶⁹ Cicero, *De Natura Deorum* I 29.

²⁷⁰ P. L. MacKendrick and K. L. Singh, *The Philosophical Books of Cicero* (Duckworth: London 1989), p. 345 n. 4.

²⁷¹ Pliny, *Natural History* II 10.1.

covering its surface as the seas, lakes and rivers; light air blowing all about the heavens and celestial fires burning above us as the luminaries; the sun, moon, and the five wandering stars and the fixed stars beyond. Pliny's worldview of the four elements dispersed in this manner is likely informed by *De Caelo* which discusses Empedocles' theory of the four elements and compares them with other Presocratic theories.²⁷² This dispersal by weight becomes important to Christian exegesis later, especially in the discourse concerning the firmament, which I will return to below. Pliny affirms that the world is an eternal *numen* spatially limited but temporally unbounded, and the four elements—being the primary bodies of which the world is composed—are no different.²⁷³ The important details to take away from Pliny's account of the elements are that they are presented as being four in number, dispersed according to weight, fundamentally eternal and incorruptible and perhaps most importantly their existence is treated as undisputed.²⁷⁴

From the examples above it is clear that the theory of the four elements was likely the foremost theory of natural philosophy within Roman literary circles by the first century BC. Despite the variations seen among adherents of individual philosophical schools, the significance of these four elements (whether considered 'true' elements or compound of the real primary bodies) is clear. The theory had its essential qualities of the fourfold status of the elements, arranged according to weight, and fundamentally co-eternal with the world. Elemental physics were not so rigid that they could not be adapted to suit the physics of various schools of thought and later, as shall be discussed below, the Christians. It can be said with some confidence that the theory clearly enjoyed a status as consensus among the educated classes.

3. TOWARDS A CHRISTIAN ADAPTATION OF THE ELEMENTS

As we have seen from the above examples, Empedocles' theory proved adaptable and modifiable across a range of philosophical views in the ancient world ranging from fifth-century Athens to first-century CE Italy. With the adoption of Christianity as the main religion of the Roman world over the course of the third and fourth centuries it brought with it a set of assumptions about the cosmos at odds with past cosmological models:

²⁷² Aristotle, *De Caelo* 302a10-304b23.

²⁷³ Pliny, *Natural History* II 1.1.

²⁷⁴ Noteworthy *in absentia* in Pliny's account of the elements is Empedocles himself, who is only mentioned briefly as a source for the text and in relation to the history of philosophy and medicine in Books 29 and 30. He is noted as having been a *physicus* and a figure commanding some authority so it would be reasonable to assume that since the theory is not questioned by anyone the omission of its creator does not function to cast doubt on Empedocles' status as the theory's creator.

chief among these are the sentiments of the opening words of Genesis that this world had a beginning as well as in the apocalyptic prophesies of the New Testament that the world would end at an unspecified time in the future. While much of ancient physics revolves around a principle of conservation of matter, Christianity introduces a new paradigm wherein generation *ex nihilo* and inevitable annihilation are believed as fact. The need for a constant material principle which weathers the generation and decay of composite bodies, arguably the driving force behind ancient materialism, is done away with within this new worldview. As David Furley describes it ‘Such a theory [as Presocratic materialism] presupposes the conservation of matter, in some sense. “Nothing comes into being out of nothing and nothing passes away into nothing.” This became a slogan of Greek natural philosophers, of all persuasions and all ages; even those philosophers who thought the world was created by a Creator God described him as shaping the cosmos out of pre-existing materials, not as conjuring it out of nothing’.²⁷⁵ This discrepancy raises the fundamental question of why Christian authors employed this theory in their exegesis, given that the questions which materialist theories were used to answer had become redundant. This section seeks to shed light on the matter and argue that Christian authors engaged with elemental physics to lend scientific credibility to the biblical accounts of creation and eschatology.

3.1 Commentaries on Genesis

Christian commentaries on scripture lent a novel perspective on the texts but were not novelties in and of themselves. Drawing on longstanding Jewish scriptural commentary traditions as well as Greek and Alexandrian Homeric scholarship, Christian exegetes had many sources to draw on for their commentaries on the Bible. The Greek traditions of commentary writing—the process of atomising texts into lines and words and providing details to explain the text—is of considerable antiquity, dating back to at least the fifth century BCE with the Derveni Papyrus.²⁷⁶ As Christianity spread throughout the Mediterranean world, its converts who were trained in these literary and grammatical traditions were able to apply these techniques used to explicate Homer, Plato, and Vergil

²⁷⁵ David Furley J., *The Greek Cosmologists: The Formation of Atomic Theory and Its Earliest Critics*, 2 vols (Cambridge: Cambridge University Press, 1987), I, p. 20.

²⁷⁶ Funghi provides an overview of the debate about the genre of the Derveni Papyrus. While it certainly contains a commentary, there has been some dispute about whether or not it was a commentary as a whole, with some scholars interpreting it as allegorical exegesis. See Maria Serena Funghi, ‘The Derveni Papyrus’, in *Studies on the Derveni Papyrus*, ed. by André Laks and Glenn W. Most (Oxford: Oxford University Press, 1997), pp. 25–37.

to their own scriptures. Rabbinical commentary traditions were accessible through Hellenistic Jewish scholarship like Philo of Alexandria's commentary on *Genesis, De Opificio Mundi*. Before looking at the early Latin tradition of commentaries on Genesis and their treatment of the four elements, I wish to briefly examine one of the more influential Greek texts on Ambrose and Augustine, the *Hexaemeron* of Basil of Caesarea, and how it addresses elemental physics in its commentary.

3.2 Basil of Caesarea and the Elements

Basil of Caesarea (c. 330-379) was a Christian Church Father, bishop and author who wrote extensively on many topics pertaining to the faith, including monasticism, the Arian heresy and role of secular literature in a Christian life. An advocate for the Christian study of literature, Basil made use of philosophical and physical teachings in his Lenten sermons on Genesis—the *Hexaemeron*—with the aim of illustrating the beauty of God's creation. In terms of his source material, we can see hints that Basil refers not to the doxographical tradition *per se* but to its origins in the *Metaphysics* A. Looking for a place to begin with his homily on creation, he suggests that he might address the accounts on nature by the wise men of the Greeks. He states that each account overthrew the one which preceded it, an allusion to the linear progression of physics portrayed by Aristotle's account. Because each account contradicts its predecessor, Basil felt no need to engage with these theories. For him, their arguments about nature were self-defeating, for they did not recognise God as a causal agent in nature. Lacking this insight, he argues at I 2, they proceeded to speculate about material causes alone 'referring the beginning of the universe to the elements of the world'.²⁷⁷ Throughout the homily he stresses that the problems of generation and corruption which troubled generation after generation of philosophers were resolved by the opening line of Genesis, 'In the beginning, God created'.

His brief critique shows this paradigm shift from a principle of conservation to creationism. In his view, the questions which motivated the physicists are made redundant by Genesis. The world had a beginning at a point in time and matter was generated from nothing by God. One would expect this to be the end of his engagement with the physical sciences and yet this is not the case. Not long after his initial dismissal, Basil raises a challenge to the Pentateuch's account. There are three omissions from the account of

²⁷⁷ Basil of Caesarea, *Exegetic Homilies*, trans. by Agnes Clare Way (Washington: Catholic University of America Press, 1963), p.5.

creation as God is only seen to create one of the elements: earth. Water, fire, and air go unaccounted for. This objection raises the question as to why Basil felt the need to account for the four elements after his assessment of natural philosophy as an obsolete approach to nature.

The answer to this appears to lie in the widespread acceptance of the theory of the four elements. Even though we have some suggestions from the text that Basil was familiar with Aristotle's linear account of the development of physics, he doesn't engage with or problematize the fact that the four elements is one of these theories of the wise men of the Greeks which he had very recently dismissed. The philosophers, in his esteem, were wrong about the nature of generation and destruction, but the observation that there were four elements from which material bodies are composed is nevertheless a valid one. By the fourth century the theory had long been the consensus and this is not something which Basil shows any interest in contradicting on the grounds of its historical origins in natural philosophy. Instead of challenging a philosopher's godless speculation on the material cause, he embraced the idea and integrated it with a Christian worldview.

He engages with an idea about the nature of bodies which permeated ancient atomism and elemental physics: that anything which is not a primary body is a compound of primary bodies. As Empedocles said 'There is no growth of all mortal things, nor any end in destructive death, but only mixture and interchange of what is mixed exist, and growth is the name given to it by men'.²⁷⁸ All perceptible bodies in the world are compounds of the four substances. The Earth created at the beginning of Genesis is not simply a pure homogenous mass of the element of earth but the Earth, a mixture of the four elements. In support of this theory Basil furnishes examples of the other elements intermixed with the earth. 'Therefore, even though he [Moses] says nothing about the elements, fire, water, and air, nevertheless, by the judgment of your own intelligence, reflect, in the first place, that all things are compounded with all others, and that you will find water and air and fire in the earth, if really fire is struck from stones, and if from iron, which itself has its source from the earth, a plentiful fire is wont to shine forth when there is friction'.²⁷⁹ Flint, long used as an example of fire within an earthy body, is used to highlight the intermingled elements within compound bodies.²⁸⁰ As to water and air, he cites the evidence of water well diggers and certain 'vapours' which rise out of the moist

²⁷⁸ DK 8. Trans. Inwood, p. 221.

²⁷⁹ Basil of Caesarea, *Exegetic Homilies*, p. 13.

²⁸⁰ On the conception of flint or combustible materials like wood containing seeds of fire, see for example Vergil, *Aeneid* VI 6-7 or Lucretius, *De Rerum Natura* I 902.

earth when evaporated by the sun. Through these practical examples he demonstrates the theoretical point that the Earth, as a compound body, is a mixture of the four elements and so when all four were created they existed within the Earth. With these explanations, Basil legitimises the Christian usage of the four elements by demonstrating them to be accounted for in the scriptural narrative of creation.

A key difference between the Empedoclean and post-Empedoclean accounts of the elements is the absence of the unifying and sundering presences of love and strife. In Empedocles' account love draws the elements together and strife sunders them apart. In the later adaptations of the theory, love and strife are largely ignored in favour of the four elements. In the second homily, Basil briefly reflects on the nature of what unites the four elements into compound bodies, saying:

<p>Ὅλον δὲ τον κόσμον ἀνομοιομερῆ τυγχάνοντα ἀρρήκτω τινὶ φιλίας δεσμῶ εἰς μίαν κοινωνίαν καὶ ἁρμονίαν συνέδησεν.²⁸¹</p>	<p>The whole world, which consists of diverse parts, He bound together by an unbroken bond of love into one fellowship and harmony.²⁸²</p>
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Here Basil states that God bound the various parts of the world together through love, fitted together in harmony with one another. This assessment is reminiscent of a part of the *Timaeus* in which the titular speaker explains how God bound (συνέδησεν) the elements together and as a result the body of the world has love (φιλίαν τε ἔσχεν ἐκ τούτων).²⁸³ While Basil's account of love as an attractive and unifying agent for the elements echoes Plato's and Empedocles' versions, he concludes the section of his homily with an injunction against mythical fabrications (μυθικῶν πλασμάτων), alluding to the accounts of these past philosophers. As with Plato, love in this context binds the elements together but lacks the causal features of love in Empedocles. Agency in bringing these bodies together, as with generation in the first homily, is reserved for God. Basil's account of love here, as his account of the elements earlier, can be read as a reaction to Empedocles even though it is somewhat removed from his own work.

²⁸¹ Basil, *Hexaemeron* ed. by Jacques-Paul Migne, PG 29 II 2.6-7.

²⁸² Adapted from Basil of Caesarea, *Exegetic Homilies*, p. 24.

²⁸³ Plato, *Timaeus*, 32b5-c3.

4. LATIN COMMENTARIES ON GENESIS

While some other early commentaries on Genesis by Theophilus of Antioch and Origen survive, Basil's work was directly influential on the earliest Latin commentaries. At its core, Ambrose of Milan's *Hexaemeron* is largely a retelling of Basil's ideas for a Latin-speaking audience. Despite the lack of originality, the text is important for introducing Basil's arguments and ideas to the Latin-speaking West, including his interpretation of the four elements. Ambrose's convert from Manichaeism Augustine of Hippo also engaged in commentaries on Genesis, including his literal reading of the text *De Genesi ad Litteram*. Of particular concern will be their inquiry into finding the elements in the text just as with Basil, but also their discussions on the identity of the four elements, the possibility of a quintessence and the nature of the firmament.

4.1 Ambrose of Milan

Ambrose, a contemporary of Basil, largely rehashes his ideas in his own work, also named the *Hexaemeron*. The text was composed in the latter years of the fourth century. However, there are some differences between the two texts, in particular in their presentation of the four elements. While Basil understood the four elements as earth, water, air, and fire and proceeded to find them in the text of Genesis, Ambrose took a different approach by interpreting the text as explicitly stating the creation of an element besides earth. In the two extracts below we see Ambrose's interpretation of the elements in Genesis.

Hex. I 6.20

In his enim quattuor illa elementa creata sunt, ex quibus generantur omnia ista quae mundi sunt. Elementa autem quattuor, caelum ignis aqua et terra , quae in omnibus sibi mixta sunt, siquidem et in terra ignem reperias, qui ex lapidibus et ferro frequenter excutitur, et in caelo, cum sit ignitus et micans fulgentibus stellis polus, aqua esse possit intellegi, quae uel supra caelum est uel de illo superiore loco	'In fact, with heaven and earth were created those four elements from which are generated everything in the world. The elements are four in number: heaven, fire, water, and earth —elements which are found mingled in all things. You may find fire in earth, for in frequently arises from stones and iron; you may find it also in the heavens, since it may take fire and the skies may gleam with brilliant stars. In the heavens, too, we can perceive the presence of water, which is either above
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in terram largo frequenter imbre demittitur.²⁸⁴

the heavens or from that high position falls frequently to earth in heavy rainstorms.²⁸⁵

Hex. I 6.23

Cum alii conpositum caelum ex quattuor elementis adserant, alii quintam quandam naturam noui corporis ad constitutionem eius inducant atque adfingant aetherium esse corpus, cui neque **ignis admixtus sit neque aer neque aqua neque terra**, quod huius mundi elementa suum quendam habeant cursum atque usum et motum naturae, ut grauiora demergant et in pronum ferantur, uacua et leuia in superiora se subrigant—est enim proprius cuique motus—, in sphaerae autem circuitu ista confundi et uim sui cursus amittere, quoniam sphaera in orbem suum uoluitur et superiora inferioribus, superioribus quoque inferiora mutantur. Quorum autem secundum naturam motus mutati sunt, horum necessario ferunt mutari solere qualitates substantiarum suarum. Quid igitur defendimus aetherium corpus esse, ne uideatur corruptioni obnoxium? Quod enim conpositum ex corruptibilibus elementis est necesse est resoluatur.²⁸⁶

‘While some maintain that the heavens are composed of the four elements, others assign the formation of the heavens to what is called a fifth nature of new body. They conceive this body to be ethereal and unmixed with **fire, air, water or earth**, whereas the elements of this world have their own special course and customary motion according to nature, the heavier sinking downward; the light and rare elements rising upwards. Each of these elements has in fact, its own proper motion. However, in the circular quality of a sphere these elements are confused and lose the impulse of their course, inasmuch as a sphere is turned around in its orb and hence the elements above change place with the elements beneath and vice-versa. And where these movements have undergone chance in accordance with nature, they state that by necessity the quality of the substances therein usually suffers a corresponding change. Well, then, should we defend the theory of an ethereal body, lest the

²⁸⁴ Ambrose *Opera*, ed. by C. Schenkl, CSEL, 32, 3 vols (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 1897), 1, pp. 3-261.

²⁸⁵ Ambrose *Hexaemeron, Paradise and Cain and Abel*, trans. by John J. Savage, Fathers of the Church, 42 (New York: Fathers of the Church Inc., 1961), p. 19.

²⁸⁶ Ambrose, *Opera*, pp. 3-261.

heavens appear subject to corruption?
What is composed of corruptible
elements, for example, must of necessity
undergo dissolution.²⁸⁷

At I 6.20, Ambrose addresses the same problem as Basil in his second homily. Of the four elements only earth is said to have been created by God. If the creation of the other three cannot be found then the text appears to contradict a fundamental part of the natural sciences and the general consensus of the age that there were four elements. Ambrose follows Basil's argument that the two bodies created in the beginning are not pure homogenous bodies but compounds with the four elements present in them. He furnishes the argument with Basil's example of flint, which appears to 'contain' fire, but also expands the argument upwards to heaven, citing the fiery nature of the stars as evidence that heaven contains fire and precipitation as an example of heavenly water. We can see how Ambrose's *Hexaemeron* relies heavily on Basil's ideas about the elements but also expands on them.

The most noteworthy departure from Basil is Ambrose's presentation of the four-element doxography, in which air is notably absent. Consider his introduction of the elements in the first passage above '*Elementa autem quattuor, caelum ignis aqua et terra*'. This is a striking divergence here from traditional doxography as he lists the four elements as earth, water, fire, and heaven. What we see in this passage is a remarkable synthesis of the Christian and doxographical tradition, whereby Ambrose has taken the two created bodies from Genesis 1:1 and reinterpreted the nature of the four elements through this lens. In its place is *caelum*, which signals a departure from one tradition. That heaven or sky is an element of the world is stated as a matter of fact with no elaboration, but the reasoning behind it is plain to see. The body of Earth is composed mostly of the element earth, compounded with the other elements. Following the opening words of Genesis, it appears that Ambrose has considered the same holds for the skies. Just as Earth is composed of mostly earth, Heaven is composed mostly of heaven. Thus we see his solution to the absence of the elements in Genesis. Basil inferred them with reference to the compound nature of all bodies, but Ambrose went further and found them by making

²⁸⁷ Ambrose, *Hexaemeron, Paradise and Cain and Abel*, p. 24.

another element besides earth explicit within the text, rechristening the element *aer* as *caelum*. In his introduction of the four he presents them in a chiasmus, with the two explicitly stated elements earth and heaven on the outside bracketing the two implied elements water and fire on the inside. Even though Ambrose's work is largely derivative of Basil's, he did introduce innovations in his exegesis in his re-imagining of the element of air.

4.2 Augustine of Hippo

Ambrose's exegetical endeavours were also pursued by his convert Augustine, who penned several commentaries on Genesis during his lifetime. With Augustine, the picture is somewhat similar to Ambrose, although he deviates somewhat from his master's presentation of the four elements in *De Genesi ad Litteram*. The book examines the text from a literal rather than allegorical perspective, but employs the natural sciences insofar as they can be used as hermeneutic tools without contradicting scripture. For example, Augustine makes use of an astronomical theory about the motion of the planet Saturn but only to affirm the existence of supercelestial waters but does not address the premise of the theory of a spherical cosmos, a topic on which the Bible appears ambiguous. The book is not Augustine's only commentary on Genesis, and he provides other more allegorical readings of the text in *De Genesi contra Manichaeos*, the unfinished commentary *De Genesi ad Litteram Imperfectus Liber* and books XII and XIII of his *Confessions*. *De Genesi ad Litteram* is distinct from these, not only in the different reading of the text, but also in the scholarly attention which the text has received being one of the least studied works of Augustine and so making his commentary on physics in the text fertile ground for study.

His literal reading of the text lead him to address similar problems to Ambrose and Basil concerning the four elements but his responses to these problems are distinct from his predecessors. In many ways his engagement with elemental physics is more sophisticated and detailed than the others, touching on questions of transmutation and the relationship between elements and animate beings. The fundamental difference between the two *Hexaemera* and *De Genesi* is that Augustine takes a much broader reading of the Bible and uses not only his knowledge of the natural sciences but other references to the elements in the Bible in his exegesis. While his approach is different he does grapple with the same questions. In the passage below, he addresses the apparent absence of elements in the text of *Genesis*.

De Gen. III 3

Et nullo modo arbitrandum est Nor must the idea be entertained for a praetermissum esse in hac scriptura ullum moment that in this scriptural account any mundi huius elementum, cum quattuor element of this world was overlooked, it notissimis eum constare persuasum sit, be generally agreed that it consists of that quia uidetur hic caelum et aqua et terra well-known four, because it does seem as commemorari, de aere autem taceri. if sky and water and earth are mentioned Consuetudo quippe nostrarum in it while it keeps silent about air. But our scripturarum est aut caeli et terrae nomine scriptures in fact are in the habit of either mundum appellare aut interdum addere et referring to the cosmos by the name of mare. Aer itaque uel ad caelum pertinere heaven and earth, or of sometimes also intellegitur, si qua sunt in eius adding sea. And so air is understood as superioribus partibus tranquillissima et belonging either to heaven, if there are any pacatissima spatia, uel ad terram propter entirely calm and tranquil regions in the hunc turbulentum et caliginosum locum, higher spheres, or to the earth on account qui humida exhalatione pinguescit, of this turbulent and murky level which is quamuis et ipse saepius caeli nomine rendered more dense by the earth's damp nuncupetur. Ac per hoc non scriptum est: exhalations—though it too is often producant aquae reptilia animarum referred to as heaven or sky. That is what uiuarum, et producat aer uolatilia uolantia the text here does not run, “Let the waters super terram, sed utrumque hoc produce reptiles of live souls, and let the animantium genus ex aquis productum air produce flying things flying over the esse narratur. Quidquid ergo aquarum siue earth,” but states that each of these two labiliter undosum et fluidum est siue kinds of animated beings is the product of uaporaliter tenuatum atque suspensum, ut the waters. So the waters in either form, illud reptilibus animarum uiuarum, hoc whether as flowing and surging fluid uolatilibus adpareat distributum, allotted to reptiles of live souls, or as utrumque tamen humidae naturae attenuated and held in suspension in the deputetur.²⁸⁸ form of vapour and given over to flying

²⁸⁸ Augustine, *De Genesi Ad Litteram, De Genesi Ad Litteram Liber Imperfectus, Locutiones in Heptateuchum*, ed. by J. Zycha, CSEL, 28, 2 vols (Vienna: Verlag der Österreichischen Akademie der Wissenschaften, 1894), I.

things, are assigned to the humid element.²⁸⁹

In this passage, Augustine addresses the criticism that one or more of the four elements is absent in the account of creation. His response is to assert that the phrases used by the authors of the Bible referring to certain parts of the world, as with Gen. 1:1, refer to the totality of the world and not to elements in isolation. From this, he reasons that the phrase ‘heaven and earth’ encapsulates not just the body of sky and earth but their constituent elements and elements tangential to them. Here, unlike Ambrose and Basil, he does not rely on the argument from the compound nature of macroscopic bodies and instead relies on the idea that the existence of air is implicit in the words ‘heaven and earth’. These bodies are not simply the mass of earth or of the sky but include the air tangential to both.

The absence of the creation of air was resolved by Augustine because of his broad interpretation of the opening lines of Genesis. It is implied from this that the other elements, fire and water, also came to be at this moment of creation. While that matter is straightforward for him and settled without reference to the physical sciences he did feel the need to refer to the natural motion and location of the elements to cast light on the nature of the firmament and the problems which arise from it. The theory that the elements had their own natural motion and location within the cosmos is not easily integrated with the cosmology of the Bible, owing to problem of the supercelestial waters, the waters partitioned by God above and below the sky (Gen. 1:7). As seen in Aristotle’s *De Caelo* and the Latin reception of the theory, the elements tend to regions of the cosmos, with the heavy elements gravitating towards the centre and the lighter levitating towards the periphery. Through this process layers within the universe are formed with the spherical mass of earth at the centre, bodies of water on its surface, air above in the atmosphere and fire rising to the celestial bodies. Modifying this system to allow for water to exist above the sky outside of its natural location was no easy task.

In the second book of *De Genesi* Augustine set out to address these issues and reconcile the two systems with reference to scripture and philosophical experimentation. In providing an answer to this he does not wish to invoke a miraculous suspension of the regularity of nature, while acknowledging divine omnipotence would allow for this.²⁹⁰

²⁸⁹ Augustine, *On Genesis: A Refutation of the Manichees, Unfinished Literal Commentary on Genesis, the Literal Meaning of Genesis*, ed. by John E. Rotelle, trans. by Edmund Hill (New York: New City Press, 2005).

²⁹⁰ Augustine, *De Gen.*, II 2.

He addresses the challenge to the cosmology of *Genesis* that the natural weight and motions of the four elements preclude the existence of supercelestial waters. By its nature, water tends downwards but because of its weight it can only be supported by a more solid body, the only possible candidate for such a body being earth. This would lead to the conclusion that the firmament would have to be a body of earth at the periphery of the cosmos which would be supported by nothing whatsoever. Such a conclusion would contradict the theory of the natural sciences and be entirely unsatisfactory. So, Augustine sought to find an interpretation which does not contradict scripture and satisfies the premises of elemental physics.

This leads him to paint a picture of the cosmos where the elements are ordered by weight but with divisions between the upper and lower portions of the elements within the world. Earth lies at the lowest point of the world with water flowing into available spaces above and below its surface.²⁹¹ Air is divided into two parts, with the lower air contiguous to the earth being dense (and so able to sustain the flight of birds), humid, and life sustaining and the upper airs being rarefied and lighter.²⁹² Fire too is distinguished between the turbulent terrestrial fires which seek to rush upward to the sky and the serene and tranquil celestial fires of the stars and planets.²⁹³ Augustine applies these distinctions between upper and lower parts to water, distinguishing liquid water from water vapour. Vapour in the form of clouds is light enough to be suspended by air and from that he posits an even finer and more rarefied vapour which can be borne by the lightest element, fire, from which the sky is composed.²⁹⁴ With reference to the movement of the planet Saturn, which of the visible planets has the longest orbit, he argued that there was some substance acting as a cooling agent, slowing down what ought to be the fastest moving planet.²⁹⁵ By acknowledging that the elements can have forms of varying condensation and rarefaction (what we would term material states like solid, liquid, gas etc.) Augustine reconciles the two conflicting worldviews, integrating elemental physics into the Christian narrative of creation.

²⁹¹ Augustine, *De Gen.* II 1.

²⁹² See for example his description of the summit of Mount Olympus at *De Gen.* III 2.

²⁹³ Augustine, *De Gen.* VII 21.

²⁹⁴ Augustine, *De Gen.* II 4.

²⁹⁵ Augustine, *De Gen.* II 5. This argument sheds light on an internal inconsistency of the work when contrasted with his discussion on the shape of the heavens at II 9. In the later passage he is non-committal on the shape of the sky but this argument about Saturn is precluded on a spherical heaven.

5. THE CHRISTIANISED PHYSICS

These two exegetical works employ elemental physics to explain the cosmology in the book of Genesis. However, they do not rigidly adhere to any previous adaptation of elemental physics. Rather, they each modify the theory in subtle ways to produce a new adaptation, one which in some ways is paradoxically closer to Empedocles' poem than later iterations of the theory. This section will examine some of the common themes in these two attempts to reconcile this natural philosophical theory with Christian scripture.

5.1 *The Heavenly Element*

From Empedocles through to the later reception of his work in Hellenistic philosophy and the doxographical tradition the number and identities of the four primary bodies underwent some variation. The agents of Love and Strife tended to be replaced with an efficient cause, the αἰθήρ of Empedocles was arguably reinterpreted as Aristotelian ἀήρ, air, and αἰθήρ, the fifth element, and the composition of the sky was switched from Empedoclean αἰθήρ to fire or the quintessence. The reception of the theory in Ambrose and Augustine is no exception to this trend of modification. While both maintain the four-element doxography, the precise identity of each element varies and both of them come to differing conclusions though both are clearly informed by scripture.

As noted above, Ambrose makes a striking departure from tradition and names the four elements as *terra, aqua, ignis, and caelum*, eschewing the *aer* which has been established since Aristotle. Is this merely a change in name of one element or does it represent a reimagining of the theory? That 'heaven' is one of the four elements is simply stated as a matter of fact and not elaborated on. We might infer *caelum* to be aerial in nature, but this picture is complicated somewhat by his later statement in the first homily at I 8. 'These would have it, then, that first the four elements were generated by the Lord our God that is, heaven, earth, sea, and air for the reason that fire and air are the causes of things, while earth and water furnish the material from which are derived the beauty and form of the world'.²⁹⁶ Here, the four elements are named as 'heaven, earth, sea and air' and linked with a more familiar description of 'fire, air, earth and water' apparently suggesting that *caelum* is fire, contradicting his earlier statement of the four-element doxography of 'heaven, fire, water and earth'.

²⁹⁶ Ambrose, *Hexameron, Paradise and Cain and Abel*, p.33.

Christianising the Elements

This matter is further complicated by another reference to the four elements at I 6, where the traditional four elements, *terra*, *aqua*, *ignis*, and *aer* are named.²⁹⁷ In dismissing the possibility of a fifth element, Ambrose states that certain philosophers posit a quintessence which is neither earth nor water, nor fire, nor air but some other substance. His element of *caelum* from elsewhere in the homily is nowhere to be seen. Looking at the consistency of his naming of the elements across the three instances this suggests that *caelum* is in fact fire, contradicting his initial introduction.

There appears to be an inconsistency in Ambrose's account of the four elements, specifically with the upper elements of air and fire. This inconsistency appears to arise out of Ambrose's attempt to reconcile Genesis and elemental physics, specifically in his strategy of understanding *caelum* as one of the four elements. His use of Basil's argument about the compound natures of sky and earth was sufficient to find the four elements in the text, but he has gone a step further than Basil and read *caelum* as an element in and of itself. So then, the question is, what is the identity of Ambrose's *caelum*? Is it fire, air, or something different altogether? We can rule out the last option with reference to his critique of Aristotle's quintessence at I 6. A different body would have associations with the quintessence, and would run the risk of contradicting his critique of incorruptible matter. Furthermore, it would undermine his use of Basil's argument. The choice then is between *ignis* and *aer* as *caelum*. Unfortunately, the *Hexaemeron* gives us cause to believe it could be either of them. A comparison of his statements of the four element doxography in the first homily does not easily lend itself to identifying *caelum* through process of elimination, since he alternates between excluding *ignis* and *aer*.

Caelum as a separate substance, neither earth nor water nor air nor fire seems unlikely. Such a drastic reform of the theory of the four elements seems superfluous for Ambrose's purposes, and the fact that it is not expanded on in the text at all suggests that this was not his intention. When the examples of the four-element doxography in the first homily are compared with each other we can see Ambrose's inconsistency clearly:

I 3	I 6	I 8
<i>Terra</i>	<i>Terra/Terra</i>	<i>Terra</i>
<i>Aqua</i>	<i>Mare/Aqua</i>	<i>Aqua</i>
<i>Ignis</i>	<i>Caelum/Ignis</i>	<i>Ignis</i>
<i>Caelum</i>	<i>Aer/Aer</i>	<i>Aer</i>

²⁹⁷ He poetically calls fire *ignitus aether* once at *Hex.* II 3.13.

While earth and water are consistent across the three examples, the higher elements vary between sky, fire, and air. *Ignis* and *aer* are repeated semi-consistently, but *caelum* appears as a synonym for both of them. How then are we to interpret this? I think the answer lies in the example at I 6, specifically in Ambrose's reference to the sea.

When the three lists are examined together, there are some important differences which may hint at a simpler explanation. First, and foremost is the difference between *aqua* at 1.3 and 1.6 and *mare* at 1.8. The sea is of course not an element but a body composed mostly of a single element. While such a change may be read as metaphorical, it can also be understood that Ambrose here is referring not to the primary bodies but to the major compound bodies which these primary bodies compose. There is after all no distinction in Latin between the element *terra* and *Terra* the large mass of the Earth. Even though they are called *elementa* by Ambrose here they can be understood as larger portions of the world. While this is a possibility a problem for this interpretation arises from the nature of these bodies and their relations to their fundamental parts.

If we understand the '*quattuor elementa*' at I 6 to refer to compound bodies and the I 6 explanatory note, I 3 and I 8 to refer to primary bodies we arrive at the following conclusion. The element *caelum* is in fact a synonym for *aer* but the body of the sky is composed mostly of fire. This preserves the four-element doxography of earth, air, fire, and water but superficially Christianises it by renaming one of the four for a created body in *Genesis*. This conclusion is collaborated by Ambrose's proof of the compound nature of the sky containing both fire and water, indicating that the element *caelum*, a component of sky, is in fact *aer*.

Ambrose's adaptation of the four elements can be understood partially as a response to the problem of the words 'heaven' and 'heavens' in the Bible. Basil argued that 'heaven(s)' contained a multiplicity of meanings, and could refer to the sky, the firmament, or even the outer limits of the cosmos.²⁹⁸ Expanding on Basil's interpretation, he concluded 'Accordingly, we cannot deny the existence of not only a second heaven, but also of a third, since the Apostle attests in his writings that he 'was caught up to the third heaven'.²⁹⁹ Heaven in the *Hexaemeron* can thus refer either to the air, whether the element *aer* or the air above the earth, the firmament or the fiery outer boundary of the world. Ambrose adds a definition of *caelum* as a synonym for the element of air.

²⁹⁸ Basil, *Hex.* III 3.

²⁹⁹ Savage, p. 50.

Looking to Augustine we see a different treatment of the four primary bodies, but his approach is marked with a similar desire to reimagine one of the elements as *caelum*. In contrast with Ambrose, Augustine's approach is more grounded in the tradition of physics. In Book II of *De Genesi*, Augustine sets out clearly that the upper sky, where the planets and stars are, is composed of pure fire, elsewhere described as more tranquil than the turbulent fires below on earth.³⁰⁰ Later, in Book III, he discusses the possibility of transmutation of the elements and states the four-element doxography as *caelum, aqua, terra, and aer*, with the understanding that *caelum* is synonymous with *ignis* in an elemental context.³⁰¹ By clearly equating heaven with fire, he reflects the theory of the natural location and motion of the elements and overcomes the apparent absence of the element of fire in the creation narrative and furthermore avoids the ambiguity introduced in Ambrose's account of the elements. Augustine's treatment of the elements brings the theory into a Christian context and relates them to scripture without deviating from the pre-existing tradition of the elements in the doxographical tradition.

Both Ambrose and Augustine desired to read the four elements into the book of Genesis, but they approach the matter differently. Looking to Gen. 1:1, both authors equate one of the four elements with *caelum*, mirroring the relationship between the Earth and its primary constituent element earth by synonymizing the compound and primary body of the sky. In doing so, both come to differing conclusions, with Ambrose evidently understanding it to have an aerial nature and Augustine a fiery one. The result of these changes is to harmonise scripture and science.

5.2 *The Quintessence*

Aristotle's quintessence did not gain as widespread acceptance in Latin literature as the other elements, with most authors counting the number of the elements as four. Ambrose and Augustine follow this pattern but arguably they do so for different reasons. While it might have been tempting to understand Ambrose's *caelum* as being related to the fifth element in some way, he unambiguously came down against Aristotle's quintessence.

To understand exactly why these two authors reject the fifth element, it is important to bear in mind the function which it served in Aristotle's cosmology and the reason for its introduction: namely as means of accounting for the motion and unchanging

³⁰⁰ Augustine, *De Gen.* II 3 cf. VII 21.

³⁰¹ Augustine, *De Gen.* III.

nature of the sky. In Aristotle summarises this reasoning as follows, claiming ancient authorities as justification:

The truth of it is also clear from the evidence of the senses, enough at least to warrant the assent of human faith; for throughout all past time, according to the records handed down from generation to generation, we find no trace of change either in the whole of the outermost heaven or in any one of its proper parts. It seems too that the name of this first body has been passed down to the present time by the ancients, who thought of it in the same way as we do, for when we cannot help believing that the same ideas recur to men not once nor twice but over and over again. Thus they, believing that the primary body was something different from earth, and fire and air and water, gave the name *aither* to the outermost region, choosing its title from the fact that it “runs always” (ἀεὶ θεῖν) and eternally.³⁰²

His reasoning is as follows. With the exception of the sun, moon and five classical planets, the rest of the celestial bodies appear to move uniformly and not change position relative to one another, which led Aristotle, among others, to think that the heavens were unchanging. Furthermore, as he considered time to be lacking a beginning or an end, he concluded that the heavens were eternal which necessitated a body which was immune to decay. Since the cause of the decay of things was the desire of the primary bodies to return to their natural locations, he posited a fifth element for the body of the sky. The premises which lead to this conclusion do not apply within a Christian cosmology, which is predicated on a beginning in Genesis and a prophesied end. The incompatibility of these two worldviews ultimately resulted in the rejection of the fifth element.

Ambrose deals with the problem of a fifth element in the first homily and argues against it on the grounds that the world was not made to be everlasting. He provides a general outline of the theory of Aristotle from *De Caelo* concerning a fifth element but does not provide his own objections to the theory. For Ambrose such speculations about incorruptible ether cannot rival divinely revealed truth and with reference to the *Gospel of Matthew* he dismisses it.³⁰³ The impermanent nature of the world negates the existence of an incorruptible body and with it the possibility of a fifth element.

Augustine presented a clear system with the elements ordered in the cosmos according to their weight with a pure form of fire, the lightest element, the primary component of the sky, planets, and stars. As part of his exegesis, he introduces distinctions for three of the elements, fire, air and water, stating that they have differing forms and functions depending on whether they are adjacent to earth or sky. The four-element

³⁰² Aristotle, *On the Heavens*, trans. by W.K.C. Guthrie (Cambridge, MA: Harvard University Press, 1939), p. 25.

³⁰³ Ambrose, *Hex.*, I 6.

doxography is understood as a given fact in his work and he twice refers to them as the *notissimi quattuor* ‘the well-known four’.³⁰⁴ The nature of the sky is a foregone conclusion for him. However, he does diverge briefly to comment on another speculated function of the fifth element, the soul.

Accordingly, we should pay no attention either to the idea some people have entertained, that is a sort of fifth bodily element from which souls may be made, which is neither earth nor water nor air nor fire, whether this more tempestuous kind on earth or that pure and bright fire of heaven but heaven knows what different kind of thing.³⁰⁵

While the idea of a fifth element as the body which composes the sky and celestial bodies originates with Aristotle, the notion the soul is made of the same substance is Platonist or Neo-Platonist in nature. In his discourse on the soul Augustine establishes its non-corporeal nature and then tackles the idea of a quintessential soul. His argument is grounded in mathematics and epistemology in contrast to Ambrose’s argument against a fifth substance from scriptural authority. Augustine’s refutation here is not of a fifth element *per se*; instead it is a rejection of the idea that such an element could be the soul. He argues that were the soul corporeal, it could not grasp incorporeal things. This, he argues, is manifestly false as the soul is capable of conceiving of a single dimensional line which cannot exist as a body within three-dimensional space. For Augustine material bodies are understood to be composed of the four elements alone and the question of incorruptible bodies is not raised outside of the context of the resurrection. However, this prospect was not explored in much detail though it may certainly be said that he allows for the existence of incorruptible and immortal corporeal bodies but only within this context.³⁰⁶ The soul, which exists prior to the resurrection, is already immortal and not subject to decay. The fact that he believes the soul to be incorporeal would appear to feed into his rejection of a fifth type of body which composes both the soul and the sky. His dismissal of incorruptible bodies prior to the resurrection, alongside his presentation of the cosmos composed only of the four-elements might give scope to infer a total rejection of an incorruptible matter.

In the two texts we see differing approaches to the question of incorruptible matter, both responses to Aristotle to varying degrees. Ambrose provided a detailed discourse on the impossibility of a fifth nature, addressing the matter head-on. Augustine, in contrast,

³⁰⁴ Augustine, *De Gen.* III 3; VII 21.

³⁰⁵ Augustine, *On Genesis: A Refutation of the Manichees, Unfinished Literal Commentary on Genesis, the Literal Meaning of Genesis*, p. 337.

³⁰⁶ Augustine, *De Gen.* XII 37.

does not concern himself with these metaphysical questions, taking it as a given that the elements are the components of all bodies, limited to four in number, were created by God *ex nihilo* and (presumably) destroyed at the end of the world.

5.3 *The Nature of the Firmament*

As we have seen the nature of the celestial sphere is a recurring matter in these texts. In terms of ancient science and philosophy, such inquiries into celestial phenomena is by no means novel, but the particular problems posed by reconciling the biblical accounts of creation with a secular cosmology required innovative solutions. Nowhere is this difficulty more prominent than in the problems posed by the firmament and supercelestial waters.

Ambrose sets out the problem at hand in the third homily. Given the natural tendency of the elements towards certain motions, how is it possible to have water above air in a position so contrary to its nature? ³⁰⁷ Fundamentally, his solution is that God created the nature of the elements and ultimately nothing he created can be contrary to its own nature. However he does provide a detailed solution to this problem, drawing on Basil's response to the same problem. His solution is first a statement about the multiplicity of heavens, supported by scriptural authority and he distinguishes this idea from a multiplicity of worlds in the sense in which the atomists described them.³⁰⁸ The firmament is one such 'heaven', the solid partition of the supercelestial and terrestrial waters. Another heaven has the stars 'stamped' upon it, but all of these celestial bodies are heavens. The waters above the firmament are in a state akin to steam or clouds and thus their presence above the air is not contrary to the elements natural order.³⁰⁹

On the material composition of the firmament Ambrose remains silent. He explains it as being firm and solid but unlike Augustine does not address the problems which this solidity would create when conceived of in terms of the material sciences. Prior to drawing his distinction between the various heavens, he cites the authority of the prophet Isaiah stating that the heavens have a 'subtle' body rather than solid and are in the shape of a vault above the earth. Despite this subtle nature and aerial composition, the solidity of the firmament would appear to arise from divine intervention. With reference to Exodus and the claim that the parting of the Red Sea was done by God solidifying the

³⁰⁷ Ambrose, *Hex.* II 2.4.

³⁰⁸ Ambrose, *Hex.* II 2.5, 4.15.

³⁰⁹ Ambrose, *Hex.* II 3.11.

waters to facilitate the crossing, he escapes these contradictions by claiming that God's omnipotence is a solution to them.³¹⁰

While Ambrose draws a distinction between the heaven of the stars and the firmament which separates the waters, Augustine appears to consider the two to be one and the same. Certainly he does follow Basil and Ambrose in asserting the multiple meanings of heaven, but in his world-system the supercelestial waters are said to be above the '*caelum sidereum*', the heaven of the constellations. As noted above, this has the implications that Saturn, the outermost planet, is the coldest of them despite being closest to the fiery body of heaven. Augustine took a non-committal stance on the shape of heaven, though his arguments about Saturn are predicated on a celestial sphere.³¹¹

Augustine approaches the solidity of the firmament in a different way to Ambrose, who took the matter on faith and divine intervention. Augustine addresses the problem of its solidity with recourse to elemental physics: only earth has the solidity and strength to support water and while no compound body is a homogenous mixture of a single element, the firmament could not possibly contain enough earth to support the waters without support from a larger mass of earth.³¹²

The combination of the rejection of Aristotle's fifth element as the primary body of the sky, combined with the attempts to harmonise science and scripture means that these world-systems in the *Hexaemeron* and *De Genesi ad Litteram* bear some similarities to Empedocles' own system. Even though the sky is a solid body in Aristotle's work it is neither fiery nor aerial in nature but composed of a different element with properties different from the sublunary four. In rejecting the fifth element of Aristotle, it was necessary to identify another substance from which the sky was composed. Within these Christian texts, we see that the multiple meanings of heaven lead to a distinction between the firmament and the sky, both in name and in nature. For Ambrose the firmament is solid but evidently aerial in nature and distinct from the fiery heaven of the stars. For Augustine, in contrast, the firmament is the same boundary of the sky which contains the stars on its surface which is composed of solidified celestial fire, based on his statements at VII 21 that heaven is 'pure fire' and II 1 that it is solid: '*caelum, quod ultra limitem aeris circumfusum atque solidatum est*'. Here we can discern certain similarities with various testimonia concerning Empedocles' opinion on the nature of the sky. The

³¹⁰ Ambrose, *Hex.* II 3.11.

³¹¹ Augustine, *De Gen.* II 9.

³¹² Augustine, *De Gen.* II 1.

doxographers Diogenes Laërtius and Aëtius assert that Empedocles believed the sky to have a solid crystalline or ice-like nature.³¹³ In two accounts at 2.6.3 and 2.11.2 respectively, Aëtius states that according to Empedocles the sky was first formed from *aither* and elsewhere that it is solid and composed ‘from solidified air in the manner of ice by fire’.³¹⁴ Achilles Tatius’ commentary on Aratus’ *Phaenomena* echoes this sentiment of an ice-like sky.³¹⁵ This *doxa* of sky as a body composed of a solidified fiery or aerial element found its way into the Latin Christian tradition and was mentioned in passing by Lactantius in *De Opificio Dei* 17.6: ‘Or if someone tells me that the heaven is bronze or glass, or as Empedocles says, frozen air, am I to agree immediately, just because I do not know of what material the heaven is made?’³¹⁶ The parallels between discussions on the composition of the firmament and Empedocles’ *doxa* did not escape the notice of a scholiast on Basil’s *Hexaemeron*, who also commented that Empedocles said the sky is ice-like.³¹⁷ While the overall hostility towards philosophers’ opinions on nature exhibited in these works indicates that they were not consciously or intentionally borrowing from Empedocles, it appears that Ambrose and Augustine’s efforts to account for the elements in Genesis while dismissing certain Aristotelian theories on the fifth element have led them to arrive at similar positions to the progenitor of ancient elemental physics.

5.4 The Binding Agent of the Elements

Notably absent from later iterations of Empedocles’ theory were the agents of Love and Strife which cause the unity and disunity of the primary bodies.³¹⁸ In the absence of a cosmic cycle the causes of total unity and separation are unnecessary so their absence is unsurprising. As discussed above in relation to Basil’s *Hexaemeron* and the possible intertextual relationship with Plato’s *Timaeus*, love is seen to play a role in the binding together of different elements in Basil’s understanding of matter. Or rather, God is said

³¹³ Diogenes Laërtius, VIII 77; Aëtius II 11.2.

³¹⁴ Inwood, p. 180. Cf. Longrigg discussed at 4.2 above.

³¹⁵ Achilles Tatius, *Introduction to Aratus*, V 34.29-30

³¹⁶ Inwood, p. 180.

³¹⁷ Giorgio Pasquali, ‘Doxographica Aus Basiliusscholien’, *Nachrichten von Der Königlichen Gesellschaft Der Wissenschaften Zu Göttingen*, 1910, 194–228.

³¹⁸ I opt for the term ‘agents’ here though they are often referred to as ‘forces’, a term which strikes me as verging on anachronism. The idea of nature having fundamental forces is a familiar concept to us and seems a neutral term but I think it infers that love and strife in Empedocles can not be understood as divinities. Love in Empedocles is called by names such as Aphrodite (DK 74), Gethosyne (DK24) and Kupris (DK 74) which can be understood as the human poetic names for a force of attraction beyond their comprehension or as the unity of the feelings of love and joy with this goddess. Because there is an ambiguity I think it is worth reflecting it in our choice of terminology for love and strife in the poem. Agent while it has the sense of being a conscious actor can also be a depersonalized term for the cause of change e.g. agent in the sense of chemistry or physics.

to have bound the elements together in love. A similar theme is seen in the opening of Ambrose's third homily.

Ambrose *Hex.* II 1.1

<p>Quis ergo non miretur dissimilibus membris disparem mundum in corpus unum adsurgere et insolubili concordiae caritatisque lege in societatem et coniunctionem sui tam distantia conuenire, ut quae discreta natura sunt in unitatis et pacis uinculum uelut indiuidua compassione nectantur?</p>	<p>Who, therefore, does not marvel at the fact that a world formed of dissimilar elements should rise to the level of unity in one body, that this body should combine by indissoluble laws of concord and love to link together and form a union of such discordant elements? Furthermore, who does not marvel that these elements so naturally separate should be tied together in the bonds of unity and peace as if by an indivisible compact?³¹⁹</p>
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In his preface to his discussion on the second day of creation Ambrose expresses wonder at the fact that the dissimilar parts of the world, composed as they are of conflicting elements, are together as a *Gestalt*. Though here he speaks of the *membra* or 'limbs' of the world rather than its *elementa*, this is the preface to his discussion on the firmament and the apparent discord of having water out of its natural place above the lighter element of air, and so we can read this as referring to these properties of the four elements. He described such a union of opposites as through the indissoluble law of harmony and love. We can understand *caritas* here as a particularly Christian sense of 'love' and can discern a sense of amicability from *societatem* and a more marital love from *coniunctionem*. Similar to Basil's usage of δεσμός, Ambrose invokes the image of a picture of a literal bond or fetter with *uinculum*. The imagery here of binding unity through love is quite clear. For Ambrose as for Basil, love plays a role in uniting and harmonizing the disparate elements. The question which this raises for us now is whether or not this can be understood as a Christian response to Empedocles' love?

While the role of Love in uniting the elements together is certainly a theme which greatly occupies the fragments of Empedocles and the traditions about his teachings in doxography, in these later Christian works it is only a minor feature of their treatment of

³¹⁹ Ambrose, *Hexaemeron, Paradise and Cain and Abel*, p. 45.

the four elements. Certainly there is a tangible continuity from the similar imagery from the *Timaeus*, Basil's and Ambrose's respective *Hexaemeron*, it is difficult to discern to what extent, if any, this is a response to a philosophical teaching. There is a difference in the role which love plays in both of these contexts, with the agency of God being closer to the fore in these Christian texts and love taking on a more passive, instrumental role. Nevertheless, its inclusion and the intertextual links between the works of Ambrose, Basil, Plato and Empedocles should give us pause for thought about the interactions at play here. It is difficult to make a clear pronouncement on the significance of this theme in light of how little there is to work with, but if nothing else the fact that love is instrumental in uniting the four elements across several centuries demonstrates continuity, however slight it may be.

Fundamentally, there is a disconnect throughout all of these texts on the subject of creation between their stance on the teachings of the philosophers on nature and this historical origins of the theory of the four elements. This is at the heart of why their acceptance of the four-element theory is not problematized in comparison to other theories of natural philosophy like the shape of the earth and its place in the cosmos. By the first century the theory had been accepted by so many disparate groups—philosophers of competing schools, doctors and medics, architects and poets—that it truly was taken simply as an obvious fact about the world and its origins in the philosophical tradition were ignored. That there is no overt tension at using a philosophical theory to interpret scripture while dismissing philosophical theories as self-defeating suggests that these Christian authors, content with their understanding of the causal role of the divine in nature, felt unimpeded by this theory's secular origins. In their own esteem, theirs was the definitive understanding of nature.

6. CONCLUSION

By the first century BCE, the idea that matter was fundamentally composed of the four elements had gained widespread acceptance in a variety of literary and philosophical circles. As seen from its usage in Peripatetic, Platonist, Stoic and Epicurean contexts Empedocles' theory that all matter was composed of these four primary bodies was easily adapted to new circumstances. The use of the idea in biblical interpretation and exegesis in the third and fourth centuries demonstrates that the theory could be adapted to a Christian context no less than the other philosophical contexts preceding it. While some aspects of past modifications of the theory like the Aristotelian theories of natural motion

Christianising the Elements

and location were maintained and fitted to a scriptural context, others like the fifth element were rejected outright, paradoxically bringing the Christian version of the theory closer to its original philosophical context, despite the consistent insistence of Christian authors that the philosophers were incorrect. These early attempts to reconcile the theory of four elements with the account of creation in scripture set the groundwork for later Christian endeavours and explanations of the nature of the world, directly influencing works by Isidore of Seville, the Irish Augustine and the anonymous *Liber de Ordine Creaturarum*. The efforts of Ambrose and Augustine introduced the four elements to Latin biblical commentary and in spite of their open hostility towards the ideas of the philosophers, paved the way for one such idea—the four elements—to have an unquestioned authority for centuries afterwards.

Chapter Four: The Origins and History of the *atomus in tempore*

1. INTRODUCTION

Scholarship on the continuity of atomism in Late Antiquity and the Early Medieval period has largely focused on its reception and development in Islamic philosophy and subsequent reintroduction to Western Europe during the High Middle Ages through contact with the East. A common theme in scholarship on this period is the stressing of the decline of traditions of Greek learning and the loss of knowledge in the Latin West during the so-called ‘Dark Ages’. There is certainly some truth in this approach. Recall the hourglass model of Reynolds above.³²⁰ Over time, the pool of Latin manuscripts which were being copied reduced from a broad base to a narrow middle. The texts which survived to this point then stood a chance of being copied and disseminated. While the loss of literature and decline of the manuscript tradition during this period is undeniable, this image of Late Antiquity and the Early Medieval period as an era of intellectual stagnation creates a historical narrative of discontinuity which is not entirely justified. The purpose of this chapter is to conduct a case study examining the continuity of atomic theory during Late Antiquity and the Early Middle Ages and in doing so to challenge this narrative of intellectual decline.

1.1 Historical Background

The legacy of atomism in Latin literature during these periods has not been the subject of much scholarly attention to date. Scholarship on Medieval atomism tends to be focused on the reception of atomism in the Islamic philosophical tradition. With the aim of reconciling Greek philosophy with the Qu’ran, schools of theology and philosophy called *kalam* were established.³²¹ Of particular note was the Mu’tazilite school founded during the ‘Abbâsid period, who expounded a providential atomism with spatial, temporal and locomotive *minima*.³²² The prevailing historical narrative about atomism in the West is that after the decline of the Epicurean school, the idea of atomism fell into obscurity, only known through second hand references in translations of Aristotle and Galen, in

³²⁰ p. 12 above.

³²¹ For a summary of medieval Islamic atomism see John Marenbon, *Medieval Philosophy: An Historical and Philosophical Introduction* (London ; New York: Routledge, 2007), pp. 88-91.

³²² Andrew Pyle, *Atomism and its Critics: Problem Areas associated with the Development of Atomic Theory of Matter from Democritus to Newton* (Bristol: Thoemmes Press 1995), pp. 211-2.

Christian polemic against the Epicureans and a falsified biography of Lucretius by St. Jerome.³²³ According to this view, it was only with the rediscovery of Lucretius' *De Rerum Natura* in an unknown monastery in the fifteenth century that ancient atomism became known in the West.

There are some underlying assumptions with this narrative which are somewhat at odds with the evidence for knowledge of, and engagement with atomism from the third and fourth centuries onwards. The decline of the philosophical school associated with atomism did not spell a total break in the tradition of atomist thought. By the fifth century, there were conceptions of atoms as discontinuities in body, number and time in the encyclopaedic tradition. This final category, the atom in time or *atomus in tempore* was thought of as a single indivisible unit of time.³²⁴ Rather than a temporal continuum this atomist view of time portrays time as composed of discrete instances which are so short as to admit no further division. Despite this engagement with atomism by figures like Augustine, Isidore of Seville, Bede, and Alcuin, the subject has not received much scholarly attention to date, owing in part to the perception of Late Antiquity and the Early Middle Ages as periods of decline and loss of Greek learning.

This chapter's focus is on one aspect of the later transmission of atomism in Latin literature, the often-maligned atom in time, which by the sixth century was considered to be the fundamental unit of time. Though rarely the subject of scholarship, when it is discussed this phenomenon is often held up as a break in the traditions of philosophy which would not be undone until the rediscovery of lost works centuries later. This study will explore the origins and development of this phenomenon from Late Antiquity and outline its spread through the encyclopaedic and computistical traditions in the Early Middle Ages and argue against the dominant narrative. Fundamentally, I seek to demonstrate continuity between classical traditions of atomism and this phenomenon.

1.2 The Later Reception of Atomism

Atomism was a theory of physics which posited a duality between being and non-being.³²⁵ Within this system non-being is identified with void, an infinite empty space, and being is infinite in number, solid and indivisible. Through this dualist theory, as Taylor

³²³ See 2.5 below.

³²⁴ Between the fifth and eighth centuries, authors counted up to five categories of atom. They are the *atomus in corpore/re, in tempore, in numero, in litteris/oratione* and *in sole*. This chapter focuses on temporal atomism and the histories of the other atoms are addressed in Chapter Five below.

³²⁵ KRS, 407-9.

describes it the atomists ‘attempted to reconcile the observable data of plurality, motion and change with the Eleatic denial of the possibility of coming to be or ceasing to be’.³²⁶ As with other theories of Presocratic physics, the atomists’ ideas are grounded in a principle of conservation, summed up by Epicurus, a later atomist, as *πρῶτον μὲν ὅτι οὐδὲν γίνεται ἐκ τοῦ μὴ ὄντος* ‘firstly that nothing comes to be from what is not’.³²⁷

In its later reception, we will see certain features of this system of physics diminish in importance and other features come to the fore. The indivisibility of atoms rather than their changelessness or infinitude becomes their main, if not only, quality in the later reception and the void vanishes from the system almost entirely. The atoms of Antiquity manifest in the Early Medieval period through the *atomus in corpore* or *in re*, and as will be discussed below in relation to temporal atomism, are understood primarily through an etymological lens, leading to an expansion of the definition of atom to include discontinuity in time, number and other phenomena. There are some fundamental differences between this later conception of atomism and its antecedents in the ancient world. Most prominently, is that while both represent atoms as discontinuity in body, within ancient atomism the atoms were only one half of the world-system. Although atoms lend their name to the physical school of thought, they are on an equal footing with the void. The void is the permeable, infinite space in which atoms exist. Along with the introduction of new categories of atoms, it is the disappearance of the void from atomist discourse in Late Antiquity which sets it apart from the ancient atomism.

The void was essential within the system of physics, allowing motion, generation, and decay. Its departure from the discourse marks a shift in the sophistication of the theory far more so than the introduction of additional categories of atoms. The questions of being, coming-to-be and passing away which motivated Presocratic physics had alternative solutions within the patristic context in which this conception of the atom arose. Generation was ultimately the act of the divine and happened *ex nihilo*. Destruction into nothing would happen at the end of the world. In the interim, change and growth and death were caused by the motions of the elements within the space of the world which was finite and in no need of an infinite vacuum to allow for motion. This use of atomism therefore did not need the answers of atomism to the problems of generation and destruction but functions, as will be discussed below, as a tool of Biblical exegesis.

³²⁶ C.C.W. Taylor, ‘Anaxagoras and the Atomists’, in *From the Beginning To Plato*, Routledge History of Philosophy, 10 vols (London: Routledge, 1997), I, pp. 204–43 (p. 221).

³²⁷ Epicurus, *Letter to Herodotus* 38.

1.3 Existing Scholarship

As stated at the outset, scholarship on the *atomus in tempore* is quite rare. Where it is addressed it is responded to in one of two ways. Either it is dismissed in its entirety as erroneous and held up for cause for lamentations at the loss of ancient learning after the fall of the western Empire or else it is ignored. This disinterest is mostly driven by the broader trend that as a whole research into the history of atomism tends to gloss over the Latin tradition between the fourth and ninth centuries.

There was a resurgence of interest in ancient atomism in the nineteenth century, spurred on by discoveries in the physical sciences of the existence of minute bodies which at the time did not appear to be subject to division, thus appearing to confirm the atomist thesis of Democritus and Leucippus. Not long after the discovery of the electron two major works of scholarship on the history of atomic theory were published, Kurd Lasswitz's *Geschichte der Atomistik vom Mittelalter bis Newton* in 1890 and Leopold Mabillean's *Histoire de la philosophie atomistique* in 1895. In their treatment of atomism in Late Antiquity both works suffer from a lack of serious engagement with the texts under discussion. Lasswitz' work surveys atomism from Late Antiquity onwards, beginning with the Church Fathers. In it he describes and comments on discourse of atomism in the works of Lactantius, Eusebius, Augustine and Isidore. In his view, Isidore's description of the atom in *Etymologies* XIII 2.1 marks the decline of ancient wisdom and the rise of the ignorance of the 'dark ages':

*Das ist das Warnungsschild welches Isidor der bloßen Erwähnung der Atomlehre beigibt. Es dürfte seine Wirkung nicht verfehlt haben. Mehr und mehr schwindet das Verständnis für die Physik der Alten.*³²⁸

This is the warning which Isidore adds to the mere mention of Atomic theory. It should not have failed to work. More and more the understanding of the physics of the ancients disappears.³²⁹

Lasswitz offers neither analysis of Isidore's entry on atomism nor attempts *Quellenforschung* of Isidore's source material. The conclusion that he draws here, that ancient understanding of physics was on the decline, rests on the assumption that Isidore's explanation of atomism self-evidently demonstrates this decline. His discussion of the temporal atom is brief, and in his opinion its origins lay in the discipline of music.³³⁰ The possibility of continuity between the temporal atom and ancient atomism is not discussed.

³²⁸ Kurd Lasswitz, *Geschichte der Atomistik: vom Mittelalter bis Newton*, 2 vols (Hamburg and Leipzig: Leopold Voss, 1890), I, p. 33.

³²⁹ My thanks to Dr. Dónal Ó Cathain for his advice on translation.

³³⁰ Lasswitz, p. 35.

Mabilleau's *Histoire* took a different approach to the history of atomism, taking a broad definition of atomism, including theories of matter outside the Greek philosophical tradition. His inquiry into the history of atomic thought begins in ancient India with discussion of Hindu theories of atomic matter from the second century BCE onwards. Drawing on ancient Greek narratives of Democritus of Abdera's eastward voyages he suggests a tentative link between the Indian and Greek traditions, though does not offer any definite conclusions.³³¹ After describing Greek theories of atomic matter he traces the heritage of the philosophy through Islamic and Arabic philosophy, and the works of Avicenna and Averroes. The Middle Ages in Western Europe is characterised as an intellectually barren period with atomism and philosophy surviving only by the grace of the Islamic Golden Age.³³² Atomism was then reintroduced to Europe via contact with Arabic scholarship through the spread of alchemy in the Late Medieval period. Because his focus in Late Antiquity and the Medieval Period is outside of Western Europe, the reception of atomism in this time and place and the *atomus in tempore* do not feature in his work. While the atomic theories in circulation in the Latin west paled in comparison to the sophistication of the contemporary Islamic world, if one is seeking to establish *[u]ne histoire de la philosophie atomistique [qui devrait] remontre aux origines de cette philosophie dans la tradition humaine* it seems a shame to restrict the scope of the research when the final topic of his investigation, alchemy, draws on Arabic, Persian, Greek and Latin traditions. It would seem that his omission of a survey of the West was based on the assumption that there was nothing of value to be found there during Late Antiquity and the Early Middle Ages.³³³

Andrew Pyle's 1995 work *Atomism and its Critics* is a comprehensive and detailed survey of atomism and the difficulties which the theory has encountered from Democritus to the present day. On the subject of early Medieval Atomism, Pyle follows in the footsteps of his predecessors stressing a narrative of decay and decline. Like Mabilleau, Pyle explores the developments in Islamic atomism during this period, and goes on to discuss the Mu'tazilite School and their attempts to harmonize Greek physics and the Qur'an. However, while it is fair to contrast Late Antique atomism in Europe and the Islamic world in terms of their sophistication, to dismiss the examples he offers from the Middle Ages with no analysis seems unjustified:

³³¹ Léopold Mabilleau, *Historie de la philosophie atomistique* (Paris: Imprimerie Nationale, 1895), p. 4.

³³² Mabilleau, p. 306.

³³³ Mabilleau, p. 1.

The Atom in Time

During the Dark Ages of Western Christendom the Atomic Theory—like so much else—was almost entirely forgotten. The only references to Atomism which survive in this period are garbled and third or fourth hand accounts of the Encyclopaedists, men such as Isidore of Seville (560-636), Bede (672-735) and Hrabanus Maurus (776-856). There is no trace of a continuous and developing tradition of Atomist thought.³³⁴

In support of this thesis Pyle cites two authorities, a 1928 *Isis* article by G.B. Stones and a book on the history of science, *Augustine to Galileo* by A.C. Crombie, both of which suffer from the same flaw: the lack of engagement with the texts in question.³³⁵ It is simply taken for granted that the decline of learning is self-evident in these texts. Stone's article merely offers a passing comment on the understanding of atomism in this period: "The idea [of atomism] is still there, though it is frequently misunderstood. Thus, Isidore of Seville (560-636), the Venerable Bede (672-735), and Hrabanus Maurus (776-856), all speak of the atom, referring to discontinuity in bodies, in time and number".³³⁶ Stones offers no further analysis or commentary on the texts themselves, the reader is left to assume the matter speaks for itself. Just as with Lasswitz the intellectual history of Early Medieval period is presented solely in terms of error and ignorance. As to Pyle's other authority *Augustine to Galileo* is a history of medieval science that places emphasis on continuity rather than collapse. Crombie revised much of his original 1952 in a second edition later and his original work was republished with revisions based on his own changes of opinion.³³⁷ Pyle cites the first edition in which the Encyclopaedists are referred to in a footnote stating that Isidore, Bede, William of Conches, Maimonides, and Rhazes discussed atomism in passing.³³⁸

In terms of other contemporary studies of atomism, Bernhard Pabst's *Atomtheorien des lateinischen Mittelalters* is a comprehensive survey of Latin discourse of atomism from Antiquity to the fourteenth century.³³⁹ His work describes and summarises relevant works from a selection of medieval authors concerning atomic theory in the Middle Ages. His work provided a roadmap for the selection of texts

³³⁴ Andrew Pyle, *Atomism and Its Critics: Problem Areas Associated with the Development of Atomic Theory of Matter from Democritus to Newton* (Bristol: Thoemmes Press, 1995), p. 210.

³³⁵ G.B. Stones, 'The Atomic View of Matter in the XVth, XVIth and XVIIth Centuries', *Isis*, 10.2 (1928), 445-65; Alistair C. Crombie, *Augustine to Galileo: The History of Science A.D. 400-1650*, 1st edn (London: Falcon, 1952).

³³⁶ Stones, pp. 445-6.

³³⁷ A. C. Crombie, *The History of Science from Augustine to Galileo*, 2nd edn (New York: Dover Publications, 1995), pp. 17-8.

³³⁸ Crombie, I, pp. 236-8 n1.

³³⁹ Bernhard Pabst, *Atomtheorien Des Lateinischen Mittelalters* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1994).

examined below, but little in the way of commentary on these works. Unlike his predecessors in the historiography of atomism, Pabst correctly identifies the origin of temporal atomism in a sermon of Augustine.³⁴⁰

Beyond these works there is virtually no scholarship to date concerning the *atomus in tempore*. The prevailing narrative of the decline of Greek learning has influenced reference works on the subject of atomism. The *Oxford Dictionary of the Middle Ages* makes no mention of temporal atomism, referring only in passing to Mutakallimun, the tradition of Islamic atomism and later medieval atomic theories.³⁴¹ Brill's *New Pauly* which makes reference to Pabst's work states 'the word "atom" itself had lost any meaning in physics and referred only to the smallest unit of time'.³⁴² The *Lexikon der Mittelalter* makes a passing reference to the various atomisms of the Middle Ages attested in Isidore and Bede, with the caveat that 'ohne daß [i.e. the *atomī*] damit allerdings eine physikal Theorie verbunden war' 'without a physical theory being connected to it'.³⁴³ These summaries based on works including Mabillean's, Lasswitz's and Pabst's draws the conclusion that there is nothing of merit to this feature of atomism in the post-Classical period. Taking these criticisms as a starting point for my investigation, I seek to revisit the source material for the *atomus in tempore*, analyse and discuss it and its place within the wider history of ancient atomism.

2. THE ORIGINS OF THE ATOM

The philosophical doctrine of atomism is a form of material pluralism said to have been invented by Democritus of Abdera and Leucippus, either of Abdera or Miletus. It is often thought to have been a response to the famous paradoxes posed by the Eleatic elenchus.³⁴⁴ Atomism postulates a duality between being and non-being which are defined in opposition to one another. Being is infinite in number, discrete, solid and indivisible, which gives rise to the name of the units of being as 'atoms' meaning 'un-cuttables'. Non-being is endless but single, penetrable and contiguous at all its points and identified with the void.³⁴⁵ Because of this, all bodies are compounds of these two, aggregates of atoms

³⁴⁰ Pabst, p. 40.

³⁴¹ *The Oxford Dictionary of the Middle Ages*, ed. by Robert E. Bjork, Dictionary of the Middle Ages (Oxford: Oxford, 2010), p. 204.

³⁴² *Brill's New Pauly: Encyclopaedia of the Ancient World: Antiquity*, ed. by Hubert Cancik and others (Leiden: Brill, 2002), pp. 294-5.

³⁴³ *Lexikon Des Mittelalters*, ed. by Robert Auty (Munich: Munich: Artemis-Verlag, 1977), pp. 1174-5.

³⁴⁴ McKirahan, p. 303. See also D. J. Furley, *Two Studies in the Greek Atomists* (New Jersey: Princeton University Press, 2015), pp. 79-104.

³⁴⁵ DK 67, A7.

permeated by the empty void. Because of this structure, no compound body can exist indefinitely.³⁴⁶ Eventually the earth, sun, and cosmos itself are fated to dissolve back into atoms and void, only to recombine and make new worlds in a universe unbounded by beginning or end in space or time. Although Democritus was said to have been an even more prolific author than Plato, unfortunately the majority of what we know about his work comes to us through fragments.³⁴⁷ Aristotle discussed his theories often and even wrote a monograph on him, unfortunately no longer extant. Although he was critical of Democritus' atomic theory, he did have some praise for the man himself, even saying that while flawed, his theory of matter was more refined than competing theories.³⁴⁸ Through Aristotle and his student Theophrastus, Simplicius, Aëtius, and others we have up to 162 fragments of Democritus.³⁴⁹

The atomism of Democritus and Leucippus was adopted by Epicurus and his school during the Hellenistic period, and thus the Epicureans became the main voice for this proposal of discontinuity in bodies in contrast with Aristotle's theory of matter. This Presocratic atomism was borrowed with superficial changes, evoking charges of plagiarism. Antique authors including Cicero and Clement of Alexandria acknowledged that Epicurus' atomism was largely influenced by Democritus' works.³⁵⁰ Cicero was particularly critical of what he saw as Epicurus' plagiarism, stating that where he had made minor changes to the theory he changed it for the worse.³⁵¹ The changes made to the theory were mostly minor, with the exception of the doctrine of the minimum within the atom, or the doctrine of minimal parts, believed by some to be a response by Epicurus to Aristotle's criticism of Democritus.³⁵² Nevertheless, one of the principle arguments for Epicurus' atomism, *nihil ex nihilo*, was fundamentally a Presocratic principle, one that

³⁴⁶ In the atomist conception of matter bodies are formed from the aggregation of atoms. However, these atoms are always interspersed with void, never combining into a single body. Aristotle sums it up in a fragment of his *On Democritus*, stating it is simplistic to think that two bodies could ever become one (*On Democritus ap. Simplicium de Caelo* 295 11). Therefore, these aggregations, whether they are humans, manmade artifices or entire worlds are always temporary configurations. As KRS describe '[it] is emphasized [by Aristotle and Simplicius] that no real coalescence of atoms takes place: they simply come into contact with each other, and always retain their own shape and individuality' p. 426. See also McKirahan, pp. 322-4.

³⁴⁷ Kirk et al., pp. 405-6.

³⁴⁸ Aristotle, *De Gen. et Cor.* 315a34.

³⁴⁹ Taylor, *Atomists*, pp. 2-53.

³⁵⁰ Pierre-Marie Morel, 'Epicurean Atomism', in *The Cambridge Companion to Epicureanism*, ed. by James Warren (Cambridge: Cambridge University Press, 2009), pp. 65-83.

³⁵¹ Cicero, *De Finibus Bonorum et Malorum* 1.18.

³⁵² Morel, p. 69-70. See also Furley, *Greek Atomists*, pp. 111-130.

was influential on Democritus' atomism and on Parmenides before him.³⁵³ Even during the Hellenistic and Roman periods, atomist physics retained its Presocratic character. Indeed, we see in Lucretius' poem *De Rerum Natura*, that when the poet critiques other physics, he focuses on the Presocratics Anaxagoras, Empedocles and Pythagoras rather than on subsequent physicists and philosophers.³⁵⁴

The Epicurean school, from its foundation around 306 BCE to its decline in the third century kept the doctrine of atomism alive. Very little of the work of the Epicureans, either from the Athenian Garden or Epicureans elsewhere in the Roman Empire survives directly, with the bulk of information about atomism coming to us from sources critical of their ethical and physical teachings. Epicureans feature often in Cicero's philosophical dialogues, but frequently have their teachings refuted or ridiculed by other speakers. There are some first-hand sources in Greek, most significantly three of Epicurus' letters preserved by Diogenes Laërtius. Some works of the Epicurean Philodemus are preserved in the ruins of library of Lucius Calpurnius Piso Caesonius, father of Julius Caesar's wife Calpurnia, which was buried under ash outside of Herculaneum. The carbonized scrolls of his library have been studied with the help of modern technology since the 1970s and have revealed much about the scope of Philodemus' works. In addition, there is another Epicurean source found in İncealiler, Turkey in the form of a monument, over 80m long originally, but now heavily fragmented. The monument was paid for by Diogenes of Oinoanda, a wealthy citizen of that town towards the end of his life. The monument features a section on physics, fragments of which are mostly focused on refuting other philosophers rather than expounding on Epicurean physics. The most detailed Latin source we have on atomism from an Epicurean source is the first-century BCE poem by Lucretius, the *De Rerum Natura*, which details and explains the arguments for atomism and for the ethical hedonism of the Epicureans.

2.2 Christianity and Atomism

As the representatives of atomic physics during the Hellenistic and Roman periods within the philosophical schools, the Epicureans were the main opponents of a providential cosmos. The atomist argument is grounded in the notion that natural processes can organise the world order without the need for divine agency. As such atoms became a byword for a non-providential cosmos in the eyes of early Christian authors, and thus an

³⁵³ A. A. Long and D. N. Sedley, *The Hellenistic Philosophers: Volume 1, Translations of the Principal Sources with Philosophical Commentary* (Cambridge: CUP, 1987), pp. 26-7

³⁵⁴ Lucretius, *De Rerum Natura* I 635-920.

object of condemnation. The relationship between Christianity and the Epicureans was more nuanced at times, though in early Christian literature both canonical and apocryphal Epicurean philosophers appear as opponents in public debates with prominent Christian figures.³⁵⁵ For those on the outside of both groups, the two could seem similar, owing to their mutual condemnation of popular religious practice. Because of its association with a non-providential world and with Epicurean hedonism, positive or neutral interactions between early Christianity and atomism are few, but there is one strand of engagement in Christian exegesis which this study will argue is ultimately the source for the *atomus in tempore*.

2.3. Letter to the I Corinthians 15:51-2

In the epistles of Paul of Tarsus (d. c. 62-4) we find a reference to atomism. In the First Letter to the Corinthians, Paul discusses the resurrection of the dead:

Greek Text	NRSV	Literal Translation
ἰδοὺ μυστήριον ὑμῖν λέγω:	Listen, I will tell you a	See, I tell you a mystery:
πάντες οὐ κοιμηθήσόμεθα,	mystery! We will not all	We all will not sleep, but
πάντες δὲ ἀλλαγῆσόμεθα,	die, but we will all be	we all will be changed, in
ἐν ἄτόμῳ, ἐν ῥιπῇ	changed, in a moment , in	an atom , in the flick of an
ὀφθαλμοῦ, ἐν τῇ ἐσχάτῃ	the twinkling of an eye, at	eye, at the last trumpet.
σάλπιγγι.	the last trumpet.	

Although rare, Paul's use of the word ἄτομος here in a temporal sense had precedents in Classical Greek. Aristotle used ἄτομος in this sense of a moment three times, twice in the *Physics* and once in *De Sensu*.³⁵⁶ In two of these cases, the word is attached to the word χρόνος, time, which makes the sense explicit. The word consists of two elements, the privative prefix ἀ- indicating absence or deprivation, and τόμος a cut or slice from τέμνειν, to cut, meaning an individual moment of time. While this is somewhat a somewhat obscure use of the word, it is nevertheless intelligible. However, the passage raises some problems in the context of translation into Latin.

The main problem for Latin readers and translators is that the only referent which these later readers had for the meaning of the word ἄτομος was the term as used in a Latin philosophical context, unambiguously meaning discontinuity in bodies despite its use

³⁵⁵ Acts 17:18.

³⁵⁶ Aristotle, *Physics* 236b6, 263b27; *De Sensu* 447b18.

here in a temporal sense. The word *atomus*, borrowed directly from Greek, was used almost exclusively in a philosophical context to refer to the primary bodies in the physics of Democritus, Leucippus, and the Epicureans.³⁵⁷ The use of the word *atomus* in this unusual sense gave rise to two approaches in Latin translation. The first was the use of the loanword *atomus* in the translation and the second was a translation of the meaning of the sentence which eschewed the term. We find examples of these two approaches in the works of Tertullian and Jerome.

2.4 Tertullian's Atoms

Prior to the promulgation of Jerome's Vulgate by the Council of Trent in the sixteenth century, there was no authoritative edition of the Latin Bible. The Vulgate was commissioned in the fourth century to replace the *Vetus Latina* Gospels then in use in the Latin Church. These early translations varied from place to place, often preserving Greek idioms from the Septuagint. In Tertullian's anti-Marcion works we find the loanword *atomus* rather *momentum*. In Tertullian's polemic we find some quotations of I Cor. 15:52, preserving the term ἄτομος in Latin.

Tertullian *Adv. Marc.* 3, 24

<p>Post cuius mille annos, intra quam aetatem concluditur sanctorum resurrectio pro meritis maturius uel tardius resurgentium, tunc, et mundi destructione et iudicii conflagratione commissa, demutati in atomo in angelicam substantiam, scilicet per illud incorruptelae superindumentum, transferemur in caeleste regnum, de quo nunc sic [ideo] retractatur, quasi non praedicato apud creatorem ac per hoc alterius dei christum probante, a quo primo et solo sit reuelatum.³⁵⁸</p>	<p>‘After its thousand years are over, within which period is completed the resurrection of the saints, who rise sooner or later according to their deserts there will ensue the destruction of the world and the conflagration of all things at the judgment: we shall then be changed in an atom into the substance of angels, even by the investiture of an incorruptible nature, and so be removed to that kingdom in heaven of which we have now been treating, just as if it had not been predicted by the Creator, and as if it were proving Christ to</p>
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³⁵⁷ There is another use of the loanword *atomus* in Latin, but it is quite rare. Pliny, for example, wrote of a type of incense which the Greek called *atomus* in *Nat. Hist.* XII 30.

³⁵⁸ Tertullian, *Aduersus Marcionem*, ed. by Emil Kroymann, CCSL 1 (Brepols: Turnhout, 1954), pp. 441-726.

belong to the other god and as if he were the first and sole revealer of it.³⁵⁹

Tertullian Adv. Marc. 5, 10

Resurgent enim mortui incorrupti - illi scilicet, qui fuerant corrupti dilapsis corporibus in interitum - et nos mutabimur **in atomo**, in oculi momentaneo motu; oportet enim corruptiuum hoc - tenens utique carnem suam dicebat apostolus - induere incorruptelam et mortale hoc immortalitatem - ut scilicet habilis substantia efficiatur regno dei; erimus enim sicut angeli -: haec erit demutatio carnis, sed resuscitatae. Aut si nulla erit, quomodo induet incorruptelam et immortalitatem?³⁶⁰

“For the dead shall be raised incorruptible,” even those who had been corruptible when their bodies fell into decay; “and we shall be changed, **in an atom**, in the twinkling of an eye. For this corruptible”—and as he spake, the apostle seemingly pointed to his own flesh—“must put on incorruption, and this mortal must put on immortality,” in order, indeed, that it may be rendered a fit substance for the kingdom of God. “For we shall be like the angels.” This will be the perfect change of our flesh—only after its resurrection. Now if, on the contrary, there is to be no flesh, how then shall it put on incorruption and immortality?”³⁶¹

These two passages contain the earliest examples in Latin of atom used in a temporal rather than corporeal sense. The first states that the resurrected will be ‘*demutati in atomo in angelicam substantiam*’, literally changed in an atom into angelic substance. Tertullian tells us that ‘those who have died will rise again with bodies which do not rot, and in the second passage that we will be changed in an atom, in the brief duration of a blink of the eye’. This quotation would appear to be 1 Cor. 15:51-2, Tertullian’s own *ad hoc* translation, given that *in momento* is present in the manuscript tradition.³⁶² The distinct ἐν ἰσχύει, the image of the motion of the eye in both examples, and the subject matter of the resurrection of the dead all point to this being a translation of the verse. What is striking about this translation is the use of metaphor. The preservation of the atom

³⁵⁹ Adapted from Roberts and Donaldson, p. 343.

³⁶⁰ Tertullian, *Adversus Marc.*, pp. 441-726.

³⁶¹ Adapted from Tertullian, *The Ante-Nicean Fathers*, p. 451-2.

³⁶² H. A. G. Houghton, *The Latin New Testament: A Guide to Its Early History, Texts, and Manuscripts*, Latin New Testament, First edition. (Oxford: Oxford University Press, 2016), pp. 7-9.

metaphor is preserved from the Greek, when other metaphorical features were discarded. The Greek text of πάντες οὐ κοιμηθήσόμεθα, ‘all shall not sleep’, is rendered plainly with a positive assertion of *resurgent*, ‘they will rise’. Although Tertullian is not sticking rigidly to the Greek text he is communicating the meaning of the passage. On its own, this would be unremarkable, but for his choice to retain the metaphor of ἐν ἰσχύρῳ and omit the simple and much more common metaphor of death as sleep.³⁶³ Even though Tertullian himself does not problematize the term that he used, the Latin loan word *atomus* suggests that even in his day there was some uncertainty about the word, or at least some significance to it. The temporal sense in which the word was used was made clear by the ‘*in oculi momentaneo motu*’ which followed but the retention of ἐν ἰσχύρῳ through the loanword is suggestive of some doubt over the exact nature of the passage, or at least a sense that there was some significance to the choice of word.

Tertullian’s retention of the loan word without further explication of the nature of the *atomus* is striking within the wider context of his works. He mentions atoms eight times throughout the corpus of his writings: four times in the temporal context in relation to the resurrection or direct quotation of 1 Cor. 15:51-2 and four times in relation to the materialism of the philosophers. However, he does not elaborate on this temporal sense of the word. For him, it would appear that it was explained clearly enough by the words which followed it in the translation of 1 Cor. An atom, in the context of the resurrection of the dead, was a synonym for the blinking of an eye.

2.5 Jerome’s Atom

Jerome of Stridon (c. 342-420), exegete and translator of the Bible into Latin took a different approach to Tertullian in relation to the ἄτομος of 1 Cor. 15:52. Perhaps out of awareness of the philosophical connotations of atoms he avoided the term in his translation, rendering the metaphorical ἐν ἰσχύρῳ as the literal *in momento*, thus avoiding any ambiguity surrounding the word. Additionally, he provided some commentary on the interpretation of the passage and took a somewhat innovative take on atomism.

In *Epistula* 119, a letter to two monks from Toulouse seeking his advice on interpreting certain verses of Scripture, we see Jerome’s explanation for 1 Cor. 15:51-2. On the subject of the atom, Jerome has the following to say: *Atomus autem punctum*

³⁶³ Centuries later, Jerome would choose to translate the meaning of both in his Vulgate, rendering the line ‘*omnes quidem resurgemus sed non omnes inmutabimur in momento, in ictu oculi*’. Like Tertullian, he favoured *resurgere* for *koiman*, but he differed by rendering the meaning of *en atomōi* and not retaining the metaphor.

*temporis est, quod secari et diuidi non potest; unde et Epicurus ex suis atomis mundum struit et uniuersa conformat.*³⁶⁴ ‘However, an atom is a point of time, the cutting and division of which is not possible. It is from this that Epicurus established a world out of his atoms and fashioned a universe.’ He renders the meaning of the passage as he understands it to the monks in plain Latin: *in puncto temporis et in motu oculi atque momento*, ‘in a point of time and in the blink of an eye and in a moment’. This interpretation is reflected in his Vulgate translation in which he rendered the verses as: *Ecce mysterium vobis dico: omnes quidem resurgemus sed non omnes inmutabimur in momento in ictu oculi in novissima tuba.*

Jerome’s explanation of the atom presents some difficulty for anyone versed in Epicurean philosophy. In Epicurean terms an atom is not a unit of time. Not only did Epicurus not believe time was atomic, he did not believe that time existed *per se*. We might make sense of this by focusing on Jerome’s emphasis on Epicurus’ own atoms, *ex suis atomis*, which hints that there is a difference between atoms as mentioned in I Cor., which are temporal in nature, and the atoms out of which Epicurus fashioned his physics, which are corporeal in nature. It seems possible that Jerome did not understand ἐν ἄτομῳ as referring to Epicurean physics, but rather that he took it as a literal division of time, opening up the possibility that what is in I Cor. is a different view of the nature of the atom to that of the philosophers.

2.6 Atomist Context: The Nature of Time

Before continuing with the interpretation of I Cor., I wish to examine the claim which Jerome made, associating temporal atomism with the Epicureans. This brief digression into early and later atomist thought on the nature of time is warranted by the need to demonstrate the novelty in late antiquity of the concept of atomic time. Although the term ‘indivisible’ was first used in Aristotle with regards to time, his description of time as such does not amount to a comparison with matter (which Aristotle held to be a continuum). The aim of this passage is to demonstrate that among both the early and later atomists, time was not conceived of in comparable terms to matter and any such comparison was not a part of their teaching.

The question of the nature of time is one of the few areas in which the Presocratic and Hellenistic atomists appear to diverge from one another.³⁶⁵ The early atomist

³⁶⁴ Jerome, *Opera: Epistulae LXXI-CXX*, ed. by Isidor Hilberg, CSEL, 55 (Vienna: Tempsky, 1912).

³⁶⁵ The outlines of the differing opinions of the atomists on time were observed by Karl Marx in his 1894 doctoral dissertation, ‘Differenz der demokritischen und epikureischen Naturphilosophie’.

conception of time is attested in a fragment of Democritus from Aristotle's *Physics* and from Simplicius' commentary on the passage:

On the subject of time everyone with one exception [i.e. Plato] seems to agree that it did not come into being. This is the argument that Democritus uses to prove that it is impossible for everything to have come into being; for time did not come into being.³⁶⁶

Simplicius, commenting on the same passage notes 'Democritus was so convinced that time was eternal that he used the premise that time did not come into being as something obvious in order to demonstrate that not everything came into being'.³⁶⁷ The argument is clear. Time is something which exists but which did not come into being. If one being did that, then there is no reason why the same cannot be said for all the beings which exist *per se* such as atoms and void. Democritus' argument here does not tell us anything detailed about his understanding of time. Time is more important to the argument which he is trying to make, namely providing him with ontological grounds for his own physical theory. Fundamentally it is clear that Democritus considered time as a being *per se* and more importantly for present purposes, nothing of his comments on time suggests that it was akin to matter and atomic in nature. With these examples we see that the phenomenon of atomic time did not occur in Democritus' understanding of the nature of time. The question is whether this was an Epicurean innovation?

The answer would appear to be no. The existence of time *per se* appears to have been denied by the Epicureans who considered it a secondary characteristic of atomic motion. Time within Epicurean atomism proves to be quite problematic. As Epicurus summarises in his *Letter to Herodotus*, within his system all that exist are bodies and the void.³⁶⁸ Secondary characteristics like heat and colour can be accounted for by this duality of bodies and void, but how can one account for the passage of time within this system? Is time a body or is it the void? Put simply, it appears that there are two aspects to the Epicurean conception of time. Firstly, in terms of physics it is an appearance arising from the relation of bodies relative to one another within the void. Secondly, this appearance is defined by consensus among humans because of their observation of the motions of the heavenly bodies, the sun for days; moon for months, and so on. Epicurus himself had the following to say on time:

Moreover, one must also think of this very carefully: one should not investigate time as we do other things which we investigate in an object, [i.e.] by referring to the basic grasps which are

³⁶⁶ Aristotle, *Physics*, 251b 14-17. Translation from Taylor, *Atomists*, p. 89.

³⁶⁷ Simplicius, *In Physicam*, 1153.22-4, tr. Taylor, *Atomists*, p. 90.

³⁶⁸ Diogenes Laërtius, X 39.

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observed within ourselves, but we must reason [on the basis of] the clear experience according to which we utter [the phrases] “for a long time” or “for a short time” interpreting it in a manner closely connected [to our own experience] ... For this needs no demonstration, but [only] reasoning, because we associate it with days and nights and their parts, and similarly with feelings too and the absence of them, and with motions and states of rest, again, having in mind in connection with them precisely and only this peculiar property according to which we apply the term ‘time’”.³⁶⁹

The meaning of this passage is rather obscure, but it appears that Epicurus is reducing the perception of time to convention arising from the motion of the heavenly bodies. Unlike atoms and the void, which exist *per se*, time is an agreed-upon convention. Sextus Empiricus is rather more succinct in his summary of Epicurean beliefs about time when he says that they held time to be “an appearance in the form of night and day” which highlights the nature of time as a social convention surrounding the motion of bodies in space rather than a thing in and of itself.³⁷⁰ Similarly, Lucretius states briefly in the *De Rerum Natura* the Epicurean stance on time “Time also exists not of itself, but from things themselves is derived a sense of what has been done in the past, then what thing is present with us further what is to follow after”.³⁷¹ Time for the Epicurean atomists is seen to not be a body like an atom or part of the void but rather a phenomenon arising human perception of motion with no inherent existence of its own.

We see from these examples that Jerome’s claim that temporal atomism was attributable to the philosophers is not reliable. While the use of the term ἄτομος in a temporal sense has precedents in Greek and predates I Cor. it was not used by the atomists to describe time. The concept begins in a Christian context with the Latin translations of the Pauline letters but was not expanded upon until Augustine of Hippo approached the matter.

2.7 Augustine’s Atom in Time

In Tertullian and Jerome we saw two differing approaches to translating this passage into Latin. Tertullian, known for accepting things on faith alone, accepted the wording of the apostle at face value and understood *atomus* in a temporal sense despite his awareness of atoms as pertaining to materialist philosophy. Jerome would avoid the word altogether in his translation, discarding the metaphorical use of *atomus* for the literal *momentum*, but at the same time reinterpreting the secular use of atoms to make it correspond with the scriptural usage of the word. Neither of these authors addresses the matter in much detail,

³⁶⁹B. Inwood and L. P. Gerson, *Hellenistic Philosophy: Introductory Readings*, 2nd edn (Cambridge: Hackett Publishing Company, 1997), p. 15.

³⁷⁰Sextus Empiricus, *Against the Mathematicians*, X 181, tr. Taylor *Atomists*, p. 90.

³⁷¹Lucretius, *De Rerum Natura*, I 458-61. tr. Rouse & Smith, p. 39.

but Jerome's contemporary Augustine attempts to interpret the use of the term that we see a systematised understanding of temporal atomism develop.

Augustine was no stranger to atomism. In his *Confessions* he admitted to having had affinities for Epicureanism after his departure from Manichaeism saying 'Talking to my friends Alypius and Nebridius, I declared that in my heart I would have had to hand the palm to Epicurus when it came to matters of the greatest good and the greatest evil'.³⁷² Having familiarity with the ethics and physics of the Epicurean school, he was doubtlessly well aware of the meaning of the word *atomus* within the context of physics. The word poses a challenge for him in his exegesis as Augustine rejected Epicureanism because of its affirmation of the mortality of the soul. As atomists, they considered the soul to have corporeal existence like all other matter and to be subject to dissolution like all compound bodies. If read literally then, does I Cor. 15:52 infer that bodies are composed of atoms? Yet this is not the only problem with which the verse presents him. He addresses it in a sermon to his congregation in North Africa, not in a treatise to a learned readership. How is he to address this first problem to an audience who firstly may not recognise a rare word in the language, secondly may not speak much Greek and understand the elements of the word, and thirdly are probably not educated in philosophy and physics?

Sermon 362 addresses questions about the resurrection of the dead, namely will the resurrection happen at all and if so what will it be like. In order to offer answers to these questions he cites scriptural authority, and I Cor. 15:52 is among the verses he quotes. Like his fellow countryman Tertullian, Augustine too makes use of the loanword *atomus*, necessitating an explanation to his congregation.

Augustine, *Sermon 362*

Multi nesciunt quid sit atomus. Atomus dictus est a τομή, quod est sectio: ἄτομος graece quod secari non potest. Sed dicitur atomus in corpore, dicitur in tempore. In corpore dicitur, si quid inueniri potest quod quidem diuidi non posse perhibetur, corpusculum aliquod tam minutum, ut iam non habeat ubi secari possit. Atomus autem in tempore momentum est breue,

Many do not know what an atom is. An atom is said to be from τομή, which means a cutting, and in Greek ἄτομος means something which cannot be cut. It is said that there are bodily atoms and temporal atoms. It is said that a bodily atom (if such a thing could be discovered) is something that it is not possible to split, a tiny body so minute that it does not have anywhere

³⁷²Augustine *Confessiones* 6.26, trans. by Micheal Eler in *The Cambridge Companion to Epicureanism* ed. by James Watson (Cambridge: CUP, 2009), p. 63.

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quod iam non habet ubi diuidatur. Verbi gratia, ut possint etiam corda tardiora capere quod dico: lapis est; diuide eum in partes, et partes ipsas diuide in lapillos, lapillos quidem in grana, ueluti sunt arenae, rursusque ipsa arenae grana diuide in minutissimum puluerem, donec si possit peruenias ad aliquam minutiam, qualis iam diuidi non potest. Haec est atomus in corporibus. In tempore uero sic intelligitur. Annus, uerbi gratia, diuiditur in menses, menses diuiduntur in dies, dies adhuc in horas diuidi possunt, horae adhuc in partes horarum quasdam productiores, quae admittunt diuisiones, quousque uenias ad tantum temporis punctum, et quamdam momenti stillam, ut per nullam morulam produci possit, et ideo iam diuidi non possit: haec est atomus in tempore.³⁷³

where it can be divided. However, a temporal atom is a short moment, which has nowhere to be split. I will give this example for those of you with minds too slow to grasp what I am saying; there is a rock, divide it in parts and those parts into pebbles, then the pebbles into granules, then they are sand, and again divide the grains of sand into the most fine dust, until you can arrive at something so small, that it is of a quality which cannot be divided further. This is the atom in the body. The atom in time is to be understood in this manner. A year, for example, is split into months, months are divided into days, and days can be split into hours and now hours can be lead out into certain parts of hours which admit division, up until you arrive at such a point in time and a certain droplet of a moment so that no further parts can be drawn out of it and so it cannot be divided: this is the atom in time.³⁷⁴

His explanation of the nature of the atom is straightforward. He begins by giving the etymology of the word, explaining that it is a Greek word meaning indivisible, before employing an analogy to allow his audience to imagine it. He speaks of the division of a rock into smaller and smaller parts, stones, pebbles, and sand, until reaching a part so small that it admits no further division. This paints a simple picture to his audience. He then uses this analogy and draws a distinction between this corporeal atom and a second type of atom. The temporal equivalent of pebbles, sand, and dust are days, hours, and minutes. This distinction accounts for the anomalous use of atom in a temporal sense, which Paul spoke of in I Cor. Just as a rock can be divided into smaller and smaller parts so too can time, likening the various units of time to the increasingly minute sections of

³⁷³ Augustine, *Opera Omnia*, ed. by Jacques Paul Migne, PL 39 (Paris: 1846).

³⁷⁴ Translation my own.

the rock until, as with the rock one reaches a point which cannot be further divided. He calls this instant an atom.

Augustine appears to take a different approach to Jerome with regards the atom. Whereas Jerome made an ambiguous statement of the atom's nature, Augustine explains it plainly and makes reference to mundane objects and intervals of time. Jerome, if my understanding is correct, suggests that the atom exists as a temporal unit only, and that the atomist philosophers were incorrect to speak of it as a unit of matter. In doing so, Jerome avoided providing scriptural authority for the existence of material atoms. Augustine's approach to this problem differs. His language here suggests that the existence of the two atoms is simply not equally likely. While he makes use of a simple description of an atom (significantly, ignoring the other half of the atomists' duality, the void) he appears to approach the matter of its existence with some scepticism.

There are two points to note here which suggest that he has reservations about corporeal atomism but that these reservations do not apply to temporal atomism. After explaining what the word means, he qualifies his description of it stating *si quid inueniri potest*: if such a thing as an atom could be discovered then its existence could be believed. This implies that because an atom has not been discovered, one cannot commit to its existence. We have seen this non-committal stance before in his comments on the shape of the world in *De Genesi ad Litteram* above. It is possible that what Augustine suggests here is that an atom, classically conceived of as beneath sense perception due to its minute size, could never be discovered as by definition it can never be perceived on its own. Thus he can imply that because no one has ever seen an atom and because no one can see or touch an atom, its existence is purely hypothetical.³⁷⁵ When this statement is compared with his description of the temporal atom, we see that these reservations do not apply to the other *atomus*. He opened his description of the corporeal atom with the verb *dicitur* 'it is said', which is unspecific. Who said it? Perhaps it was philosophers, perhaps poets. This is unimportant to his argument, but what is important to his stance on the matter is that people say that there exists such a thing as a bodily atom.

Contrast this with his introduction to the atom in time. '*Atomus autem in tempore momentum est breue, quod iam non habet ubi diuidatur*'. The vagueness and hearsay of the bodily atom is set aside. The *autem* contrasts this sentence with the preceding one and

³⁷⁵ Alternatively, it is possible that owing to his familiarity with Epicureanism, he does not wish to present a reading of scripture which endorses an anti-teleological cosmos and so approaches the possibility of corporeal atoms with some trepidation.

his use of the verb *esse* rather than ellipsis or *dicuntur*, asserting that unlike the atom in the body, the existence of the atom in time is not dubious. We see here that while Augustine may approach corporeal atomism with some reservations, he conveys much more confidence in the existence of the temporal atom because of its apparent affirmation in scripture.

Through this approach, Augustine resolves any potential conflict as an orator trying conveying a complex idea to his audience and the exegetical problem of how to understand this passage. By means of a simple analogy, Augustine explains the nature of atomic matter and by extension atomic time to his audience. By distancing the material atom slightly from reality, he avoided providing a scriptural endorsement of atomism and by extension, exculpates Paul from any possible endorsement of Epicurean ethics. Augustine's account of the atom would prove quite influential, informing authors directly and indirectly for centuries to follow through the transmission of this passage by the encyclopaedists.

3. THE EARLY MEDIEVAL RECEPTION OF THE ATOM IN TIME

After tracing the origin of temporal atomism in Late Antiquity, we can see that its origins are not in the decline of Greek learning, but the adaptation of it to a different intellectual culture. This section will examine how this idea formed by Augustine from earlier Christian biblical exegesis was developed and incorporated into a wider worldview.

3.1 *Martianus Capella's Atoms*

The *De Nuptiis Philologiae et Mercurii* of Martianus Capella (Fifth century) was a formative text for the Liberal Arts curriculum of the Latin West. The text, which describes a union of learning and eloquence through the figures of pagan gods, proves to be a treasure trove of information about various philosophers, including the atomists. Democritus himself is referred to at the start of book two in passing, in a role related more to his association with magic than with physics.³⁷⁶ In the scene describing an assembly of the residents of heaven, we are greeted with a cast of gods, heroes and philosophers, Democritus among them. The text features the rather curious image of *circumfusus atomis Democritus videbatur*, Democritus surrounded by atoms.³⁷⁷ In addition to this

³⁷⁶ This tradition about Democritus has been understudied, but dates back to at least the first century AD if not earlier.

³⁷⁷ Various philosophers are featured in this scene, surrounded by their traditional first principle from their physics (e.g. Thales is soaked, Heraclitus is on fire) or a symbol of their ethics (e.g. Epicurus is handing out roses to the assembly, representing his *telos* of pleasure). The passage provides the reader

doxographical and biographical information in Book II, we also have a passage from Book IX which details the nature of time:

Martianus Capella 9, 971

Primum igitur tempus est, quod in morem atomi nec partes nec momenta recisionis admittit, ut est in geometricis punctum, in arithmetiis monas, id est singularis quaedam ac se ipsa natura contenta. ³⁷⁸	First let us take up the tempus [the basic unit of time], which, like the atom, admits of no cutting into parts or particles. It is comparable to the point of the geometricians or the monad of arithmeticians, i.e. a certain singularity and comprised of itself. ³⁷⁹
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Martianus here presents time as being of the same nature as the atom, indivisible and likens it to a geometrical point or monad (e.g. the number one). The question for us reading this is what does this mean for the *tempus* to lack parts? We can interpret it in one of two ways. Either by this he means that time is a continuum which admits no division from beginning to end or else he is describing time as being composed of discrete units, which we might term instants, which cannot be divided on account of their brevity. Since he compares it with a geometrical point we can rule out the first possibility, which would be perhaps more aptly compared with a line. In this brief passage, he presents time as having an atomic nature and likens it to the atoms of Democritus as well as to it to other singularities, a development which also occurs in Isidore's *Etymologies*.³⁸⁰

3.2 Isidore of Seville's Atoms

The influence of Isidore of Seville on the Latin West in the Middle Ages cannot be understated. Drawing on all available sources to him, he compiled in his *Etymologies* a summary of ancient knowledge which went on to be the definitive authority on many topics, including on the natural world. *De Mundo et Partibus*, book XIII of the *Etymologies*, presents a synthesis of scripture and science across the first three chapters.

with details about various divinities and mortals, including epithets of the gods (eg. Mars is called *Gradivus*, Apollo *Delius*) and alternative names for human characters, with Vergil referred to as *Mantuanus*.

³⁷⁸ Martianus Capella, *De Nuptiis Philologiae et Mercurii*, ed. by James Willis (Teubner: Leipzig, 1983).

³⁷⁹ *Martianus Capella and the Seven Liberal Arts. Vol 2: The Marriage of Philology and Mercury*, trans. by William Harris Stahl, Richard Johnson, and Evan Laurie Bruge (New York: Columbia University Press, 1977), p. 373.

³⁸⁰ This chapter focuses on the *atomus in tempore*, but there emerged a trend after Augustine to 'atomise' other things and abstractions. This atomizing tendency is discussed in Chapter Five, below.

The book opens with a short description of Christian cosmogony and is followed by chapters with a more philosophical slant, incorporating atoms and the four elements into this worldview. His account of atoms presents multiple classes of atoms.

Isidore of Seville Etymologies 13.2.2

Atomos philosophi uocant quasdam in mundo corporum partes tam minutissimas ut nec uisui pateant nec τομήν, id est sectionem, recipiant; unde et ἄτομοι dicti sunt. Hi per inane totius mundi inquietis motibus uolitare et huc atque illuc ferri dicuntur, sicut tenuissimi pulueres qui infusi per fenestras radiis solis uidentur. Ex his arbores et herbas et fruges omnes oriri, ex his ignem et aquam et uniuersa gigni atque constare quidam philosophi gentium putauerunt. Sunt autem atomi aut in corpore, aut in tempore, aut in numero. In corpore, ut lapis. Diuidis eum in partes et partes ipsas diuidis in grana, ueluti sunt harenae; rursumque ipsa harenae grana diuide in minutissimum puluerem, donec, si possis, peruenias ad aliquam minutiam, quae iam non sit quae diuidi uel secari possit. Haec est atomus in corporibus. In tempore uero sic intellegitur atomus. Annum, uerbi gratia, diuidis in menses, menses in dies, dies in horas; adhuc partes horarum admittunt diuisionem, quousque uenias ad tantum temporis punctum et quandam momenti stillam, ut per nullam morulam produci possit; et ideo iam diuidi non potest. Haec est atomus temporis. In numeris, ut puta octo diuiduntur in

Atoms (*atomus*) are what the philosophers call certain corporeal particles in the world that are so tiny that they are not visible to sight, and do not undergo τομή, that is, “splitting,” whence they are called ἄτομοι. They are said to fly through the void of the entire world in unceasing motion and to be carried here and there like the finest dust motes that may be seen pouring in through the window in the sun’s rays. Some pagan philosophers have thought that all trees and plants and fruits have their origins from these particles, and that from them fire and water and the universe were born and exist. There are atoms in bodies, in time, and in number. In a body, such as a stone. You may divide it into parts, and the parts into grains, like sand; then divide the grains of sand themselves into the finest dust, until, if you can, you will reach a certain minute particle, which no longer can be divided or split. This particle is the atom in bodies. With reference to time, the atom is understood in this way: you may divide a year, for example, into months, months into days, days into hours. The parts of hours still admit diuision until you come to a point of time and a speck of an instant such that it cannot be extended

quattuor, rursus quattuor in duo, deinde duo in unum. Vnus autem atomus est, quia insecabilis est. Sic et littera: nam orationem diuidis in uerba, uerba in syllabas, syllabam in litteras. Littera, pars minima, atomus est, nec diuidi potest. Atomus ergo est quod diuidi non potest, ut in geometria punctus. Nam τόμος diuisio dicitur Graece, ἄτομος indiuisio.³⁸¹ through any small interval, and thus can no longer be divided. This is an atom of time. In number, take for example eight divided into four, and four into two, and then two into one. But one is an atom, because it is indivisible. Thus also with letters (i.e. speech-sounds), for speech is divided into words, words into syllables, syllables into letters. But a letter, the smallest part, is an atom and cannot be divided. Therefore an atom is whatever cannot be divided, like a point in geometry, for τόμος means “division” in Greek, and ἄτομος means “non-division”.³⁸²

Augustine’s influence is plain to see in this passage, with many verbal echoes and direct quotations to be seen in Isidore’s account of atoms:

Augustine, *Sermones* 362

Multi nesciunt quid sit atomus. Atomus dictus est a τομή, quod est sectio: ἄτομος graece quod secari non potest. Sed dicitur atomus in corpore, dicitur in tempore. In corpore dicitur, si quid inueniri potest quod quidem diuidi non posse perhibetur, corpusculum aliquod **tam minutum, ut iam non** habeat ubi secari possit. Atomus autem in tempore momentum est breue, quod iam non habet ubi diuidatur. Atomus autem in tempore momentum est breue,

Isidore *Etymologies* XIII 2

Atomus philosophi uocant quasdam in mundo corporum partes **tam minutissimas ut nec** uisui pateant nec τομήν, id est sectionem, recipiant; unde et ἄτομοι dicti sunt. Hi per inane totius mundi inquietis motibus uolitare et huc atque illuc ferri dicuntur, sicut tenuissimi pulueres qui infusi per fenestras radiis solis uidentur. Ex his arbores et herbas et fruges omnes oriri, ex his ignem et aquam et uniuersa gigni atque constare quidam

³⁸¹ Isidore of Seville, *Isidori Hispalensis episcopi Etymologiarum sive originum libri XX*, ed. by W.M. Lindsay, 2 vols (Oxford: Clarendon Press, 1911).

³⁸² Isidore of Seville, *The Etymologies of Isidore of Seville*, trans. by Stephen A. Barney, W.J. Lewis, J.A. Beach and Oliver Berghof (Cambridge University Press: Cambridge 2006), pp. 271-2.

quod iam non habet ubi diuidatur. Verbi philosophi gentium putauerunt. Sunt gratia, ut possint etiam corda tardiora autem atomi aut in corpore, aut in capere quod dico: **lapis est; diuide eum** tempore, aut in numero. In corpore, ut **in partes, et partes ipsas diuide in lapis. Diuidis eum in partes et partes lapillos, lapillos quidem in grana, ueluti ipsas diuidis in grana, ueluti sunt sunt arenae, rursusque ipsa arenae harenae; rursusque ipsa harenae grana diuide in minutissimum grana diuide in minutissimum puluerem, donec si possit peruenias ad puluerem, donec, si possis, peruenias ad aliquam minutiam, qualis iam diuidi aliquam minutiam, quae iam non sit non potest. Haec est atomus in quae diuidi uel secari possit. Haec est corporibus. In tempore uero sic atomus in corporibus. In tempore uero intelligitur. Annus, uerbi gratia, sic intellegitur atomus. Annum, uerbi diuiditur in menses, menses diuiduntur gratia, diuidis in menses, menses in dies, in dies, dies adhuc in horas diuidi dies in horas; adhuc partes horarum possunt, horae adhuc in partes horarum admittunt diuisionem, quousque uenias quosdam productiores, quae admittunt ad tantum temporis punctum et diuisiones, quousque uenias ad tantum quandam momenti stillam, ut per temporis punctum, et quamdam nullam morulam produci possit; et ideo momenti stillam, ut per nullam iam diuidi non potest. Haec est atomus morulam produci possit, et ideo iam diuidi non potest: haec est atomus tempore**

The only noticeable difference between the presentations is the absence of Augustine's reservations about atomism in Isidore's work. In addition to drawing on Augustine, Isidore alludes to Lucretius, as he does throughout the *Etymologies* as an authority on atoms.³⁸³ One question which we must answer is whether Isidore had direct knowledge of Lucretius. Did he have the poem to hand or was he citing him as an authority by drawing on other references which he had to hand from the likes of Lactantius and Servius? In the *Etymologies*, Isidore quotes the *DRN* fifteen times and at least once from all six books of the poem. The majority of his quotations are from book five, potentially meaning that there is a chance that he had at least part of the poem to hand. However, he

³⁸³ For example, in XIII 3 immediately following the discussion on atoms, he directly quotes *De Rerum Natura* 4.133.

also cites Lucretius without quotation many times, the majority of which David Butterfield observes, come from book six.³⁸⁴ Aside from the Bible, Vergil and Cicero are his two most often cited authorities.³⁸⁵ It is possible that Isidore drew on other sources for Lucretius, encountering him indirectly. However, as Butterfield notes, the quotations and citations are not the only evidence for contact with the poem: ‘From the many verbal reminiscences and obvious adaptations of Lucretius theories in his tellingly title *De Natura Rerum* and the unfinished, twenty-book encyclopaedic *Etymologiae*, it is highly likely that Isidore had direct access to the Lucretian text’.³⁸⁶ It is fair then to say that his contact with the poem was both direct and substantial.

While this passage and its reference to atoms as discontinuities in both body and time has been understood as a corruption or a sign of the decline of Greek learning in the West, when it is read through an intertextual lens we gain a more nuanced perspective of it. The text does not represent decline and loss but an attempt at compilation and preservation of knowledge, drawing on the sources available to the author.

3.3 *The Atom in Computistics*

Computistic is the medieval science of chronology and time keeping which developed out of a need to calculate the date of Easter. In the early centuries of Christianity the celebration of Easter varied regionally, with some communities following the Jewish celebration of Passover on 14 Nisan, others selected various dates in the spring, leading to a number of paschal controversies within the Church. Blackburn and Holdford-Strevens provide a comprehensive overview of these disputes which led to the need for standardisation within the Church.³⁸⁷ By the Middle Ages the consensus was that Easter would be celebrated on the first Sunday following the first full moon after the vernal equinox. The need to calculate these factors necessitated an understanding of time-keeping, giving rise to the computus.

In addition to providing practical instruction on the mathematics and arithmetic required to compose and interpret Easter tables, computus also provided theoretical instruction to users about the divisions of time and it is here that the *atomus in tempore*

³⁸⁴ D. Butterfield, *The Early Textual History of Lucretius’ De Rerum Natura* (Cambridge University Press, 2013) p. 90.

³⁸⁵ Isidore, *The Etymologies of Isidore of Seville*, ed. by S. A. Barney and others (Cambridge University Press, 2006) p. 15.

³⁸⁶ Butterfield, *The Early Textual History of Lucretius*, p. 89.

³⁸⁷ B. J. Blackburn and L. Holford-Strevens, *The Oxford Companion to the Year* (Oxford: Oxford University Press, 1999), pp. 791-800.

finds a natural home as the basic unit of time within a wider theoretical framework of chronology. In some cases, it is even precisely defined. The atom as a unit of time is present in the computus of 243 or *De Computo Paschali*, an early text on the calculation of Easter.³⁸⁸ At 2.14, the Computist describes the units of time in ascending order from smallest to largest ‘*ad athomum per dies et annos singulos*’.³⁸⁹ A much more detailed account of the temporal atom is to be found in the *Munich Computus* of 718-9 which draws heavily on Isidore’s account:

Munich Computus 2, 1-28

<p>Atomos nomen Grecum est et interpretantur indiuisible, Ysidoro dicente: Atomos philosophi dicunt quasdā in mundo partes minutissimas, ut uisi non pateant, nec sectionem recipiant. Huc illucque feruntur, sicut minutissimi pulueres, qui infusi per tenebras solis radiis uidentur. Inde atomos indiuisible interpretantur. Atomos autem in IIII partibus manet, id est in corpore et in tempore, in numero atque in sole. In corpore, ut, si lapidem diuidas in partes quas partiris in grana, ut arene, quas rursum diuidis in puluerum, quem diuidi non potes. Inde illum puluerem atomos nominas. In tempore uero atomos fit, ut annum diuidis in menses, menses uero in septimanas, septimanas in dies, dies autem in horas, hore uero in momenta, momentum in quadam stillam paruissimam. Inde haec</p>	<p>Atomos is a Greek term and is to be translated as indivisible, as Isidore says: the philosophers call certain smallest parts in the cosmos <i>atomos</i>, and these can neither be seen, nor can they be divided further. They are carried hither and thither, like the smallest particles of dust, which appear to have been poured through the shadows into the rays of the sun. Therefore <i>atomos</i> is to be translated as indivisible. <i>Atomos</i> appear however in four domains, i.e. in an object and in time, in a number and in the sun. (<i>Atomoi</i> appear) in an object as if you divide a stone into pieces, which you divide into grains, just like sand, which you divide further into dust, which (in turn) you cannot divide any further. Therefore you term this dust <i>atomos</i>. In time, however, an <i>atomos</i> emerges when you divide a year into months, months into weeks, weeks into days, days into hours, hours into <i>momenta</i></p>
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³⁸⁸ Anonymus, *S. Gelasius I Papa, S. Avitus, S. Faustinus, Joannes Diaconus, Juliabus Pomerius, Duo Anonymi, Aurelius Prudentius*, ed. by Jacques Paul Migne, PL, 59 (Paris: Migne, 1847).

³⁸⁹ There is a brief comment to be made about the use of ‘th’ instead of ‘t’ in *atomus* here. Latin lacked the sound of a voiceless dental fricative /θ/, but used the digraph ‘th’ to represent the Greek Θ in loan words. As *atomus* is a Greek loan word, it has been at some point hypercorrected to represent its origins. There is an argument for correcting the word to *atomum* as the TLL entry does, but there is some merit in retaining it as a variant reading, as it hints that the author was aware of the word’s Greek origins.

stilla diuidi non potest et atomos (and finally) a *momentum* into certain
 dicitur.³⁹⁰ smallest drops. These drops, then, cannot be
 divided further and are (therefore) called
atomos.³⁹¹

The Computist quotes Isidore's account on the atom with some minor deviations from the *Etymologies*, most notably the addition of a new categories of atom, *atomus in litteris* and *in sole*, and the introduction of further divisions of time, *septimanae* and *momenta*, or weeks and moments. The other atoms named here are not of particular relevance to the Computist's discourse on time. The corporeal atom's function in this passage is to relate the concept of the subdivision of time to the division of something tangible and the numerical atom is mentioned here purely on Isidore's authority. However, Isidore here is authoritative on the temporal atom, but his entry is not definitive. The Computist presents a more developed form of the atom in time which expands on Isidore, not only by providing more detail on the nature of time but also with a precise definition of the *atomus in tempore*. At the outset the author defines time as the 'interval (*spatium*) extending from the beginning to the end' and goes on to detail a theoretical system of 14 temporal divisions from the *mundus*, the duration of this world's existence down to the *atomus*, the unit of time so small and so brief as to admit no further division. Furthermore, the Computist provides precise definitions for each of the units of time. Moving backwards from the day we are told that there are four *quadrantes* in a day, three hours in a *quadrans*, four *puncti* in an hour, two and a half *minuta* in a *punctum*, four *momenta* therein and finally fifteen *atomi* in a single *momentum*.³⁹² With these developments, we see the *atomus in tempore* precisely defined relative to other temporal measurements and fitted into a chronological theory with practical applications. Thus in the centuries between Tertullian and the *Munich Computus*, the temporal atom went from a passing comment based on the odd wording of a passage of the Bible to a clearly defined basic unit of time.

³⁹⁰ Immo Warntjes, *The Munich Computus: Text and Translation: Irish Computistics between Isidore of Seville and the Venerable Bede and Its Reception in Carolingian Times*, Sudhoffs Archiv/Beiheft, 59 (Stuttgart: Steiner, 2010), pp. 8-10.

³⁹¹ Warntjes, pp. 9-11.

³⁹² To give a sense of what this mean, these units correspond to the following in SI base units, assuming a *dies* is exactly 24h. 1 *quadrans* = 6h., 1 *hora* = 2h., 1 *punctum* 30mins, 1 *minutum* 12mins, 1 *momentum* 3mins, leaving an *atomus* as twelve seconds.

3.4 Other Texts

The *atomus in tempore* spread into other areas of Latin literary cultures from its influence in encyclopaedic and computistical literature during the Carolingian period. While the *Munich Computus* was certainly influential, the smaller units, including the atom in time, were revised. For example Bede, in his *De Tempore Ratione* concurs with the Munich Computist as to the definitions while Carolingian computists define the *atomus* as 1/564 of a *momentum* rather than the 1/15 of the Munich computist.³⁹³ Texts later than the *Munich Computus* list five types of atom rather than the four of the *Munich Computus* or the three of the *Etymologies*.³⁹⁴ Ideas about the *atomus* were disseminated throughout this period and the Carolingian renaissance. Descriptions of the atom in time, along with the others is to be seen in the grammatical works of Peter of Pisa, Charlemagne's personal tutor from 774-90. The *De Littera* section of his *Ars Dieziana* takes the form of questions and answers between a *magister* and their *discipulus*.³⁹⁵ The elenchus on letters features a description of the *modis littera*, the categories of letters, of which the master reckons there are five. We are told that among the Hebrews there is the *zephyr*, the Greeks *gramma*, the Latins *littera*, orators *legitera* and philosophers *atomus*. With regards to the last, he explains that "*Atomus*" uero ideo nuncupatur, quia diuidi non potest. Omne enim quod indiuisibile est, apud philosophos "*atomus*" nuncupatur. Whatever is not subject to division is an atom, and he names five categories of atom, *in re*, *tempore*, *numero*, *littera* and *in sole*, typical of the post-*Munich Computus* era. Of the temporal atom we are told "An atom in time is, just as a year is divided into seasons, seasons into months, months into weeks, a week into days, one day cannot be divided: it is an atom".³⁹⁶ In contrast to the conception of the atom in time in the *Munich Computus*, this account takes a much less scientific approach to defining the atom, arriving at a very different conclusion that a day cannot be subdivided. While the *Munich Computus* and subsequent *computi* gave quite precise definitions of the atom in time, this text takes the day as the indivisible unit of time. The lack of precision is understandable, with this being a grammatical textbook and not a chronological one.

³⁹³ Warntjes, pp. 6-13.

³⁹⁴ Warntjes, p. 9, n8-9.

³⁹⁵ Peter of Pisa, *Grammatical Works Attributed to Peter of Pisa, Charlemagne's Tutor*, ed. by Elke Krotz and Michael M. Gorman, Bibliotheca Weidmanniana (Hildesheim: Weidmann, 2014), pp. 337-342.

³⁹⁶ *Ibid.*, p. 339. Translation my own.

4. CONCLUSION

Over the course of the centuries from Tertullian and *De Computo Paschali* in the second century to the *Munich Computus* in the eighth we see the development of the atom in time from a figure of speech to a more fleshed out theoretical unit of time within a practical system of timekeeping. With each generation of authors we see this discontinuous conception of time develop and grow. It began as a curious choice of word in 1 Cor., the smallest part of matter used as a metaphor for the briefest moment of time. Through Augustine's exegesis of this passage it begins to be seen as something more than just a metaphor, and moves into being a physical concept. Whereas Jerome and Tertullian simply took it to mean 'in a moment' Augustine drew out a more detailed explanation and justification, and through of his knowledge of atomic physics from philosophy, he links this temporal atom to the physical bodies conceived of by Democritus, Leucippus and Epicurus centuries before his time.

It is true that Augustine's explanation is not sophisticated. He does not discuss indivisible magnitudes, partless bodies, Eleatic paradoxes, or the nature of void. But his exegesis is not supposed to do that. He was delivering a sermon to his (presumably) largely illiterate and uneducated congregation in Roman North Africa about the resurrection, not writing a treatise on natural philosophy. His task in the *Sermon* was to make clear the Apostle Paul's meaning to his audience and address any concerns they may have had about their fate after death. Rather than simply explain away the word *atomus* as a synonym for a moment, he chose instead to interpret the epistle as using the word by its ordinary meaning in Latin. But the ordinary meaning was not sufficient, and necessity is the mother of invention. It was after all, only a small step for Augustine to take. There was a precedent, seen in a predecessor's words and in a near contemporary's letters that the word had a temporal meaning in the context of the letter. What Augustine did was to reconcile the philosophical meaning of atom with the meaning of the words of 1 Cor. and in doing so he made an innovation in the form of atomic time. He drew on the etymology of the word atom, and reasoned that this 'indivisible' spoken of in the passage was not an indivisible body but an indivisible time.

That is simply what Augustine did: He made an obscure meaning clear to his congregation. But after Augustine's lifetime his interpretation stood as an authoritative one because of his status as a Church Father. What began as a simple diversion in a sermon, intended to explain a problematic word in scripture, became a statement from a Church Father about the true nature of time as supported by scriptural authority. Isidore

took this innovation from Augustine and made it a fundamental part of the world presented in his encyclopedia, disseminating the idea, which had the effect of spreading a conception of time as atomic rather than as a continuum throughout the learned minds of the Medieval West. Perhaps drawing on Martianus Capella's statements, Isidore expanded this atomist view slightly, to the point where not just bodies and time but numbers, sounds and points too were atomic in nature. Among Isidore's readership were medieval computists, who took the small step to expand Isidore's description by calculating the subdivisions of time and defining the *atomus in tempore* as a precise moment, and fitting it into their theoretical description of time.

Though the atoms that made up the cosmos had waned in significance and the void was all but unheard of after Isidore until the rediscovery of Lucretius, a variant atomism is seen to develop among Late Antique and Early Medieval writers. This atomism conceived of bodies, time, numbers, and eventually sounds and points as being finitely divisible, not because of a theoretical basis or serious reflection on nature but because the authors who wrote of them relied on the authority of their literary forbears. Although other authors laid the foundation, Augustine's words provided the justification for the later developments in Isidore and the Computists. With the exception of the atom in time, they are not particularly prominent features of medieval science. When it came to the nature of matter, the four elements were far more widely discussed than the atoms. There is some discussion to be had on the atoms in number, speech and geometry in their own right, but where they are mentioned in the above texts, for the most part they function as support for an atomic worldview, as examples of other indivisibles which make the intangible atom in time and imperceptible atom in body more intelligible. The atom *in sole* of the *Munich Computus* and later texts deserves some attention and will be addressed in the final chapter of this thesis. Of all of the atoms of this variant atomism, the *atomus in tempore* is the most widely discussed and most significant. One which had a part within a theoretical system of timekeeping with the practical application of calculating the calendar, and more importantly the movable feast of Easter.

Fundamentally its origins lie with ancient atomism. It is neither as complex nor as rigorous as its predecessor, but without the atomism of Democritus and Leucippus in the first place these developments would be impossible. Through Augustine's innovation in the *Sermon* it comes to be as a simple idea, and because his readership are not concerned with the same problems as the critics and advocates of ancient atomism, the idea is repeated unchallenged and gradually expanded upon where it is necessary, in this

case as a theoretical underpinning for understanding the nature and composition of time. The idea was shaped by different pressures and demands than those that shaped ancient atomism. The entries in Isidore's *Etymologies* were written with neither the same motives nor methods as Aristotle's *Physics*, but were composed according to his own time and mores, meaning that the authority of an intellectual giant like Augustine was sufficient for his collection of learning.

Accordingly, we ought to consider that the *atomus in tempore* has its place in the wider history of atomic thought. While it may not be sophisticated as Democritus' duality of being and non-being or as erudite as Lucretius' poetry it merits consideration as a part of the history of atomism. The philosophical, epistemological and ethical motives for its origins may be radically different from Democritus' response to the Eleatic elenchus or Epicurus' adoption of a slightly modified Democritean physics but the idea that time is composed of indivisible units simply would not have come into being without the influence of the atomists. It was not as complex as the atomism of Democritus and Leucippus or of Epicurus and his school or of the Mu'tazilites but the fact remains that it is a form of atomism, one which flourished in the Latin West when the other less simplified 'atomisms' faded away into obscurity. When Lucretius' poem was only known in fragments contained in the words of the Church Fathers, the *atomus in tempore* was being described by Isidore and spread throughout the Latin speaking world. When Democritus had become so obscure that Eriugena glossed their names in *De Nuptiis* only as *iudex populi* the *atomus in tempore* was being quantified and measured as part of a system of time keeping in medieval computistics.³⁹⁷ The *atomus in tempore* provided a link between contemporary science and ancient physics in the medieval world when the latter was fading away into nearly to oblivion in Europe. By examining the transmission and development of this innovation of Late Antiquity we see that it is far from a garbled second hand reference but a well-reasoned explanation in a world with radically different intellectual backgrounds to the early atomists. When it is understood in its proper context, a context in which the authority of past writers, whether Biblical or Patristic was valued more than reasoning from first principles we see that it is a variant type of atomism, rather than an error or a mistake. It should not be considered as part of the wider history of atomism from Democritus to the present day.

³⁹⁷ Johannes Scotus Erigena, *Tutti i Commenti a Marziano Capella*, trans. by Ilaria Ramelli, Il Pensiero Occidentale, 1st edn (Milano: Bompiani, 2006), p. 228.

Chapter Five: The Atomising Tradition in the Early Middle Ages

1. INTRODUCTION

This chapter examines the legacy and influence of Augustine's novel interpretation of atomism in the Early Middle Ages (500-c.800) during which time other categories of atoms appear in tandem with the *atomus in corpore* and *in tempore*. There was a tendency which emerged out of Isidore of Seville's etymological strategy to 'atomise' certain other concepts which were judged to be indivisible. Isidore's readers counted other phenomena and concepts as atomic, expanding the scope of Early-Medieval atomism. By the Carolingian period, these categories of atoms had become relatively stable with some minor variations to be seen in differing accounts.

Along with the *atomus in tempore*, these other atoms have been portrayed in scholarship as markers of the decline of Greek learning in the Latin literary tradition.³⁹⁸ Indeed, when viewed in isolation these atoms may seem simplistic or even erroneous. However, as we saw in the previous chapter, when studied through an intertextual lens later variations on atomism can be understood as a continuation of an earlier tradition rather than a break in it. Through this study I hope to demonstrate continuity of atomism in the Early Medieval period in Latin literature from the developments in its Patristic reception in Late Antiquity, and ultimately to highlight the links between these developments, antique philosophical traditions and the atomism of Democritus.

Although the number of these categories of atoms varies over time the development of all of them is ultimately grounded in Isidore's *Etymologies*. As we shall see, along with the atoms studied in the previous chapter there are up to three further types of atom discussed by Isidore and his readership. Isidore's source material for these atoms links them back to the antique reception of the Presocratics through references to poetry, grammar, and mathematics. With reference to Reynolds's 'hourglass model' discussed in the previous chapter, we can conceive of Isidore's atomism as the narrow point in the hourglass which transmits small fragments of late antique atomism to be expanded upon in Latin literary culture up until the rediscovery and dissemination of Lucretius in the fifteenth century.

³⁹⁸ See Chapter Four, 1.4 above.

The Atomising Tradition

The first section of this chapter deals with the *atomus in numero* or atom in number from *Etymologies XIII*, and places its origin in the mathematical traditions of Late Antiquity. Following this, the second section examines a development in Isidore's later readership, the *atomus in litteris* or *oratione*, the atomised 'speech-sound'. Its development is seen in the encyclopaedic tradition and among the grammarians. This atom is found throughout Carolingian texts and through its origins in the grammatical tradition it shares common ground with the earliest extant philosophical descriptions of the written word. The final section addresses the most problematic of the medieval atoms, the *atomus in sole*: the atom in the sun. This atom is perhaps the most striking development in medieval atomism, not because of what it is (which is either a vague meteorological phenomenon or simply a poetic name for dust) but because of its origins, development and connections with Democritus. This chapter will examine this atom from an intertextual perspective with the aim of shedding light on its origins.

2. THE NUMERICAL ATOM

2.1 Introduction

We find in Isidore's account of atoms in Book XIII of the *Etymologies* the first additional atom since Augustine's atom in time. According to Isidore there are three types of atom: *sunt autem atomi aut in corpore, aut in tempore, aut in numero*.³⁹⁹ He defines this third atom as the number one:

Isidore, *Etymologies XIII* 2.4

In numeris, ut puta octo diuiduntur in quattuor, rursus quattuor in duo, deinde duo in unum. Vnus autem atomus est, quia insecabilis est.	In number, take for example eight divided into four, and four into two, and then two into one. But one is an atom, because it is indivisible. ⁴⁰⁰
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Just as with the *atomi in corpore* and *in tempore*, Isidore goes through a process of dividing numbers until he arrives at something which cannot be divided further. This impossibility of further division renders the number one atomic, and thus is the atom in number.

As with the *atom in tempore*, Isidore's definition here influences the later reception of atomism. The question which this section seeks to address is how far

³⁹⁹ Isidore, *Etymologies XIII* 2.4.

⁴⁰⁰ Barney et al., p. 271.

removed, if at all, is the *atomus in numero* from ancient atomism. To answer this, we must look to Isidore's authorities on mathematics.

2.2 Isidore's Sources

The introduction of the *atomus in numero* in Book XIII is complemented by his introduction to numerical theory in Book III *De Mathematica*. Asking 'what is a number?' Isidore defines one as a unity rather than a number.⁴⁰¹ What differentiates one from number appears to be plurality. Within this framework, one is not a number but the *semen numeri* 'the seed of number'.⁴⁰² The immediate source of this material appears to be Boethius' *De Institutione Arithmetica*. In it he defines a number as *unitatum collectio* 'a collection of units', demonstrating the same understanding of the generative nature of one.⁴⁰³ Isidore's presentation has a significantly more philosophical slant not just with his description of one as the 'seed' of numbers, seed being a common metaphor for primary bodies in Lucretius, Vergil, Ovid and others, but also with his later integration of the unit into Augustine's system of corporeal and temporal atoms.⁴⁰⁴ Here we see the atomising tendency of the Early Middle Ages begin in earnest, centred on extending the notion of indivisibility to other phenomena. While numbers can be divided, the underlying unity remains indivisible. Isidore reasons through his etymologising approach to the world that one is the *atomus in numero*, the atom in the number. The addition appears to be original with Isidore, and all later instances of the *atomus in numero* appear to be derived from his account. For example, Hrabanus Maurus borrowed Isidore's example of division in numbers resulting in the *atomus in numero*, as did the Munich computist who quoted him directly.⁴⁰⁵

One cannot discuss ancient numerical theory and Presocratic philosophy without reference to Pythagoras, who is often regarded as a foundational figure for mathematics, including in Isidore's *Etymologies*, wherein he is credited as the first to commit the discipline to writing.⁴⁰⁶ While Pythagoras certainly had a reputation in Antiquity as a

⁴⁰¹ Isidore, *Etymologies* III 3.1.

⁴⁰² Isidore, *ibid.*

⁴⁰³ Boethius, *De Institutione Arithmetica* I 3.

⁴⁰⁴ See e.g. Lucretius, *De Rerum Natura* VI 201; Vergil, *Aeneid* VI 6-7; Ovid, *Metamorphoses* XI 144; Cicero, *De Finibus* V 7.18.

⁴⁰⁵ Hrabanus Maurus, *De Computo* I 11.23; *Munich Computus* II 19-21; Peter of Pisa, *Ars Dieziana* 82-4; MS Laon 422 37v (although the text offers Isidore's definition of the *atomus in corpore* for the *atomus in numero*).

⁴⁰⁶ Isidore credits Pythagoras as the first to commit the discipline to writing among the Greeks at *Etymologies* III 2.1.

mathematician, the historical reality of this is certainly on dubious grounds.⁴⁰⁷ Once again, we must refer to Aristotle's *Metaphysics A* and approach the material with a degree of caution. Indeed, the relationship between the historical figure of Pythagoras of Samos and his followers in Aristotle's own time is presented as dubious. In any case, the 'so-called Pythagoreans' asserted numbers to be the first cause in Aristotle's account.⁴⁰⁸ For the Pythagoreans, numbers certainly held a mystical significance.⁴⁰⁹ Doubtlessly, this reputation in the doxographical tradition and wider literary culture contributed to his status as a foundational figure for mathematics in the Middle Ages.⁴¹⁰ However, he is not linked directly with this idea of unity and plurality by Isidore or Boethius, relegating the figure of Pythagoras to the background.

Although Pythagoras is constantly present in the background of Late-Antique/Early Medieval mathematical discourse, the influence of Euclid, the Greek mathematician of the third century BCE is considerably more tangible. Euclid's *Elements* is an encyclopaedic treatise on the disciplines of mathematics which included a section on number theory that reflects this distinction between unit and numbers: Μονάς ἐστὶν, καθ' ἣν ἕκαστον τῶν ὄντων ἓν λέγεται. Ἀριθμὸς δὲ τὸ ἐκ μονάδων συγκείμενον πλῆθος.⁴¹¹ 'A unit is that in virtue of which each of the things that exist is called one. A number is a multitude composed of units'.⁴¹² Thus we see this distinction between the unit of one and the plurality of numbers is of considerable antiquity, even if it cannot be reliably linked to Pythagoras. Prior to the translation of the *Elements* in the twelfth century from Arabic, the book as a whole was unavailable in the Latin West. However, much of the material was available from Boethius' partial translation and from the *Agrimensores*, third century treatises on surveying.⁴¹³

Boethius' *De Institutione Arithmetica* was Isidore's immediate source on this point of mathematical theory, and Boethius was credited in the *Etymologies* as the second Latin author to translate mathematical works from Greek. His definition of numbers as a collection of units sets the stage for Isidore's etymological investigation into the nature

⁴⁰⁷ KRS, p. 234.

⁴⁰⁸ Aristotle, *Metaphysics A* 985b23-986a26.

⁴⁰⁹ KRS, pp. 232-3.

⁴¹⁰ KRS, pp. 232-4.

⁴¹¹ Euclid, *Elements* VII 1-2.

⁴¹² *Greek Mathematical Works: From Thales to Euclid*, ed. by Ivor Bulmer-Thomas, LCL, 335, 2 vols (Cambridge, Mass.: Harvard University Press, 1991), I, p. 67.

⁴¹³ Reynolds, p. 2.

of numbers, which results in his synthesis of the numerical unit with the Late Antique atom.

2.3 *Atomist Influence?*

It would appear that Isidore's inclusion of this atom was an act of innovative interpretation of the available source material on his part. However, to put this on firmer ground we must first examine whether or not there is any possibility of an *atomus in numero* in atomist thought prior to this. Epicurean atomic physics has often had a tempestuous relationship with mathematics, but there is little to suggest hostility towards it on the part of Democritus.⁴¹⁴ Among Democritus' mathematical output were works on geometry, applied mathematics, and Diogenes Laërtius records a text simply on numbers.⁴¹⁵ Indeed, he was even credited with the formation of a paradox concerning the division of conic sections.⁴¹⁶ This interest in geometry complements his work on atomism, as the prospect of indivisible bodies poses many problems from a geometric perspective.⁴¹⁷ Later atomism among the Epicureans was openly hostile towards mathematics both because of Epicurus' rejection of the traditional education curriculum and the apparent mathematical inconsistencies of his modified atomic theory. Whether the atomists shared this understanding of numerical theory remains unclear. Since the atomist sources are silent on mathematical theory, we should look for alternative explanations of the origin of the atom in number.

2.4 *Isidore's Etymological Strategy*

Although there is little to link this *atomus in numero* to ancient sources, we can see that the fundamental idea of numerical plurality arising from unity dates back to Antiquity. The idea of one as the indivisible source of numbers is not new with Isidore. What is new here is his classification of one as an atom. Central to Isidore's decision to add the *atomus in numero* to the two atoms which he took from Augustine is Isidore's etymological strategy. Mark Amsler argues that through his analysis, Isidore creates a structure for the humanities by unifying knowledge of words with knowledge of things.⁴¹⁸ Put simply, for

⁴¹⁴ According to Cicero, Epicurus, who believed all of geometry to be false, led the mathematician Polyaeus astray. Cicero, *Academica Priora* 109.23.

⁴¹⁵ Taylor, *Atomists*, p. 136. Cf. Diogenes Laërtius IX 47.

⁴¹⁶ Plutarch, *On Common Notions* 39, 1079e.

⁴¹⁷ e.g. if atoms are sizeless magnitudes then no amount of them could ever result in a magnitude with size because the sum of any number of sizeless magnitudes would remain sizeless itself. See Taylor, *Atomists*, pp. 199-200.

⁴¹⁸ Mark Amsler, *Etymology and Grammatical Discourse in Late Antiquity and the Early Middle Ages* (Amsterdam: J. Benjamins Publishing Company, 1989), pp. 133-172.

Isidore understanding the *etymon* of a thing is the same as understanding its true nature: or as he wrote himself ‘Indeed, unless you know its name (*nomen*), the knowledge of a thing perishes’.⁴¹⁹ Isidore’s synthesis of mathematical theory with Augustine’s modified atomism is grounded in this strategy, and because of its indivisible unity, one is revealed to be the atom in numbers: the primary body which forms all numbers.

2.5 Conclusion

In the previous chapter we saw Augustine invent a new category of atom based on the scriptural use of the word *atomus* as part of his exegesis. Isidore, following Augustine’s authority, appears to have interpreted his source in this manner: atoms are so-called because of their indivisibility, and therefore all indivisibles are in some sense atoms. Happening across another indivisible in Boethius, Isidore reasoned the number one to be an atom. Between Augustine and Isidore, the category of atoms increases from two to three. In Isidore we see the fusion of ancient ideas, atomism and number theory, into a new form, and the beginning of this atomising tendency of the Middle Ages.

3. THE LITERAL ATOM

Isidore reckoned the categories of atoms to be three: atoms in body, time and in number.⁴²⁰ Alongside these atoms he points other things which are atomic in nature but which he did not count as atomic. From his account of the *atomus in numero*, he goes on to state that: *sic et littera: nam orationem diuidis in uerba, uerba in syllabas, syllabam in litteras. Littera, pars minima, atomus est, nec diuidi potest.*⁴²¹ ‘Thus also with letters, for speech is divided into words, words into syllables, syllables into letters. But a letter, the smallest part, is an atom and cannot be divided’.⁴²² As with the concept of one as an indivisible unit, the idea that sounds or letters do not admit division is not new with Isidore.

The idea of a letter as an indivisible unit was not original to Isidore but the concept of it as an atom certainly was a novelty. Within this conception, atoms are indivisible things but not all indivisible things are necessarily atoms. The distinction appears arbitrary, and Isidore himself seems to only count the three named atoms as atoms. Within

⁴¹⁹ Barney et al., p. 42.

⁴²⁰ Isidore, *Etymologies* XIII 2.1.

⁴²¹ Isidore, *Etymologies* XIII 2.2.

⁴²² Barney et al., p. 271.

the context of the passage, the letter is not another type of atom, but an analogy employed to explicate the meaning of the numerical atom with reference to a similar phenomenon.

The ambiguity between a phoneme and grapheme inherent in the word *litteris* leads to a variant name for this atom in later reception. The Carolingian scholar Hrabanus Maurus (780-856) calls this atom, not an atom in letters but an *atomus in oratione*, an atom in speech.⁴²³ His account is likely based on other Carolingian interpretations of Isidore, owing to the presence of the five types of atom as opposed to Isidore's three, although similarities can be seen between the two:

Isidore, *Etymologies* XIII 2.2

sic et littera: nam orationem diuidis in uerba, uerba **in syllabas, syllabam in litteras**. Littera, **pars minima**, atomus est, nec diuidi potest.

Hrabanus Maurus, *De Computo* I 11.12

Atomus in oration **est minima portio, ut est littera**; cum enim partem quamlibet **orationis diuidis in sillabas, sillabam** denuo in **litteras**, sola littera non habet quo soluantur.

Both passages show a lack of distinction between a written letter and spoken sound, or at least that the two are fungible. In modern terminology we would distinguish between a grapheme, such as the letter <a>, and the phoneme, a sound represented by the letter, like the open front unrounded vowel /a/ as in the English word 'hat'. This atom here, represents both the spoken sound and letter that represents it, thus the alternative names, atom in speech and atom in letters are somewhat superficial distinctions.

3.1 Letters and Primary Bodies

Both the concept of letters/sounds as indivisible things and the connecting of letters with primary bodies predates Isidore. Indeed, letters as icons of the fundamental constituents of matter appears often in Antiquity as a means of explaining how manifestly different bodies could be composed of the same substances as one another in different arrangements or quantities. In envisaging letters as a sort of atom, Isidore touches upon this theme from Antiquity.

A tragedy and a comedy, as Aristotle said, are written with the same letters.⁴²⁴ This likening of the natural and the literary helps to show how radically different phenomena can in fact share common principles. Isidore presents letters as a type of atom,

⁴²³ Hrabanus Maurus, *Rabanus Maurus: Martyrologium, De Computo*, ed. by J. McCulloh and W. Stevens, *Corpus Christianorum Continuatio Mediaevalis*, 44 (Leiden: Brepols, 1979).

⁴²⁴ Aristotle, *De Gen. et Cor.* 1.2 315b6-15.

or what might be better summarised as analogues to atoms. The connection between atoms and letters may well date back to atomism's Presocratic origins. Democritus is attested to have written two texts concerning sounds and phonology, neither of which survives. Diogenes Laërtius records among his many works two texts *The Causes Concerned with Sounds* and *On Good and Bad Sounding Letters* which doubtlessly set out his thoughts concerning the nature of language. Even in the absence of these early atomist treatises, we can glean from a later work, Lucretius's *De Rerum Natura*, the iconic relationship between matter, sound and letters which the atomists perceived.⁴²⁵ A classic example from Lucretius is the parallel between *lignum*, wood, and *ignis*, fire, which suggests that wood is so named because it is easily combustible, and thus contains the seeds of fire.⁴²⁶ Paul Friedlander has discussed the intimate relationship between alliteration, assonance, wordplay and atomic theory in the poem and presents a compelling case that the atomists saw in words, sounds and letters a close relationship with nature, and sees in Lucretius' work the potential that these connections date back to Democritus.⁴²⁷

3.2 Antique Parallels Between Letters and Primary Bodies

The atomists were far from alone in connecting the primary bodies with sounds and letters. The basic word in ancient Greek for a letter is a γράμμα, literally meaning a written or drawn thing, but beginning with Plato's *Cratylus* letters are sometimes referred to as στοιχεῖον, the same word used for an element. Aristotle, in his *Poetics* sets out the divisions of speech, and the categories therein. He defines the στοιχεῖον as a φωνή ἀδιαίρετος, that is an undivided or indivisible sound.⁴²⁸ Speech is composed of words (nouns, verbs, conjunctions etc.) altered by inflection, and all ultimately divisible into syllables and syllables into letters, which he calls elements. His use of στοιχεῖον as a basic word for a sound or a letter establishes a parallel between phonology and elemental physics.⁴²⁹ Just as all bodies are composites formed from variations of the four elements in combination, for Aristotle all words are composites of the 24 Greek letters. The world is the sum of all these bodies and speech is the sum of all words. In a sense, Aristotle

⁴²⁵ Paul Friedlander, 'Pattern of Sound and Atomistic Theory in Lucretius', *The American Journal of Philology*, 62.1 (1941), 16–34.

⁴²⁶ Lucretius, I, 907–12.

⁴²⁷ Friedlander, p. 30 n. 25.

⁴²⁸ Aristotle, *Poetics* 1456b.

⁴²⁹ Aristotle, *De Arte Poetica* 1556b 20.

presents speech as a microcosm of the world itself, an idea which is significant from the point of view of ancient etymology.⁴³⁰

From the mid-fourth century BCE onwards, Stoic etymological discourse developed as a vital part of their logic. Stoic logic fundamentally depended on their theory of language, which drew a distinction between phonology and semantics.⁴³¹ Vocal sounds were distinguished from the study of the *logos*, that is meaningful speech.⁴³² Amsler argues that the Stoics used etymology as part of their discourse to shed light on the true nature of the world by finding the original names first given to things. This search for understanding of things through the etymological study of their names lent a certain profundity to grammatical discourse for the Stoics and later Christian authors. Amsler states ‘For Varro, as for the Stoics, grammar and etymological analysis are part of the discourse about the world, the basis for authoritative explanations of *logos*, and the means for the production of discourse and pedagogical authority’.⁴³³ Essentially, discourse about language was discourse about nature, and to understand the name of a thing and its origins was to understand its true nature, or as Amsler puts it ‘if language originates in nature, then the elements of language are iconic with the elements of the referents’.⁴³⁴ That is to say the relationship between letters and words is analogous to the relationship between the elements and the world.

This gives the impression that for authors like Aristotle and Lucretius, speech acts as an icon of the world itself. If one understands the origins and nature of words, one understands the origin and nature of the thing signified by the word. But this comparison has further potential, and can be expanded to include the nature of matter. Within this system, understanding how letters combine to make words can help us understand how the primary bodies (whether elements or atoms) come together to form composite bodies and how by varying the combinations, even slightly, can give rise to a different word.

3.4 Grammatical Tradition

This philosophical tradition of letters as primary bodies formed part of the understanding of letters in the grammatical tradition. The fourth-century grammar *Instituta Artium*, once attributed to Probus, defines letters as *elementa vocis articulatae*, the elements of

⁴³⁰ Aristotle, *De Arte Poetica*, ed. by Rudolf Kassel (Clarendon Press: Oxford, 1965).

⁴³¹ A. A. Long and D. N. Sedley, *The Hellenistic Philosophers: Volume 1, Translations of the Principal Sources with Philosophical Commentary* (CUP: Cambridge, 1987), p. 199.

⁴³² Amsler, p. 22.

⁴³³ Amsler, p. 25.

⁴³⁴ Amsler, p. 33.

meaningful speech and then elaborates on the definition of an element.⁴³⁵ *Elementum autem est uniuscuiusque rei initium, a quo summitur incrementum, et in quod resolvitur.*⁴³⁶ ‘Moreover, an element is the beginning of each and every thing, through which growth happens and into which it is dissolved’. The *Explanationes in Donatum*, a commentary on the *Ars Maior* and *Ars Minor* of Donatus dated to the sixth century, likens letters to the elements and quotes the precise definition of elements from the *Instituta*, though it gives a much more extensive treatment to the topic.⁴³⁷ *Elementum* is etymologised as *elevamentum* (presumably from *elevo*, to lift or to raise up), to indicate that the elements of meaningful speech are ‘above’ the mere sounds made by infants and animals.⁴³⁸ Through its definition as an element, the letter is clearly connected by the author with physics.

The notion of atoms as letters was received in the Carolingian period, and is attested in the ninth century grammatical works attributed to Peter of Pisa, the tutor of Charlemagne. In the *Ars Dieziana*, we see in the dialogue between student and teacher the various categories of atoms, including the atom as a letter.⁴³⁹ The text is a commentary on the *Ars Maior* and *Ars Minor* of Donatus, partially in the form a series of questions and responses between a διδάσκαλος (Δ) and a μαθητής (Μ).⁴⁴⁰ The section from which the abstract below was taken is on the topic of letters from the *Ars Maior* 1.2, which describes the letter as the *pars minima vocis articulatae*.

De Littera 59-74

<p>Δ: Sciendum est, quibus modis littera dici potest?</p> <p>M: Quinque.</p>	<p>D: I must know, in how many ways are letters able to be spoken?</p> <p>M: Five.</p>
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⁴³⁵ James E. G. Zetzel, *Critics, Compilers, and Commentators: An Introduction to Roman Philology, 200 BCE-800 CE* (Oxford: Oxford University Press, 2018), p. 313.

⁴³⁶ H. Keil, *Grammatici Latini Ex Recensione Henrici Keilii: Probi Donati Servii Qvi Fervntvr de Arte Grammatica Libri Ex Recensione Henrici Keilii. Notarvm Latercvli Ex Recensione Theodori Mommseni* (Teubner: Leipzig, 1864), p. 48.

⁴³⁷ Zetzel, pp. 321-2.

⁴³⁸ Keil, p. 487.

⁴³⁹ Per Gorman and Krotz p. xliii ‘While preparing the facsimile of the Codex Diezianus, Berlin, Staatsbibliothek, Deizianus B. Santenianus 66 (CLA 8.1044), Bernhard Bischoff noticed that the grammatical treatise found on p. 3-50, copied by a scribe trained in Austria, resembled the commentary on Donatus printed by Hagen from Berne 207, f. 113-123. The version in the Codex Diezianus is somewhat longer than what we find in Berne 207, and for this reason all the passages found in both manuscripts are printed here under the title *Ars Dieziana*. Bischoff referred to this text as ‘Dicit Donatus’ and suggested it was a second edition of the *Ars Petri* [i.e. a grammar attributed to Peter of Pisa] but there seems to be no evidence for this belief.’

⁴⁴⁰ Or possibly *discipulus* and *magister*. In either case, the characters designating the *dramatis personae* are used intermittently in the text, but we can presume them to alternate between speakers.

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Δ: Quomodo?

D: How so?

M: Dicitur enim apud Hebraeos ‘zephyr’, apud Graecos ‘gramma’, apud philosophus ‘atomus’, apud oratores ‘legitera’, apud Latinos ‘littera’...’ Atomus uero ideo nuncupatur, quia diuidi non potest. Omne enim quod indiuisibile est, apud philosophus ‘atomus’ nuncupatur. Pro hac ratio et a Donato ‘minima pars’ dicitur.

Hoc sciendum est, quare antiqui litteras elementa uocauerunt?

Ad comparationem elementorum mundi, quid, sicut mundum ex quattuor elementis compositus est, sic et litterae in unum iunctae litteralem faciunt uocem. Atomus apud philosophos ideo dicitur littera, quia, cum oratio soluatur in uerba, et uerba soluantur in pedibus, et pedes soluantur in syllabis, syllabae soluantur in litteris, littera non habet in quo soluatur, neque diuidi potest. Ideo atomus et ‘pars minima’ dicitur.⁴⁴¹

M: It is said among the Hebrews as *zephyr*, among the Greeks as *gramma*, among the philosophers as *atomus*, among the orators as *legitera* and among the Latins as *littera*.⁴⁴² ... And indeed *atomus* is so-called because cannot be divided. For all which is indivisible is called *atomus* among the philosophers. For this reason they are also called ‘the minimal part’ by Donatus.

I must know this, why did the ancients call letters elements?

It is to be compared with the elements of the world, which, just as the world is made up of four elements, so too do letters combined into one make the written word. Among the philosophers therefore a letter is called an atom because when speech is separated into words, words into metric feet, and metric feet into syllables and syllables into letters, letters have nothing to be separated into and so cannot be divided. For this reason it is called the atom and the ‘minimal part’.⁴⁴³

This dialogue between teacher and student makes the relationship between primary bodies and letters explicit, thus making the relationship between the four elements and the world analogous to the relationship between letters and the written word. Just as with Augustine and Isidore’s divisions of matter, time and (in Isidore’s case) sounds the author

⁴⁴¹ Gorman & Krotz, pp. 338-9.

⁴⁴² *Zephyr* here resembles the Greek word for the west wind *zephuros* but what is likely meant is the Hebrew word סֵפֶר, *sefer*, meaning ‘text’. The word appears to have been orientalised by the author with the characteristically Greek letters Z and Y and the digraph PH to stress its foreign origin.

⁴⁴³ Translation my own unless otherwise stated.

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divides speech into its constituent parts until arriving at a point which admits no further division. Isidore's influence can be seen in the closing lines of the passage:

Donatus, <i>Ars Maior</i> 1.2	Peter of Pisa, <i>De Littera</i> 71-4	Isidore, <i>Etymologies</i> XIII 2.4
DE LITTERA. Littera est pars minima vocis articulatae.	Atomus apud philosophos ideo dicitur littera, quia, cum oratio soluat in uerba, et uerba soluantur in pedibus, et pedes soluantur in syllabis, syllabae soluantur in litteris , littera non habet in quo soluat, neque diuidi potest . Ideo atomus et ' pars minima ' dicitur	Sic et littera: nam orationem dividis in uerba, uerba in syllabas, syllabam in litteras . Littera, pars minima , atomus est, nec diuidi potest .

The *Ars Dieziana* text contains some minor verbal echoes in the description of the letter as an atom and as *pars minima*, although the new division of a *pedes* has been introduced between word and syllable. In the content and minor textual similarities we can discern the influence of the *Etymologies*.

By looking back through earlier discourse on the nature of language and forward from Isidore we see that the association of atoms and letters is not original with Isidore, but a long standing tradition among the atomists and philosophers and a part of a broader philosophical phenomenon of viewing speech as iconic for nature itself. While Isidore did not count this atom as a *de facto* atom like the three in body, time and number, he did lay the foundation for his readership to interpret letters as atomic and in doing so, contributed to a long standing-tradition about the nature of language and its relation to broader reality.

4. THE ATOM IN THE SUN

4.1 Introduction

The *atomus in sole* or the atom in the sun appears to be the last of the medieval atoms to develop, first appearing two centuries after Isidore's three atoms in the *Etymologies*. While the other atoms are relatively simple to define, this atom is the least consistent across texts. The *atomus in sole* is a phenomenon found in Carolingian texts which appears in one of two different forms. In most cases, it is a poetic synonym for dust, though in one instance it is an obscure meteorological phenomenon. In either case, if taken at face value, it would appear to affirm the narrative of decline and loss of

knowledge presented in scholarship on the *atomus*. I will argue that the *atomus in sole*, exists as a result of the interpretation of Isidore's account in the *Etymologies* like the previous atom *in litteris*, but ultimately the source of the image is Presocratic.

4.2 Democritean Origins

A recurring theme in this chapter has been the antiquity of alleged medieval corruptions and mistakes, and the *atomus in sole* is no exception. There is good reason to suggest that this analogy for atomic motion, like so much else in Epicurean physics, has its roots not in Hellenistic philosophy, but in Presocratic physics. In Aristotle's treatise on the soul, *De Anima*, he made reference to the opinions of Democritus on its nature and composition, making use of an analogy in the process:

Aristotle *De Anima* 404b31-404a4

<p>ὅθεν Δημόκριτος μὲν πῦρ τι καὶ θερμόν φησιν αὐτὴν εἶναι · ἀπείρων γὰρ ὄντων σχημάτων καὶ ἀτόμων τὰ σφαιροειδῆ πῦρ καὶ ψυχὴν λέγει (οἷον ἐν τῷ ἀέρι τὰ καλούμενα ξύσματα ἃ φαίνεται ἐν ταῖς διὰ τῶν θυρίδων ἀκτίσιν)</p>	<p>Which is why Democritus says it [the soul] is hot, a sort of fire; for while there are infinitely many shapes, i.e. atoms, he says that the spherical ones compose fire and the soul (like the so-called motes in the air, which are seen in sunbeams coming through windows);⁴⁴⁴</p>
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Aristotle makes a brief digression in his description of Democritus' *endoxa* on the soul, discussing the nature of the soul's constituent parts. Per his account Democritus taught that the soul and fire shared a commonality in their composition, being formed of spherical atoms. Aristotle, after stating the Democritean stance, likens these spherical atoms to specks of dust in the air, illuminated by sunlight through the window of a room. The movement of atoms through the void, with its haphazard motion and shifts in direction from atomic swerve and impact, is likened to this macroscopic scene in order to allow the reader to picture the invisible world of atoms.

Kirk and Raven interpreted the passage as referring to the self-motion of soul atoms in particular:

It is just possible, however, that Democritus, at any rate, did point to some kind of 'original motion'. Aristotle (*de an.* A2 403b31ff) tells us that he held soul-atoms to be self-moving, like

⁴⁴⁴ Taylor, *Atomists*, p. 103.

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motes in a sunbeam, and it has been suggested that this image more aptly illustrates the motion of atoms in general.⁴⁴⁵

Aristotle's criticism of the atomists is frequently made with reference to his own system of causation and the atomists' appeals to eternity and self-motion not meeting the criteria of the Aristotelian system of causation. For the atomists, the cause of the movement of an atom was its most recent impact with another. In the atomist cosmos, which was infinite in size, eternal and containing an infinite amount of matter, bodies are and always have been in motion and colliding with each other. The eternity of this motion in a universe without any apparent conception of entropy meant that a prime mover was surplus to requirement. This, Aristotle saw as a shortcoming.

The image does appear somewhat out of place within the text, which lead Diels to delete the section. The most pressing question then is with whom does this image originate? Is it with Aristotle in the fourth century, Democritus a century prior or a later interpolation within the text? Deferring to the editors (with the exception of Diels), the third option may be eliminated, with the caveat that the text has an extensive commentary tradition, dating back to at least the third century with the works of the peripatetic philosopher Alexander of Aphrodisias. Diels interpreted the image as a gloss made by one of these commentators that was incorporated into the main body of the text.⁴⁴⁶ However, later Hermann Langerbeck and OCT editor W.D. Ross have left the passage in the text, seeing no problem with it.⁴⁴⁷ I offer two reasons to suggest that the image predates Aristotle, one with reference to Kirk and Raven's interpretation of the passage, and a second with Lucretius' use of the image (discussed below) in mind. As Kirk and Raven present it, this is a reference to an atomist tool for picturing the cause of motion within a specific context: the motion of the soul in animate beings. This places what seems like a digression within the text within the context of Aristotle's argument about psychology, and his criticism of atomist causation. This acts as a preface to Aristotle's discussion of the movement of animate creatures. The atoms themselves are self-moving just like the atomist image of motes of dust moving in rays of light with no apparent cause of motion. The line is not out of place but is instead a part of Democritus' opinion on the soul, rather than an example formed by Aristotle himself. This, I believe, is further

⁴⁴⁵ Geoffrey S. Kirk and J.E. Raven, *The Presocratic Philosophers* (Cambridge: Cambridge University Press, 1957), p. 417.

⁴⁴⁶ Diels, *Fragmente*, p. 78.

⁴⁴⁷ Hermann Langerbeck, ΔΟΞΙΣ ΕΠΙΠΥΣΜΙΗ: *Studien Zu Demokrits Ethik Und Erkenntnislehre*, Neue Philologische Untersuchungen, 10 (Berlin: Weidmann, 1935), p. 78; Aristotle, *De Anima* ed. by W.D. Ross p. 5.

stressed by Aristotle's apparent scepticism inherent in his description of the motes as *καλούμενα* which we may interpret as 'so-called'. In essence, his reservations stem from his dissatisfaction with atomist causation, a criticism which he voices often in his discussions of atomism.

In Lucretius we find precisely the same image of motes of dust illuminated by sunlight, again used to explicate atomic motion:

Lucretius, *De Rerum Natura* II 112-20

<p>Cuius, uti memoro, rei simulacrum et imago ante oculos semper nobis versatur et instat. contemplator enim, cum solis lumina cumque inserti fundunt radii per opaca domorum: multa minuta modis multis per inane videbis corpora misceri radiorum lumine in ipso et vel ut aeterno certamine proelia pugnas edere turmatim certantia nec dare pausam, conciliis et discidiis exercita crebris; conicere ut possis ex hoc, primordia rerum quale sit in magno iactari semper inani.⁴⁴⁸</p>	<p>Of this fact there is, I recall, an image and a similitude always moving and present before our eyes. Do but apply your scrutiny wherever the sun's rays are let in and pour their light through a dark room: you will see many minute particles mingling in many ways throughout the void in the light itself of the rays, and as it were in everlasting conflict struggling, fighting, battling in troops without any pause, driven about with frequent meetings and partings; so that you might conjecture from this what is the first- beginnings of things to be ever tossed throughout the great void.⁴⁴⁹</p>
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There are two comparisons at play in this passage. The first is the likening of the movement of dust in a dark room, seen through rays of sunlight, to the motion of invisible atoms. The second is the comparison of the chaotic motion of the motes with the movement of soldiers in the midst of battle. Within the context of atomic physics, this passage serves two functions. Firstly, it provides the reader with a macrocosmic sight (dust floating in air) for the microscopic world (atoms falling through the void), allowing the reader to imagine the minute size of the atoms and the great spaces of void which separate them. Secondly, his description of the chaotic movement of dust in the air (what we would term Brownian motion) gives the reader a clear description of atomic motion, a particularly contentious topic for atomists. The Epicurean doctrine of the *clinamen* or

⁴⁴⁸ Lucretius, Cyril Bailey (ed.) *De Rerum Natura* (Oxford: Clarendon Press, 1921).

⁴⁴⁹ Translation W.H.D. Rouse, pp. 103-5.

swerve was problematic for other Hellenistic philosophers. Without the sudden and random change of course in the movement of the atoms, all bodies would simply fall throughout space eternally. The proposal of the swerve solved this problem by allowing for the collision of bodies in space, yet it failed to deal with the problem of causation. The cause of their sudden changes in direction is not readily apparent, thus motion can have unseen causes. This, he argues, is the same for compound bodies as well as the smaller invisible bodies which compose them. From this, the reader is left with a better understanding of how atoms move within the void. Lucretius' choice of words makes this quite clear. The *per inane* here brings to mind the notion of bodies moving through empty space, although in this instance it refers mainly to air.⁴⁵⁰

While I am hesitant to use Lucretius as evidence for earlier atomism, in this situation it is justified. The image of motes of dust in the air as an analogy for atoms is used both by Aristotle and then by Lucretius himself, but they are used in different contexts. Aristotle employs the image in a psychological work, but this image occurs in the *DRN* as an image of atomic motion in general rather than in relation to the soul. Thus it is not beyond the realms of possibility that what we are seeing in this image is the Aristotelian use of an image used by Democritus to explicate atomic motion and causation and then the Epicurean use of that image three centuries later in Lucretius.

4.3 Late Antique Reception

After the decline of the Epicurean school in the third century, there was no institutional study of atomism on the scale seen during Antiquity. Nevertheless, authors continued to make use of earlier sources for atomism as authorities on the subject. Lucretius, being the major Latin source on atomism, was quoted by secular and religious writers as an authority, including Servius, Lactantius, and Isidore.

Servius's commentary on the *Eclogues* of Virgil is an encyclopaedia of grammatical, historical and mythographic information, ordered not by name or topic but rather as they are needed to interpret particular passages of the *Eclogues*. His commentary on *Eclogue* 6.31 explains atoms, the void, and physics in order to shed light on passage from the poem.

Servius, *In Bucolicon*, 6.31

⁴⁵⁰ On one level it refers to air, though in another sense it also refers to the void. The motes of dust after all, move through both the air and the void (through which the air also moves).

Et corpus volunt esse atomos, id est And bodies are thought to be atoms, that
 quasdam minutissimas partes, quae τμήν, is certain very minute parts, which do not
 id est sectionem, non recipiunt, unde undergo τμήν, which is cutting, from
 et atomi dictae sunt: quas **Lucretius** which they are said to be atoms.
minutiores dixit esse illis corpusculis, Lucretius said they are smaller than
quae in infusis per fenestram radiis solis those tiny particles which we seen in
videmus; dicit enim illas nec visum rays of the sun poured in through the
posse recipere.⁴⁵¹ **window; thus he says it is not possible**
for them to be subject to vision.⁴⁵²

We see in this passage a paraphrase of Lucretius, with some verbal echoes of the lines from the poem. Servius has unmistakably replicated the image from Lucretius in his explanation of what atoms are, along with an etymology to explicate the word *atomus*.

Isidore of Seville, in his *Etymologies*, draws on Servius' paraphrase of Lucretius in his entry on atoms. When compared side by side with the *Etymologies*, we see Isidore's indebtedness to the Vergillian commentary:

Servius, *In Bucolicon*, 6.31

Isidore *Etymologies* XIII 2.1

Et corpus volunt esse **atomos**, id est **quasdam minutissimas partes, quae τμήν, id est sectionem, non recipiunt, unde et atomi dictae sunt:** quas Lucretius minutiores dixit esse illis corpusculis, **quae in infusis per fenestram radiis solis videmus;** dicit enim illas nec visum posse recipere.⁴⁵³

Atomos philosophi uocant quasdam in mundo corporum **partes tam minutissimas ut nec uisui pateant nec τμήν, id est sectionem, recipiant; unde et ἄτομοι dicti sunt.**

Hi per inane totius mundi inquietis motibus uolitare et huc atque illuc ferri dicuntur, sicut tenuissimi pulueres **qui infusi per fenestras radiis solis uidentur.**

As seen in the previous chapter, Isidore made use of Augustine as an authority on the atom in time, here he is plainly drawing upon Servius' account. We might also discern an allusion to Lucretius' poem, one which is absent in Servius' commentary:

⁴⁵¹ Servius, *Servii grammatici qui feruntur in Vergilii carmina commentarii*, ed. by Georg Thilo and Hermann Hagen (Teubner, 1881).

⁴⁵² Translation my own.

⁴⁵³ Servius, *ibid.*

**Lucretius, *De Rerum
Natura* II 112-20**

Cuius, uti memoro, rei simulacrum et imago ante oculos semper nobis versatur et instat. contemplator enim, cum **solis** lumina cumque inserti **fundunt radii per opaca domorum**: multa minuta modis multis **per inane videbis** corpora misceri radiorum lumine in ipso et vel ut aeterno certamine proelia pugnas edere turmatim certantia nec dare pausam, conciliis et discidiis exercita crebris; conicere ut possis ex hoc, primordia rerum quale sit in magno iactari semper inani.

II 125-8

Hoc etiam magis haec animum te advertere par est corpora quae **in solis radiis turbare videntur**, quod tales turbae motus quoque materiai significant clandestinos caecosque subesse.

**Servius, *In Bucolicon*,
6.31**

Et corpus volunt esse atomos, id est quasdam minutissimas partes, quae τομήν, id est sectionem, non recipiunt, unde et atomi dictae sunt: quas Lucretius minutiores dixit esse illis corpusculis, **quae in infusis per fenestram radiis solis videmus**; dicit enim illas nec visum posse recipere.

**Isidore *Etymologies* XIII
2.1**

Atomos philosophi uocant quasdam in mundo corporum partes tam minutissimas ut nec uisui pateant nec τομήν, id est sectionem, recipiant; unde et ἄτομοι dicti sunt. Hi **per inane** totius mundi inquietis motibus uolitare et huc atque illuc ferri dicuntur, sicut tenuissimi pulueres **qui infusi per fenestras radiis solis uidentur**. Ex his arbores et herbas et fruges omnes oriri, ex his ignem et aquam et uniuersa gigni atque constare quidam philosophi gentium putauerunt.

There are two types of striking similarities between these passages which suggest that they are to be read intertextually. The first is that all texts invoke the same image, that of motes of dust in motion which we saw in Aristotle, visible through focused sunlight in an

otherwise dark room. The second is that all texts describe this image in similar terms. Most significantly, is the *per inane* seen in both Isidore and Lucretius but not in Servius. On its own, this would not be particularly remarkable, were it not for the fact that Lucretius uses this short phrase throughout Book II of the *De Rerum Natua*, no fewer than thirteen times by my count, making this a rather quintessential Lucretian phrase. Isidore's inclusion of a commonly used Lucretian phrase could well have struck a chord with readers familiar with the poem. The other verbal echoes between these passages are quite noticeable too, the recurring words from Lucretius *solis radiis*, in close proximity to forms of *video* and *fundo* make a strong case that Isidore was drawing from Lucretius directly as well as using Servius' (unacknowledged) authority on the matter. I would argue that this is the case, since Servius does not use the construction of *per inane* with a form of *video* as Lucretius and Isidore do. In addition, while Servius does not discuss atomic motion in his entry, both Lucretius and Isidore do. Granted, Isidore's summary does not contain any of the martial imagery of the *De Rerum Natura*, but nevertheless he does convey the idea of restless motion with sudden changes of direction. The strongest case for the Lucretian source of this entry in the *Etymologies* is of course the image itself, though admittedly there are some differences between how the image functions in both.

Although Isidore, like many authors in Late Antiquity, is often regarded as a passive receiver of past literature, we can see in his fusion of Late Antique and ancient source materials available to him that he has more agency than he is often given credit for. Not only was he combining diverse sources on atomism, but he was, apparently, going back through one of his source's authorities on the matter and fusing elements of the original authority with a later paraphrase. Indeed, when it comes to atomism, we may read his work as actively interpreting the ancient sources and innovating on the material (see the *atomus in numero* above), and even syncretising an atomist worldview with an elemental one and a Christian creationist one. Regardless of the merits of Isidore's *bricolage*, his assessment gave rise to two new categories among his readers, the *atomus in litteris* and *atomus in sole*, which appears to be based off the extracted passage above.

4.4 Medieval Reception

Isidore's *Etymologies* was one of the central authorities for the Early Medieval Latin West. The *Munich Computus* of 718-9 contains the unclear explanation of the atom in the sun. The computist offers a definition of the atom and we see its meteorological nature described, but it is difficult to understand what precisely the author is talking about:

Munich Computus 2.29-33

Atomos autem in sole nominamus, ut sicut We term something ‘*atomus* in the sun’,
stillicidia ignita, quae ante auroram solis however like a glowing haze, which
prorumpunt, et inspicere in illam non breaks forth before sunrise, and which we
uidemus nec discerni. Inde philosophi, id cannot really make out (clearly enough to
est Pitagoras et Plato et Aristoteles atomos be able) to examine or distinguish it at
nuncupauerunt eo, quod discernere in dawn. Hence the philosophers, namely
illam non potuerunt. Pythagoras, Plato, and Aristotle named
the *atomos* from that which they could not
distinguish at dawn.⁴⁵⁴

The definition offered here makes the phenomenon somewhat unintelligible, owing to its inherent obscurity. When this *atomus* occurs, it cannot be clearly discerned or studied. Even though it cannot be seen and understood, its existence is affirmed with reference to three authoritative philosophers, Pythagoras, Plato, and Aristotle. Of all the atoms discussed by the computist, this is by far the most vague and indeed appears to be the most far removed from the source material in Isidore’s *Etymologies*. However, as Wartnjes points out, it seems to be based on the account which the computist quoted at 2.3-7.⁴⁵⁵ Isidore’s account of atoms and the Munich Computists’ description of the *atomus in sole* are connected through their mention of the sun but by little else. When contrasted with the other presentations of the *atomus in sole* below, this one appears to be a very liberal interpretation of Isidore’s description of atoms as moving akin to motes of dust illuminated by sunlight. The author is clear that it is something associated with the philosophers, but what it is and how it relates to them is obscure. When contrasted with the other descriptions of the *atomus in sole* below, we see that there was a clearer interpretation of Isidore, in line with the atomising tendency discussed above.

Next, I turn to another computistical text, found in MSS Laon 422 wherein we find another description of the *atomus in sole*. The manuscript is an early ninth-century text of Pseudo-Bede’s *De Signis Caeli*, a computus, and extracts from other authors, including Isidore’s *De Natura Rerum* and *Liber Sententiarum*. After beginning the chapter with a description of the atom, the author partially quotes the passage from Isidore’s *Etymologies*. The author counts the number of atoms as five, rather than four. The section below comes from *De Astronomia*:

⁴⁵⁴ Wartnjes, p. 12-13.

⁴⁵⁵ Wartnjes, pp. 12-13.

MS Laon BM 422 37v

Atomus in sole quid est id sunt illi tenuissimi pulueris per solis radios uisque fugare uidetur et ideo atomus indiuisiublis appellatur.	What is the atom in the sun? They are those very fine [pieces] of dust seen through rays of sunlight which seem to fly and by this reason they are called indivisible. ⁴⁵⁶
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Unlike the account in the *Munich Computus*, this one takes fewer liberties with Isidore's account of atomism. Indeed, with the exception of the fact that the author has understood a metaphor as a literal description, this passage resembles the account in the *Etymologies*. This is quite different from the vague meteorological phenomenon described in the *Munich Computus*, and resembles its source material in the *Etymologies* more closely. We can see verbal echoes of Isidore in this passage in the description of atoms as *tenuissimi pulueres* and *per solis radios uisi*, indicating that this *atomus* exists as a result of the interpretation of Isidore.

In the *Ars Dieziana*, a grammatical work attributed to Peter of Pisa, a student and a teacher are engaged in a series of questions and answers about letters and grammar. Among the topics of discussion are the types of atoms which we have seen so far. The number of types of atoms has increased from four in the *Munich Computus* to five in this text, with the atom in letters proposed at the end of the chapter in the *Etymologies* now counted among the categories by the interlocutors.

***Ars Dieziana*, p 96-76 *De Littera*, 75-80**

Δ: Sciendum est, quot atomorum genera sit?	D: I must know, how many types of atom are there?
M: Quinque, id est, atomus in sole, atomus in re, atomus in numero, atomus in tempore, atomus in littera.	M: Five, i.e. the atom in the sun, the atom in matter, the atom in number, the atom in time and the atom in letters.
Δ: Quomodo?	D: In what way?
M: Atomus in sole est, cum uidemus in radiis illius minutissimum puluerem, qui nec teneri nec diuidi potest. ⁴⁵⁷	M: There is an atom in the sun when we see a very fine dust in its rays, which can neither be grasped nor separated.

⁴⁵⁶ Laon BM 422, fol. 37r-v <http://gallica.bnf.fr/ark:/12148/btv1b8492138z/f85.image> (last accessed 30/11/2017 at 1910). Translation my own.

⁴⁵⁷ Gorman & Krotz, p. 339. Translation my own.

Like MS Laon, the *atomus* is not something meteorological but an atomising interpretation of Isidore's metaphor for atoms in the *Etymologies*. This dust is described as fine, seen through rays of the sun, incapable of being divided, but as something which also cannot be grasped. The verbal echoes of earlier texts are less prominent, though some relationship may be discerned in the structure of the sentence.

The final medieval examples of the *atomus in sole* which I wish to discuss come from the writings of Alcuin of York, the Carolingian scholar and teacher:

Alcuin, *Carmina* 9.104-7

Longa dies oculos atra caligine claudit,	The long day closes my eyes with dark
Solivagos athomos quae numerare solet. ⁴⁵⁸	mist, which are used to counting the lone- wandering atoms.

In this poem we see an allusion to the *atomus in sole* of the computistical and grammatical tradition. This image of motes of dust in the sun, with the word *athomos* used by Alcuin as a synonym for the dust itself. The poet describes how his eyes used to count the wandering motes of dust, when the sun was low in the sky and presumably, illuminating the dust in the dark room. Aside from the image itself, there is a very literal example of the atom in the sun to be seen in the structure of the sentence, which would appear to be wordplay. The repetition of the syllable *sol-* bookending the sentence '*solivagos athomos...solet*' is suggestive of a literary allusion to the *atomus in sole*.

Alcuin, *Epistolae* 60.103.

Nec unius parvissimi et variis motibus vibrantis in sole spurcitiā athomi offendimus in eis, sed cristallina puritate micantia; ita ut superni solis radiis nostri cordis lichinos mirabiliter inluminavit. ⁴⁵⁹	Not only are we displeased with the filth of the atom (dust) in the sun with its varied movements and shakings in this, but also there is also a crystalline purity and gleaming. Thus it has illuminated the candle of our heart with the rays of the celestial sun.
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⁴⁵⁸ Alcuin, 'Carmina', in *Poetae Latini Aevi Carolini*, ed. by Ernst Dümmler, Monumenta Germaniae Historica, 3 vols (Tournhout: Brepols, 1881), I, 169–351.
<http://clt.brepolis.net/eMGH/pages/TextSearch.aspx?key=M_ABH_MNK> [accessed 18 September 2018].

⁴⁵⁹ Alcuin, 'Epistolae', in *Epistolae Karoli Aevi*, ed. by Ernst Dümmler, Monumenta Germaniae Historica, 6 vols (Tournhout: Brepols, 1895), I, 18–481.
<http://clt.brepolis.net/eMGH/pages/TextSearch.aspx?key=M_ABH_MIT> [accessed 18 September 2018].

This second example from Alcuin shows the close connection between the sun and atoms. Once again, it is plainly a synonym for motes of dust when seen in rays of sunlight. Even though Alcuin is not referring to the various categories of atoms seen in the other examples, he clearly considers there to be a close relationship between atoms and sunlight, and that the idea of an atom is closely tied up with the rays of sunlight in particular.

When examined in isolation, the *atomus in sole* may appear at first glance to be a mere error or corruption, with little bearing to the atomism of antiquity. However, when looked at from an intertextual perspective, one can see the origins and development of the idea quite clearly. What began as an allegory for atomic motion in Democritus, Aristotle and Lucretius transformed slowly over time until it was no longer considered an allegory at all, but rather a description of atoms themselves, and *atomus* in this instance became a synonym for dust.

4.5 Conclusion

The *atomus in sole* is a difficult phenomenon to interpret *prima facie*. This section has examined texts which present differing versions of this atom in order to establish what it is. As a solar phenomenon is not clearly defined, indeed in some respects it is its own obscurity and imperceptible nature that defines it. In the *Munich Computus* it was an unclear but minute meteorological occurrence, associated with the sun, sunlight, and the dawn. Like letters and numbers it is said to be ‘atomic’ because it is not subject to division, either on account of its minuteness or because it cannot be discerned (i.e. divided from its surroundings). Whether it is a synonym for motes of dust or otherwise, on the surface it appears unrelated from the atomism of Democritus and Epicurus. As I have shown above, when it is understood intertextually, that is to say in relation to the source material, its significance becomes clearer.

When these medieval examples are compared with this passage from *De Anima* it becomes clear that the *atomus in sole*, while it may seem at first glance far-removed from the atomism of Democritus and Leucippus, is in fact ultimately derived from atomist imagery of the fifth century BCE. Through the adoption of their physics by the Epicurean school, the image was transmitted into Latin literature as a means to picture the invisible world of atoms. Through a process of quotation and compilation the image survived the decline of the Epicurean school and was passed into the world of medieval Latinity through Isidore’s encyclopaedia wherein it became the quintessential picture of atoms in the Carolingian renaissance.

5. CONCLUSION

What we have seen in these three strands of inquiry, in conjunction with the study in the previous chapter is textual evidence for the preservation and transformation of atomist physics in Late Antiquity and the Early Middle Ages. Previous scholarship has been dismissed or ignored these so-called ‘garbled references’ to atoms by authors of these periods but upon closer examination these medieval discussions of atoms appear more nuanced. The differences between these atomisms and ancient atomism are manifest, of course. By the ninth century there are conceptions of atoms as discontinuities in body and time and in letters and numbers. But there is not one of these conceptions atoms which can be dismissed as erroneous. Certainly within the intellectual frameworks of Democritus or the Epicureans they may be considered so, but within the contexts in which they developed they are anything but mistakes.

Nor can these atoms be said to reflect only the loss of Greek learning. If anything they illustrate the desire to know it and engage with it. Indeed, it is the very same desire that would be satisfied with the rediscovery of *De Rerum Natura* in 1417 by Poggio Bracciolini. While these various atoms may strike one familiar with ancient atomism, they only appear erroneous when judged within the context of ancient atomism. Within their own medieval context they may seem anomalous or even eccentric, yet when they are examined from an intertextual perspective they begin to make sense. By looking at their development from Augustine and Isidore we see each of the small steps of writing and interpretation which lead to this medieval atomist tradition solidify. But the origin of this tradition is not the only thing which has come to light through this investigation. This intertextual view lends itself to a deeper understanding of the function of these atoms.

The *atomus in numero* represents the integration of the ancient mathematical traditions with the etymological tradition. Through the lens of etymological analysis, the indivisible unity of one is reimagined as atomic. This expands the range of atomist thinking to encompass not just tangible or perceptible phenomena like matter or time but abstract concepts like numbers. The *atomus in litteris* or *oratione* is an extension of this line of thinking. This etymological analysis was applied in part by Isidore and to a greater extent by his readers to phonemes and graphemes were reasoned to be atomic because they do not admit division while retaining their meaning. These two atoms function in the tradition to give a holistic vision of the world, an all-encompassing theory of nature which synthesises the secular and religious accounts of the world and its parts. This system is accessible through etymological analysis but links fundamental aspects of nature like time

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and matter to human concepts like speech, writing, and numbers. Within the context of the *Etymologies* this atomising tendency offers an accessible worldview which moves from the microscopic world of primary bodies to the macroscopic totality of the cosmos. Within the context of Isidore's readers, it lends itself to the view which develops in the later middle ages of an iconic relationship between language and the world, or that the two books of God are the Bible and nature.

The *atomus in sole* varies slightly from the other two atoms in this study. While it too traces its immediate origins to the interpretation of the *Etymologies*, as we have seen it has a more storied history than the other two atoms in this chapter. An early atomist analogy for atomic motion employed by Aristotle and later Lucretius found its way through Servius into Isidore's encyclopaedia, and his readership, hungry to know more about atoms read more atoms into the text and drew unknowingly on this image which may well date to the Presocratic atomists. It is a remarkable serendipity that this image endured for more than a millennium as an allegory for atomic motion. However, as it became further removed from its original setting, this metaphor transformed to become something literal. While this change may seem a marker of the loss of philosophical knowledge in the Latin West, it is worth bearing in mind that parallel developments in interpreting this image happened in the Islamic world in medieval Arabic sources where Greek philosophical works had a strong textual tradition in translation.⁴⁶⁰ These parallel developments in the Latin and Arabic traditions merit comparison, though is regrettably beyond the scope of this work.

This study has highlighted the strands of continuity present in the medieval atomist tradition in Latin literature with the ancient atomists. While this medieval atomism is doubtlessly more simplistic than ancient atomism, this study 'has sought to demonstrate the strands of continuity between ancient atomist physics and argue for the existence of a literary afterlife of atomism related to its currency as a unit of temporal measurement in computistic works. A closer examination of the literary traditions of atomism reveals continuities between ancient philosophical traditions intersecting with medieval literary culture through the etymological tradition. While for past scholars these various atoms represented only decline and loss, this study makes a case for a more nuanced understanding of these medieval engagements with atomism.

⁴⁶⁰ Taylor, *Atomists*, p. 103 n. 90.

Conclusion

1. RECAP

The opening chapter of this work examined the influence of the doxographical tradition in transmitting Presocratic physics from Greek into Latin literature in Antiquity, and from there how these δόξαι were disseminated out into later authors. Their reception in the Latin *placita* tradition gives us a sense of how these philosophers were perceived in Latin literature from the first century onwards, which paved the way for contrasting the earlier reception with later Christian reception in Patristic literature.

The second chapter explored the Latin Christian reception of Presocratic physics and examined the view which emerged in the writings of Tertullian and Irenaeus that these first philosophers were not only plagiarists of the Hebrew Prophets, but also proto-heretics whose teachings inspired contemporary Christians to lapse into heresy. In these arguments we saw the earliest Latin Christian receptions of the Presocratics via the doxographical tradition. These teachings of the Presocratics which these authors used to connect philosophy and heresy were examined and seen to derive from the doxographical tradition. When examined as polemic, heresy catalogues reveal that the connections made by Irenaeus and Tertullian between philosophy and heresy functions to distance Christian heretics from their claims to being an authoritative version of Christianity.

The third chapter looked to the reception of a specific Presocratic doctrine within the context of Christian Hexaemeral literature. The fourfold material pluralism, attributed to Empedocles, was accepted by Basil of Caesarea, Ambrose of Milan and Augustine as a fundamental fact about the world while at the same time they decried the efforts of the philosophers to explain nature outside of a Christian framework. For centuries afterwards, this teaching would be accepted by Christian authors without problematisation, while other physical teachings about the world were dismissed or avoided altogether. This chapter made the case as to why these Patristic authors subscribed to elemental physics, outlining two main reasons. Firstly that the theory proved to be adaptable to differing contexts, and its reception in the various philosophical schools demonstrates that it was compatible with a variety of philosophical outlooks. Secondly that this adaptability led to its status as consensus, and for the Christians to reject this thesis as they did others would have attracted ridicule for appearing unscientific, thus undermining their claims to have access to the truth through divine revelation. Accordingly, these authors set out to find the elements that gave the Biblical account of creation scientific legitimacy. In doing so,

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I argued that they rejected Aristotle's modifications to the theory, and present a version of elemental theory which appears closer to the doxographic tradition's Empedocles than to later interpretations.

The fourth chapter began an investigation into the Early Medieval reception of atomism, focusing on the phenomenon of temporal atomism which became prominent during the Carolingian period. I traced the origins of the phenomenon to the biblical exegesis of Augustine and argued that the concept originates out of the difficulties of translating the Bible from Greek into Latin. Owing to uncertainties surrounding the Greek word ἄτομος in 1 Corinthians, the influence of atomist philosophy coloured the understanding of the passage, attested in a letter of Jerome and sermon by Augustine. From these beginnings, the idea of an *atomus in tempore* entered Late Antique discourse and was solidified into an account of discontinuities in body, time and number in Isidore's *Etymologies*. From there, Isidore's account influenced computistical and grammatical works for centuries after his lifetime, keeping the idea of atomism alive in the Latin West during the Early Middle Ages.

The final chapter continued with the previous chapter's investigation, exploring Isidore's synthesis of atomism and Late Antique numerical theory, and the later legacy of his work. His etymologizing worldview gave rise to other types of atom which along with the *atomus in tempore* and *atomus in corpore* seen in chapter four, dominated medieval discourse of atomism. The atoms in number, in letter and *in sole* were examined in this chapter individually. The numerical atom was understood as a syncretism of numerical theory and atomic theory, and the atom in letters/speech was understood in terms of the long-standing ancient tradition that graphemes/phonemes were icons for the primary bodies of nature, situating this within ancient and Late Antique grammatical discourse. In other words, that the relationship between particle and world was mirrored in the relationship between letter and word. The final section of this chapter examined the *atomus in sole*, a phenomenon of post-Isidorean atomic discourse understood either as a poetic name for dust or a vague meteorological phenomenon. In this chapter, I proposed that the *atomus in sole* is to be read intertextually, and when done so it can be understood as pertaining to a metaphor for atomic motion attested in Lucretius and Aristotle which appears to date back to Democritus.

2. FURTHER RESEARCH

This work has argued that the doxographical tradition informed and inspired Late Antique and Early Medieval reception of Presocratic physics in the Latin West. The themes touched upon throughout this work offer possible avenues for further research, concerning the legacy of philosophers in the Liberal Arts tradition, medieval science, and the study of grammar and etymology in the Middle Ages. The relation of the Latin reception to Greek and Arabic traditions has only been touched upon in passing in this thesis, but comparisons between reception in the three traditions holds potential for further examination.

2.1 The First Inventors

In the accounts of Isidore and Diogenes Laërtius we see portrayals of the Presocratics as the first inventors or discoverers of certain disciplines. For example, according to Isidore, Pythagoras was the inventor of the disciplines of mathematics and music among the Greeks—although Tubal is counted as the true inventor, Isidore often appears to credit an antediluvian inventor where possible—and made contributions to the alphabet of Cadmus, introducing the letter upsilon, which had certain mystical significance during the medieval period.⁴⁶¹ Empedocles, per Diogenes, was the inventor of the art of rhetoric and Zeno that of dialectic.⁴⁶² Whereas in earlier periods these early philosophers were portrayed as belonging to traditions which culminated in the philosophical schools, or in lines of succession which lead to Socrates, Plato and Aristotle, at the beginning of the Medieval period the focus shifts to the early philosophers as the first practitioners of the Liberal Arts, with Plato as the figure who organises the study of nature into the medieval *quadrivium*.⁴⁶³ These two examples may hint at the emergence of a re-imagined historical role for the Presocratics in the Latin West and since Diogenes attributes his source as Aristotle, that it has its roots in Antiquity. A closer examination of relations between philosophers and the Liberal Arts, both in the Latin West and Greek East in Late Antiquity and the Middle Ages may shed further light on the legacy of the Presocratics.

2.2 Letters as Icons of Nature

The perception of letters as icons of primary bodies was briefly touched upon in chapter five and it was shown that this phenomenon has precedents in the ancient world. The

⁴⁶¹ Isidore, *Etymologies* I 3.7, III 2.1.

⁴⁶² Diogenes Laërtius, VIII 57.

⁴⁶³ Isidore, *Etymologies* II 24.4.

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relationship between letters, words, and speech mirrors the relationship between primary bodies, compound bodies, and the world itself. Just as the same letters arranged differently or in differing quantities results in different words, the same primary bodies, whether atoms or elements, produces bodies with different qualities. This metaphor for primary bodies from ancient discourse on matter may well have been seized upon within a Christian context, in which the world was generated through divine speech. Indeed, in the Later Medieval period, God was said to be the author of two books: the Bible and the Book of Nature. This relationship between macrocosm and microcosm may well animate future explorations of grammatical, etymological and even esoteric discourse in the Middle Ages.

2.3 Reception of Atoms across cultures

As noted in the final chapter of this thesis, there is a common, but seemingly independent development within the Latin and Arabic receptions of atomism during the Middle Ages. An image of atomic motion, which plausibly is Democritean in origin, was transmitted both eastwards and westwards and appears to have been understood, not as a metaphor but a literal description of atoms. This reading results in the use of atoms as a synonym for dust. The parallel development of this in the Arabic and Latin traditions in the Early Middle Ages holds potential for a deeper comparative study.⁴⁶⁴

3. FINAL CONCLUSION

We have seen from the above that the pool of information about the Presocratics available to post classical authors was evidently rather small. The process of distilling entire philosophical systems down to a handful of lines of δόξαι resulted in a relatively uniform tradition, rather than conflicting interpretations, being transmitted throughout the centuries. Shifts in how the Presocratics were understood came not from these intermediary sources themselves, but from their later reception. Within the context of Christian heresiology, the physical doctrines of these philosophers were used to construct a relationship between philosophy and heresy. Within a Christianised view of history, the early philosophers were said to have derived their teachings from the Hebrew prophets but picked and chose which things to follow, thus appearing as the first heretics. This connection was used polemically to undermine heretical sects by ‘exposing’ their status as philosophers rather than true Christians.

⁴⁶⁴ G. Strohmaier, ‘Demokrit Über Die Sonnenstäubschen’, *Philologus*, 112 (1968), 1–19.

Conclusion

The physical pluralist doctrines of Empedocles and Democritus enjoyed a particularly lengthy afterlife. Empedocles' four element theory had been adapted to nearly every natural philosophy and was raised to the status of consensus among the literate élites of Antiquity, a consensus so strong that Christian exegetes felt the need to interpret the creation narrative in Genesis as affirming the theory, lest the revealed word of God appear unscientific. However, elemental physics, as popularised by Aristotle and the Hellenistic schools were modified in the process of their use for exegetical purposes. While some of the changes were superficial, others represented a profound change in the understanding of cosmology. One of the elements was rechristened *caelum* to harmonise the theory with Genesis 1:1, while Love is invoked as a binding influence on the elements and Aristotelian αἰθήρ was dispensed with to avoid the paradoxical consequences of incorruptible matter within a perishable cosmos. In constructing a world out of the four elements, one which is marked by a beginning and an end, these Christian authors come tantalisingly close to Empedocles but as a single instantiation of the world, without cyclical reoccurrence.

Through another process of exegesis and interpretation we see the emergence of dynamism in atomist thought while the Epicurean school was declining across the Mediterranean. Despite the changes in Late Antiquity which give rise to the novel view of atoms as discontinuities in body, time and number, we can discern in these and in the later-medieval atoms *in litteris* and *in sole*, themes which span across the entire history of atomism. From simple beginnings in the Latin exegesis of Pauline letters to the five *atomi* of the Carolingian period, we see the rise of an understanding of atomism through the lens of etymological discourse and the vanishing of the void.

A central aim of this thesis was to investigate the legacy of the Presocratics in places and times often presumed to be marked only by intellectual decline. It is true that the loss of infrastructure and the political break up of the Western Empire heralded drastic changes of the scholarly landscape, most notably in the loss of institutionalised philosophy. In spite of this, the pursuit and preservation of knowledge persisted and the teachings of the Presocratics continued to be transmitted throughout the doxographical tradition, both directly and indirectly through its reception in Antiquity. By identifying the means through which these teachings were transmitted into Late Antiquity and the Early Middle Ages, we are able to see the influence which these teachings had, and how writers engaged with and made use of them. The result, as shown above, was quite diverse and indeed innovative.

Conclusion

From these investigations we can conclude that the doxographical tradition inspired innovative understandings of the Presocratic philosophers, their teachings and their roles in history, in Late Antique and Early Medieval Latin literature. This demonstrates that these philosophers, who were remembered as the ones who took the first steps in the Greek world towards a deeper understanding of nature, did not arrive to us preserved in stasis but have been engaged with by generations of historians and scholars whose depictions of the ancients stand to show us how they reflected upon history in their own eras.

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