

The Cosmological Empire of Pliny the Elder:
An Examination of Political Themes in the Second Book of the *Historia Naturalis*

by

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Abstract

Pliny the Elder's *Historia Naturalis*, written in the 70s CE and perhaps left unfinished at its author's death in 79, is among the largest documents to have survived down to us from antiquity. It comprises some thirty-seven books on a breadth of topics about the natural world, and man's interaction with the world and marshalling of its resources. The work has often been referred to as the world's first encyclopedia.

Recent scholarship has rescued Pliny's reputation from its degradation among the scholars of the early twentieth century, and modern scholars have approached the document via several analytical avenues, including an examination of the *Historia's* political themes. An additional line of scholarship was considered for this thesis as it relates to Pliny—that of the intersections between political and cosmological systems. This thesis lies at the intersection between those two lines—the study of the *Historia's* political themes, and the study of political cosmologies.

The goal of this study is to show that the content of the *Historia's* second book supports the argument that Pliny was demonstrably a pro-imperialist, but also that this need not have been the author's conscious intent. Rather, Pliny's philosophical background and the language he used to describe the natural world had parallels in the political culture of his time. Like many ancients, Pliny infused his cosmology with political themes, and those reflect both Stoicism and a pro-Roman influence. This thesis, then, ought to be taken as a philological, primitivist rebuttal to the growing realist argument (alluded to by Murphy and Beagon, but propagated most clearly by Laehn) that the *Historia Naturalis* was consciously composed as a work of political philosophy.

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Finally, I'd like to acknowledge myself. I worked on this degree while I had seven dollars in my checking account at times, I worked on it getting up for early morning classes after working until 2 a.m., I worked on it with no financial support from anyone or any organization, at least until the very end. I am thankful to be here at this finish line at last, and to have those efforts at last come to fruition. Those of you who still seek the path of the professional historian, if you've come across these words, if you're struggling, keep going. You can get there. There are no struggles you can't overcome. Just keep going. Lose sleep when you have to. Skip the occasional family gathering, skip the get-together with your friends when you have to. They'll get it. They'll understand. And you'll get there. No matter the character or quantity of your struggles, you can do it.

Even as I no longer seek to join the ranks of academia, I am certainly not sorry to have done this degree. I'm a better person for having done it.

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Abbreviations for Primary Literature

<i>Arist.</i>		Aristotle
	<i>Cael.</i>	<i>de Caelo</i>
	<i>Mete.</i>	<i>Meteorologica</i>
	<i>Ph.</i>	<i>Physica</i>
<i>Cic.</i>		Cicero
	<i>Ad.Q.fr.</i>	<i>Epistulae ad Quintum fratrem</i>
	<i>Cat.</i>	<i>In Catilinam</i>
	<i>Rep.</i>	<i>de Re Publica</i>
<i>CIL</i>		<i>Corpus Inscriptionum Latinarum</i>
<i>Col.</i>		Columella
	<i>Rust.</i>	<i>De re Rustica</i>
<i>Geo.</i>		<i>Geoponica</i>
<i>Hor.</i>		Horace
	<i>Carm.</i>	<i>Carmina</i>
<i>Plin.</i>	.	Pliny the Younger
	<i>Ep.</i>	<i>Pliny the Younger's Letters</i>
<i>Plin.</i>		Pliny the Elder
	<i>HN</i>	<i>Historia Naturalis</i>
<i>Pl.</i>		Plato
	<i>Ti.</i>	<i>Timaeus</i>
	<i>Leg.</i>	<i>Leges</i>
<i>Plut.</i>		Plutarch
	<i>Cat. Mai.</i>	<i>Cato Maior (Vitae Parallelae)</i>
	<i>Mor.</i>	<i>Moralia</i>
	<i>Quaest. Conv.</i>	<i>Quaestiones Convivales</i>
<i>Schol.Op.</i>		Anonymous Scholia to Hesiod's <i>Opera et Dies</i>

<i>Sen.</i>	Seneca the Younger
<i>Clem.</i>	<i>de Clementia</i>
<i>Q. Nat.</i>	<i>Quaestiones Naturales</i>
<i>Suet.</i>	Suetonius
<i>Vesp.</i>	<i>Divus Vespasianus</i>
<i>Vita Plinii Secundi</i>	
<i>SVF</i>	<i>Stoicorum Veterum Fragmenta</i>
<i>Tac.</i>	Tacitus
<i>Ann.</i>	<i>Annals</i>
<i>Verg.</i>	Virgil
<i>Ecl.</i>	<i>Eclogues</i>
<i>Aen.</i>	<i>Aeneid</i>

Introduction

The way people look at the universe has a lot to do with how they behave.

*E.C. Krupp*¹

We can state with some confidence that curiosity killed Pliny the Elder. On the 24th of August in 79 CE, as Pompeiians fled from the erupting Vesuvius, Pliny—then commander of the Roman fleet at Misenum, across the Bay of Naples from Pompeii—went fearlessly against the crowd, anxious to get closer to this rare natural phenomenon that he might learn something new to be recorded for posterity, perhaps one more fact to add to the purported 20,000 present in his magnum opus, the *Historia Naturalis*. His nephew, Pliny the Younger, records in a letter to the historian Tacitus that this became a mission of both rescue and of knowledge, and that his uncle took to a boat, intending to help the people on the far coast. Dictating his observations of the erupting volcano to a scribe and with a great cry of “fortune helps the brave,”² Pliny sailed into a falling snow of burning ash and pumice across the Bay of Naples. The nephew never saw his uncle alive again, though he wrote to Tacitus that he heard reports from survivors.³ His body was discovered on the morning of the 26th, in the words of his nephew, “well-kept, more similar to resting than dead.”⁴

¹ E.C. Krupp, *Echoes of the Ancient Skies* (New York: New American Library, 1983), 1.

² *Fortes fortuna iuvat*, Plin. *Ep.* 6.16.

³ Plin. *Ep.* 6.16.

⁴ As Pliny the Younger writes in *Ep.* 6.16, ...*habitus corporis quiescenti quam defuncto similior*. Suetonius (*Vita Plinii Secundi*) suggests that the Elder Pliny may have been killed by a slave, who he asked to do the deed as an act of mercy when he could no longer bear the suffocating heat.

Pliny was a man of boundless, constant curiosity, and the following pages constitute an exploration and analysis of a few of the less physically dangerous of those curiosities—specifically, his treatment of cosmology. When used to describe ancient belief systems, this term is something of a catch-all, an umbrella covering astronomy, meteorology and theology, all material contained in Book Two of the *Historia Naturalis*. I am interested in why Pliny believed as he believed. In what sense was his cosmology informed by political and social factors? Is it possible to tease out his political philosophy by examining his discussions of seemingly unrelated topics, i.e., cosmology? If it is possible, does that necessarily require a conscious effort by the author to invoke that political philosophy?

Recent scholarship on Pliny has increasingly explored the sophisticated structure and themes of the *Historia Naturalis*, in contrast to Pliny's rather less-favorable treatment in the historiography of the early-to-mid twentieth century. Pliny's reputation has undergone something of a revitalization in recent years, mirrored by a resurgence in scholarly interest in the *Historia Naturalis*. In the early part of the twentieth century he was merely a compiler of the knowledge of others, the quintessential copyist, conducting no research of his own. The *Historia* was nothing more than a collection of unrelated data, untethered to its constituent parts or any sort of governing theme.⁵ Beginning around the 1980s, scholars rediscovered Pliny and his *Historia Naturalis*, and developed

⁵ Grundy Steiner is a good example of the tone of Pliny's critics in twentieth-century scholarship, writing: "He was not an original, creative thinker, nor a pioneer of research to be compared either with Aristotle or Theophrastus or with any of the great moderns. He was, rather, the compiler of a secondary sourcebook." Grundy Steiner, "The Skepticism of the Elder Pliny," *Classical Weekly* 48 (1955): 142.

a renewed appreciation for his sophistication and originality as a scholar and thinker. Several theses have been argued since then. Relevant to the present question include those of Beagon and Murphy, who each analyzed ways in which Pliny's work reflected the cultural ideals of his first-century Roman elite peers—Beagon suggested that Pliny wrote the *Historia* in the same spirit of competition which animated the behavior of all leading men of Rome,⁶ while Murphy examined the literary culture in which the *Historia* arose.⁷

Several other issues discussed in the modern historiography merit mention before moving on to the present problem. Scholars, particularly Carey⁸ and Murphy,⁹ examined the relationship between Roman imperialism and a text which purports to gather all knowledge of nature. Coming back to Pliny, Beagon engaged the philosophical influences of the *Historia Naturalis*, exploring in great depth the Stoic (yet eclectic) underpinnings of Pliny's thought. It is here where we find the most complete modern analysis of Pliny's cosmology—Beagon argues that the *Historia's* second book forms a sort of Stoic meditation on the providence of nature towards the human race, a furtherance of the idea that the world is designed to benefit mankind.¹⁰

⁶ Beagon, "Labores pro bono publico: The Burdensome Mission of Pliny's Natural History," in *Encyclopaedism from Antiquity to the Renaissance*, edited by Jason König and Greg Woolf (Cambridge: Cambridge University Press, 2013):84-107.

⁷ Trevor Murphy, "Pliny's Natural History: The Prodigal Text," in *Flavian Rome: Culture, Image, Text*, eds. A.J. Boyle and W.J. Dominik (Leiden: Brill, 2003), 301-322.

⁸ Sorcha Carey, *Pliny's Catalog of Culture: Art and Empire in the Natural History* (Oxford: Oxford University Press, 2003).

⁹ Trevor Murphy, *Pliny the Elder's Natural History: The Empire in the Encyclopedia* (Oxford: Oxford University Press, 2004).

¹⁰ Mary Beagon, *Roman Nature: The Thought of Pliny the Elder* (Oxford: Oxford University Press, 1992).

Of particular interest to the task at hand is the work of Thomas Laehn, who argues that the *Historia Naturalis* constitutes an impassioned apologia for imperial Rome.¹¹ Laehn's argument is grounded in Pliny's treatment of man, and human nature, what he calls the *animal imperiale*.¹² In brief, Laehn suggests that the *Historia's*¹³ structure creates a sophisticated defense of Roman imperialism—Pliny first describes the natural world, and then doubles back to expound upon the relationship of that nature to mankind. In so doing, Laehn's thesis avoids Book Two of the *Historia*. This is interesting, given that recent research has well demonstrated the political nature of ancient cosmological frameworks—consider the Babylonian *Enuma Elish*, which narrates the succession patterns of gods and the eventual primacy of Marduk as a model for the proper succession of kingship.¹⁴ Laehn's study does not consider Pliny's cosmology in building his case that one of Pliny's motives is a political apologia. And so the central question at present is this: does Pliny's cosmology bolster the argument that Pliny's purpose in the *Historia* is at least partly political in nature? It is the argument of this thesis that it does. We need not accept Laehn's contention that Pliny's entire purpose was imperial apologia, but it seems likely that a political message was at least implicit, and that political message can be found in the *Historia's* second book.

¹¹ Thomas R. Laehn, *Pliny's Defense of Empire* (New York: Routledge, 2013).

¹² Laehn, *Pliny's Defense of Empire*, 70.

¹³ Over the course of this thesis, for the sake of brevity, I often refer to the *Historia Naturalis* as simply the *Historia*. They are the same document.

¹⁴ Stefan Maul, *Cosmologies et cosmogonies dans la littérature antique: huit exposés suivis de discussions et d'un épilogue* (Vandoeuvres: Fondation Hardt pour l'Étude de l'Antiquité Classique, 2015). In Chapter 1, Maul notes how the *Enuma Elish* explicitly connects royal kingship with divine kingship, via such rituals such as the Akitu Festival.

The issues involved in this question are complex, and crucial to an understanding of any ancient cosmology, Roman or otherwise. An unpacking of Pliny's cosmological outlook demands not only a delving into several other books of the *Historia*, but also a thorough reevaluation of several concepts which for us in the modern world are forgone conclusions. Recent research on the subject of ancient science has demonstrated ably that peoples of the ancient world viewed science and knowledge differently than we might conceive of those things in the modern era. Our generally separate worlds of religion and science, for instance, find no parallel among our ancient counterparts. Rather, nature, politics and the gods existed as a "three-fold cord in Roman thought," in the words of LeHoux, resulting in a more holistic, synthesized worldview among ancient peoples than we would recognize today.¹⁵ Natural knowledge was political and religious, and political thought dovetailed with nature and religion. Astronomy and cosmology served myriad different purposes in antiquity, from helping merchants to set prices,¹⁶ to informing proper agricultural methods,¹⁷ to reinforcing a political metaphor.

It is this last which concerns us, with regard to Pliny's work. And it is perhaps the least obvious—for how or why would a political ideology be informed by the positions and movements of the stars, or the behavior of the planets? And yet we find this phenomenon consistently throughout ancient writings and architecture. It has been argued convincingly that Cicero used astronomical metaphors in the *Republic* to describe

¹⁵ Daryn LeHoux, *What did the Romans Know? An Inquiry into Science and Worldmaking* (Chicago: University of Chicago Press, 2012), 181.

¹⁶ Liba Taub, *Ancient Meteorology* (London and New York: Routledge, 2003), 39.

¹⁷ Taub, *Ancient Meteorology*, 176-87.

political change.¹⁸ The breastplate of the well-known *Prima Porta* statue of Augustus apparently depicts the return of the Roman standards from Parthia, but in metaphorical cosmic terms—Caelus and Helios (personifications of the sky and the sun, respectively) occupy the top of the scene, while the central image depicts the exchange of the standards, flanked by Apollo, Diana, and two children who may be Romulus and Remus.¹⁹ One of the most famous examples of the intertwining of politics and the heavens occurred in July of 44 BCE, when the future Augustus associated his assassinated adopted father with the comet which appeared during his funeral games. Augustus of course later claimed divinity for himself, after the Senate deified Julius Caesar in 42 BCE.

Monuments and architecture may have been where Augustus expressed the truth of his monarchical power, about which he could never be honest in text or speech, and some of these monuments expressed that power in cosmological terms. It is not difficult to grasp the symbolism of the fact that Augustus' sundial on the Northern Campus Martius used as its pointer an obelisk imported from conquered Egypt.²⁰ The calendar itself—governed of course by the sun and the moon—became a political and religious tool, as months were renamed for Julius Caesar and Augustus, and as pontiffs the emperors usurped control of the calendar from the senatorial class.²¹

¹⁸ LeHoux, *What did the Romans Know?*, 186.

¹⁹ Paul Rehak, *Imperium and Cosmos: Augustus and the Northern Campus Martius* (Madison: University of Wisconsin Press, 2006), 76.

²⁰ Rehak, *Imperium and Cosmos*, 7.

²¹ Rehak, *Imperium and Cosmos*, 79.

Recent scholarship has delved into the political elements present in other cosmological representations—Augustus’ sundial and its power to measure the movements of the heavens, his use of Caesar’s star on coins.²² As previously discussed, Laehn argued that the *Historia Naturalis* itself is in its entirety a political document, a sophisticated defense of empire.²³ This would by no means constitute the only time the written word stood as a defense of imperial activity—witness for instance Augustus’ own *res gestae*, or the *pinax* in Pompey’s triumph listing the spoils taken from Cappadocia, Cilicia and Coele-Syria.²⁴ However, those making that argument neglected to explore potential political elements present in Pliny’s cosmological treatment, contained in the second book of the *Historia Naturalis*. For as the sundial was able to express a political ideal to the masses because it was viewable by many,²⁵ so too can literature exhibit the same effect for posterity. The current issue at hand, the central issue of this thesis, is whether Pliny’s political ideology crept also into his cosmology.

Our author had good reason to harbor a favorable attitude towards the empire. The empire under the Flavians had been very good to the Elder Pliny. At the time that he wrote the *Historia Naturalis* he was on the far side of a lengthy career as a provincial governor, during which time he was a close friend of the Emperor Vespasian. It was customary during the imperial period for authors to dedicate their works to the current emperor, but we can presume that Pliny’s dedication of the *Historia* to Vespasian’s son

²² Rehak, *Imperium and Cosmos*, 71.

²³ Laehn, *Pliny’s Defense of Empire*.

²⁴ Rehak, *Imperium and Cosmos*, 18.

²⁵ Rehak, *Imperium and Cosmos*, 67.

Titus was more genuine than most. Titus was not yet emperor, but it was likely safe to presume that he would be in the future.

It might be asked why we would focus so carefully on the writings and political outlook of Pliny the Elder, of all available Roman writers. The answer is that Pliny is both rare and common for his times. To explain: The *Historia Naturalis* is utterly unique among documents which survive from antiquity. Nothing else of its size and scope remains. Pliny himself had something of an unusual career among well-known, elite first-century Romans—out of public service for almost a decade after his military service, he experienced a career renaissance in Flavian Rome. He wrote the *Historia Naturalis* at the tail end of this professional resurgence in 77, and so seems a likely candidate for being well-disposed towards the imperial project in a way which might shine through in his writings. In spite of his unusual career trajectory, Pliny cannot have stood alone in his ideology and worldview among first-century elites. To illuminate Pliny’s mindset is to illuminate one which must have been shared among a great many of his peers—how many, of course, we cannot know. But the number is nonzero, given the excellent reception of the *Historia* from antiquity onward (discussed in the appendix of this thesis). Pliny was no madman shouting on the corner.

The soldier-scholar whose name came down through English as “Pliny the Elder” was born Gaius Plinius Secundus in 23 or 24 CE,²⁶ north of the Po River in *Gallia Transpadana*,²⁷ probably in Comum and not Verona as was once believed. Strangely

²⁶ This date is never given in an ancient source; however, his nephew notes in a letter (Plin. *Ep.* 3.5) to Baebius Macer that the elder Pliny died in his fifty-seventh year.

²⁷ Pliny (*HN.* pr. 1) refers to the Veronan Catullus as his *conterreanus*, or fellow-countryman.

enough, in spite of his fame, we have no ancient portrait of him made during his lifetime.²⁸ Other than that he was a son of the equestrian class, not terribly much is known of his early life, except that he accompanied his father to Rome to be educated in law. He was certainly in Rome by 35 CE, as his eyewitness accounts of events which occurred under the reigns of Tiberius, Caligula and Claudius can attest.²⁹ In the mid-40s CE, he began a career in the military, “all of it with the armies of the Rhine,” in the words of Syme.³⁰ Pliny’s career has been traditionally broken down into three periods of service as an officer, in *Germania Inferior*, *Germania Superior*, and again in *Germania Inferior*, occurring between 46 and 58 CE.³¹ While in Germany he found time to write several books, sadly none of which have survived—“Throwing the Javelin from Horseback,” “The Life of Pomponius Secundus” (in which he eulogized a friend and former commander, the half-brother of Corbulo), and, in response to a dream in which Drusus Nero appeared to Pliny and commanded him to preserve his memory, a 20-volume account of the German Wars.³²

He returned to Italy in 59, and seems to have taken a decade off from any official position, for no records of any kind of employment have survived. Instead he continued his intellectual pursuits. It was during this lull in official activity that he completed a six-volume work on the training of orators and an eight-volume set on ambiguities in

²⁸ Sorcha Carey, *Pliny’s Catalogue of Culture*, 1.

²⁹ Edward Champlin, *Nero* (Cambridge: Harvard University Press, 2005), 40-41.

³⁰ Ronald Syme, “Pliny the Procurator,” *Harvard Studies of Classical Philology* 73 (1969), 205.

³¹ It’s worth noting that these three periods of service were first established by F. Munzer in *Bonner Jahrbucher* 104 (1899), and Syme follows his formulation in his 1969 paper, “Pliny the Procurator,” 206.

³² Plin. *Ep.* 3.5.

language.³³ This retirement, perhaps voluntary and perhaps not, lasted until the year 70, which was shortly after the hated Nero was at last deposed, and, following the chaos of the year of the four emperors, Vespasian had come to power.³⁴ It would be difficult to find this a coincidence. Tacitus records a lengthy list of senators and knights—in other words men of Pliny’s rank and stature—executed or exiled in the Pisonian conspiracy of 65.³⁵ During this time, as Syme puts it, Pliny’s “luck and insignificance saved him from harm.”³⁶

The civil war accompanying the year of the four emperors (69 CE) was no doubt a disaster for many, but it changed Pliny’s political fortunes for the better. He would go on to serve as procurator (provincial governor) under the emperor Vespasian at least twice, perhaps as many as four times, probably in *Gallia Narbonensis* in 70, certainly in Africa from 70-72, certainly in *Hispania Tarraconensis* from 72-74 and probably in *Gallia Belgica* from 74-76.³⁷ During this time (and certainly during his years of military service in Germany as well) Pliny collected much of the material which he would include in the *Historia*, at least that which he observed himself and did not crib from his 2,000 sources. Owing to their shared service in Germany and perhaps also to their shared equestrian roots, when he was in Rome in 75-76, Pliny was close with Emperor

³³ Plin. *Ep.* 3.5. Syme (“Pliny the Procurator,” 209) notes that it is no surprise that Pliny was not working on any current history during these final years of Nero’s reign, when “it would be rash to be writing recent or contemporary history.” This uniformly monstrous view of Nero—shared by Pliny—has been challenged in recent times. See the introductory chapter of Champlin, *Nero*, 1-36. Beagon (*Roman Nature*, 17), for one more example, suggests that Pliny’s negative view of Nero may be simply a statement of political solidarity with the new regime..

³⁴ Champlin, *Nero*, 41.

³⁵ Tac. *Ann.* 15.71.

³⁶ Syme, “Pliny the Procurator,” 209.

³⁷ Syme, “Pliny the Procurator,” 211-218.

Vespasian, with whom he met more or less daily before the sun rose.³⁸ Shortly before his death in June of 79, Vespasian appointed his friend to command the Roman fleet at Misenum, in the shadow of Vesuvius.

The nephew's description of his uncle's studious personality has become deservedly famous, as a depiction of someone who could scarcely be bothered with anything other than study. Pliny the Younger describes a man who began working before dawn (though a bit later in winter), and continued well into the night, who rebuked his nephew for walking instead of riding in a litter (for Pliny studied as he travelled), who dictated as he bathed and was read to as he relaxed in the sun. The nephew tells the story of an after-dinner reading where a friend of his stopped the reader after a mispronounced word. Pliny asked his friend if he had understood the meaning. When the friend replied that he had, Pliny chastised him for wasting their time, noting that they had lost ten lines already due to the pointless interruption.³⁹ "So great was his frugality of time," the younger Pliny wrote.⁴⁰ Whatever Pliny's shortcomings as an intellectual, the boundlessly enthusiastic workaholic seems an ideal candidate to take on a project of the immense size and scope of the *Historia Naturalis*.

And that project was indeed immense. Dedicated to the Emperor Titus, the *Historia Naturalis* consists of 37 volumes, encompassing topics as broad as astronomy, geography, ethnography, agriculture, medicine and art, everything, in Pliny's words,

³⁸ Plin. *Ep.* 3.5.

³⁹ Plin. *Ep.* 3.5.

⁴⁰ *Tanta erat parsimonia temporis.* Plin. *Ep.* 3.5.

“which the Greeks called the *enkuklios paideia*.”⁴¹ Pliny claimed to have collected the 20,000 facts from 2,000 different volumes composed by a carefully-selected list of 100 authors.⁴² His work reports a fair amount of *mirabilia*—that is, fantastical wonders, dog-headed men and satyrs⁴³ and such—which it is easy to scoff at from our modern skeptical pedestals, though recent scholars have posited several reasons Pliny may have included them beyond simple credulity.⁴⁴ Although the work has often been called an encyclopedia and has informed and inspired the structure of the modern encyclopedia, and the English word “encyclopedia” derives from those two aforementioned Greek words, scholars in modern times have disputed the appropriateness of this assignment of genre—put simply, the category of “encyclopedia” does not appear to have existed in antiquity.⁴⁵ It was used as a repository of its various knowledge throughout the medieval period and the renaissance, into the early modern period, when it began to experience scholarly critique.

The very fact that the *Historia* has survived speaks to its popularity over the ages (though admittedly this may be partially due to luck that we have it and not, for one example, Pliny’s history of the German wars). Before the end of the third century, we find Pliny’s *Historia* attested in the work of Suetonius, Gellius, and of course the younger

⁴¹ *quae Graeci τῆς ἐγκυκλίου παιδείας vocant*, Plin. *HN*. pr.14. For the significant discussion surrounding the meaning of these terms, see Aude Doody, *Pliny’s Encyclopedia* (Cambridge: Cambridge University Press, 2010), and “Pliny’s Natural History: *Enkuklios Paideia* and the ancient encyclopedia,” *Journal of the History of Ideas* 70.1 (2009), 1-21.

⁴² Plin. *HN*. pr.17.

⁴³ Plin. *HN*. 5.7.

⁴⁴ Notably, Beagon (*Roman Nature*, 11 and 128) argues that the inclusion of *mirabilia* has more to do with Pliny’s Stoic desire to reveal nature’s divinity and complexity, to have it be seen properly as a *spectaculum*.

⁴⁵ Again, see Doody, *Pliny’s Encyclopedia*. Interestingly, *enkuklios paideia* seems to have become a portmanteau due to manuscript errors, leading to the development of our English word “encyclopedia.” In antiquity, it meant “complete knowledge.”

Pliny. The fourth-century Christian author Jerome considered the elder Pliny to be the equal of Aristotle and Theophrastus, and the seventh-century English monk Bede possessed at least half of Pliny's enormous tome.⁴⁶ Detecting the influence of the *Historia* becomes more difficult in the medieval period—generally that influence is harder to detect the further in time the author is removed from Pliny himself—but we do know that medieval readers combed the *Historia* for anecdotal facts.⁴⁷ The astronomical data present in Book Two saw scattered usage in late antiquity and the early medieval period, notably by the seventh-century archbishop Isidore of Seville and the fifth-century writer Martianus Capella.⁴⁸ The fourteenth century cathedral custodian Giovanni de Matociis conducted a study of the *Historia Naturalis* which at last addressed the medieval error of conflating the Elder and Younger Plinys into a single composite.⁴⁹ Pliny was well-read throughout the Renaissance, his descriptions of classical Rome influencing the architecture of the period.⁵⁰ It was not until the end of the fifteenth century that Pliny's reputation as a scholar and scientist was challenged, when Niccolo Leonicensis published a critical appraisal of the *Historia*.⁵¹ By the early twentieth century, Pliny's star had fallen such that Harold Axtell could lament that “the *Naturalis Historia* is not glanced at.”⁵² The transformation from important piece of scholarship to dull,

⁴⁶ Beagon, *Roman Nature*, 22.

⁴⁷ Beagon, *Roman Nature*, 23.

⁴⁸ B.S. Eastwood, “Plinian Astronomy in the Middle Ages and the Renaissance,” in *Science and the Early Roman Empire: Pliny the Elder, his Sources and Influence*, eds. Roger French and Frank Greenaway (Totowa, N.J.: Barnes & Noble, 1986), 197-221

⁴⁹ L.D. Reynolds and N.G. Wilson, *Scribes and Scholars: A Guide to the Transmission of Greek and Latin Literature* (Oxford: Clarendon Press, 1991), 127.

⁵⁰ Peter Fane-Saunders, *Pliny the Elder and the Emergence of Renaissance Architecture* (Cambridge: Cambridge University Press, 2016).

⁵¹ Laehn, *Pliny's Defense of Empire*, 5.

⁵² Harold L. Axtell, “Some Human Traits of the Scholar Pliny,” *Classical Journal* 22 (1926), 104.

unoriginal compilation was complete, only to be corrected in the latter part of the twentieth century.

The *Historia Naturalis* is a complex, diverse document—any given section intersects various philosophical and historical trends and ideas. The following thesis examines several aspects of the second book (while also taking into account aspects of other books, with particular attention paid to how they relate to Book Two) and how they relate to political cosmology and whether Pliny can be read to endorse Roman imperialism. The content of the second book can be categorized into three broad categories, and we shall examine each in turn. Chapter One analyzes Pliny's ideas of the fates and divinity, specifically how Pliny conflates Romans to the concept of a Stoic craftsman god shaping the world around it. Chapter two deals with our subject's treatment of meteorology, and his idealization of the farmer as a key figure in an interconnected mutually-beneficial relationship between Rome and the provinces. Chapter three considers Pliny's cosmology and astronomy, specifically focusing on the parallel frameworks an ancient Stoic like Pliny would have seen between celestial systems and political systems on Earth. All these aspects of nature are different elements to which the ancient thinker would ascribe the catch-all umbrella term 'cosmology.' I have considered them separately here, both for the benefit of modern readers (since we treat them as separate disciplines in the modern world), and because they each relate differently to the *Historia's* political themes. Pliny's treatment of each of them supports the idea of a pro-imperialist viewpoint in the *Historia*, though each do so in different ways, and so we shall examine each in turn.

Chapter One
Plinian Divinity

The Universe itself is God and the universal outpouring of its soul.

-Chrysippus⁵³

This chapter examines two dichotomies: the Stoic dichotomy of an active craftsman god and passive matter, and secondly, the dichotomy of an active Rome and the peoples on its periphery. In short, Stoic ideas about theology provided a ready-made mental map for imperial conquest. The bisecting lines of the Stoic universe are delineated and clear. There is a divine craftsman: the universe-god, everywhere and present in everything. And there is his clay: the substance of the material world, inert, passive and lifeless, until the craftsman chooses to animate it. For Pliny and other imperial Stoics, the earthly dichotomy mirrored heaven's cosmological dichotomy, each component of each system behaving according to its own nature. Whether or not Pliny consciously set out to compose an imperial apologia, Stoic cosmology created a framework for a defense of imperialism which was already ancient and ingrained deeply into the foundations of Roman society by Pliny's time. As we shall see, Pliny's Romano-centric worldview⁵⁴ allowed him to intellectualize the world of men as a mirror image to the world of the Stoic god.

⁵³ Quoted in Cic. *Nat.D.* 1.15.

⁵⁴ Gareth Williams, *The Cosmic Viewpoint* (Oxford: Oxford University Press, 2012), 42-3.

Pliny describes a cosmology and geography which tell us something of his philosophy, and simultaneously he describes what he viewed as exemplary behavior from his fellow Romans. The connecting thread which I propose here is the linkage between Stoic theology and imperialism. In order to make this connection, a number of baseline facts must first be established. And so the chapter will proceed as follows: first, we shall briefly discuss the intersections of religion and political institutions in the ancient world. Next we shall move to a discussion of Stoic theology and Pliny's general acceptance of that theology. After that we shall discuss the strategies Pliny employs to conflate Rome with the Stoic craftsman universe-god, before at last moving on to the obverse, his identification of provincial peoples with the passivity of Stoic matter.

RELIGION AND POLITICS IN THE ANCIENT WORLD

Any number of anecdotes from ancient sources could serve as an entry point into a discussion of the intersections between the coexistence of ancient religious and political ideologies. The one I choose here constitutes one example of "catasterism," the assigning of worthy humans to a hallowed place among the gods in the sky. Suetonius and Dio Cassius each record that Augustus was placed among the gods shortly after his death, voted a deity by the Senate (on the prompting of Tiberius, of course). Suetonius tells us that there were portents that the elderly Augustus was worthy of such an honor—a bolt of lightning struck the inscription of one of his statues, melting away the C. This was taken to mean that he would live another one hundred days ('C' being the Roman numeral for '100'), and that he would be deemed a god after death, since the word "aesar"—that is,

what remained when the C was melted—meant “god” in the Etruscan tongue.⁵⁵ Dio Cassius notes that Augustus need not be mourned, since he had been “made highest and declared hero and immortal.”⁵⁶

The word *catasterism* is Greek in origin, and its verb form, *καταστερίζειν*, means “to place among the stars.” The Roman form of this phenomenon shared much in common with its Greek cousin, but the Latins also contributed their own relevant idiosyncrasies. Rome’s historians differed in how they spoke of the concept, deemphasizing physical positioning in the sky in favor of a more general lexicon of divine honors. Secondly, the Greek tradition focused more broadly on cultural heroes,⁵⁷ while Roman deification was more likely to involve an individual who had served a state function—most prominently, an emperor, or a member of the imperial family. Finally, intriguingly, in the Greek tradition worthy individuals were welcomed into heaven by the gods themselves, while in Rome, it was the Roman Senate who served as divine gatekeeper. The recently deceased were made divine by senatorial decree, and then worshipped in the form of the imperial cult.

Pliny himself mentioned this very phenomenon, in which Vespasian followed the heavenly steps of the Roman chiefs, and so the Senate “enrolled [him] among the deities.”⁵⁸ As remarkable as it seems to us that a political organization such as the Roman Senate might gather to vote on the supernatural, it is entirely in keeping with Roman

⁵⁵ Suet. *Aug.* 97.1.

⁵⁶ ...καὶ τὸ τελευταῖον καὶ ἥρωα ἀπεδείξατε καὶ ἀθάνατον ἀπεφήνατε, Cass.Dio. 56.41.9.

⁵⁷ See, for example, *Catasterismi*, a work which may owe something to a lost work of Eratosthenes, and describes the mythological origins of the constellations as the Alexandrian Greeks understood them. Elly Dekker, *Illustrating the Phaenomena: Celestial Cartography in Antiquity and the Middle Ages* (Oxford: Oxford University Press, 2013).

⁵⁸ ...*numinibus adscribant*. Plin. *HN.* 2.19.

religious practice, a quintessential example of LeHoux’s “three-fold cord of Roman thought,” comprised of nature, religion and politics.⁵⁹ As Lindberg notes, anthropomorphized deities interfered in human affairs, caused natural phenomena, and favored certain political leaders over others.⁶⁰ Indeed the contention that Roman politics and religion were inextricably linked has been accepted by modern scholars for decades.⁶¹ The question at hand for this chapter is whether Pliny’s treatment of divinity supports the thesis that the *Historia Naturalis* is in part an imperial apologia. Now that we have begun to enter the world in which Roman religion operated, we are equipped to answer that question in what follows.

PLINY AND STOIC COSMOLOGY—TWO BINARY CONTRASTS

This section first gives a brief overview of Stoic theology (namely the binary division of active god and passive matter); secondly, it describes Pliny’s acceptance of that theology; and third, it proposes a second metaphorical binary applying to political institutions and imperialism. This shall demonstrate a connection between Plinian Stoicism and support for imperialism, while circumventing the necessity of the *Historia* being a conscious defense of imperialism.

⁵⁹ LeHoux, *What did the Romans Know?*, 181.

⁶⁰ Lindberg, *The Beginnings of Western Science*, 12-24.

⁶¹ For perhaps the best recent example on the subject, see James Rives, *Religion in the Roman Empire* (Oxford: Blackwell, 2007), specifically Chapter Five, “Religion and Empire.”

The Stoic universe-god is present in everything, an immaterial force underlying all material, and the Stoic universe-god is also a divine, industrious craftsman of that material. The Stoics believed they had proven not simply the existence, but the necessity, of a universal craftsman, both made from the universe's matter and manipulating that matter into all the familiar objects of life—trees and fish, houses and palaces, mountains and rocks.⁶² This idea of the universe-god reaches back to the school's founder, Zeno of Citium,⁶³ and appears in the writings of various Stoics throughout the school's history. The universe-god, the progenitor of the divine *pneuma*, is often conceptualized in Stoic thought as the masculine half of the universe's dichotomy. The Stoic Chrysippus, for example, allegorizes the universe-god as Zeus, or the active principle.⁶⁴

In this formulation, matter itself is utterly passive, awaiting that animating presence of the divine *pneuma*. Matter will lay dormant unless acted upon by the deity or another outside agent, and is even implied by some authors to welcome that activity.⁶⁵ Witness the words of Seneca: "Matter lays inert, a thing prepared for all purposes, it will continue to rest, if nobody should set it in motion."⁶⁶ The third-century biographer Diogenes Laertius echoed this idea—according to Diogenes, the Stoics separated the world into "that which acts and that which is acted upon."⁶⁷ Per Cicero, that divine mover

⁶² Dirk Baltzly, "Stoicism", *The Stanford Encyclopedia of Philosophy* (Summer 2018 Edition), Edward N. Zalta (ed.), URL = <<https://plato.stanford.edu/archives/sum2018/entries/Stoicism/>>.

⁶³ See Cicero's comments in *Nat.D.* 1.36.

⁶⁴ *SVF* 2.1074.

⁶⁵ Thomas Benatouil, "How Industrious can Zeus be? The Extent and Objects of Divine Activity in Stoicism," in *God and Cosmos in Stoicism*, ed. Ricardo Salles (Oxford: University of Oxford, 2009), 27.

⁶⁶ Seneca *Ep.* 65.2. *Materia iacet iners, res ad omnia parata, cessatura, si nemo moveat.*

⁶⁷ Jean-Baptiste Gourinat, "The Stoics on Matter and Prime Matter," in *God and Cosmos in Stoicism*, edited by Ricardo Salles (Oxford: Oxford University Press, 2009), 48.

takes the form of a *pneuma*, or divine fire.⁶⁸ In the Stoic paradigm, motion and activity are themselves equated to god.⁶⁹ In all these sources, the division is clear—the world consists of a divine actor (and agents of that divine actor) and a passive substance to be acted upon. As far back as Zeno, the divine craftsman “works matter from the inside, biologically, like semen in animal reproduction.”⁷⁰ In other words, Chrysippus was one among many Stoics to compare the universe-god to the male half of procreation. Consequently, the Stoics often conceptualized matter as the feminine principle—for Chrysippus, as Zeus was the divine creator, Juno provided the other half of the allegory.⁷¹

Thus a fundamental question at the heart of Stoic cosmology involves agency, and the delineated, lopsided nature of that agency in the universe. Put simply, in the cosmology of the Stoic school, the divine craftsman and universe-god has all agency, and the matter which that god acts upon has no agency whatsoever. Further, for something to behave according to its nature is the highest good in Stoicism. It is the nature of the universe-god to craft matter, and it is the nature of matter to be crafted and acted upon. Thus, it is good and right that the universe-god should act upon matter, and it is good and right for that matter to be acted upon by the universe-god. This describes a situation in which, for the Stoic, everything is behaving as it should.

Far from being an all-prevalent idea, this concept of god-as-universe and god-as-craftsman seems to have united the Platonist, Epicurean, Academic and Peripatetic

⁶⁸ Cic. *Nat.D.* 2.28.

⁶⁹ Cic. *Nat.D.* 2.23-4, for example.

⁷⁰ Gourinat, “The Stoics on Matter,” 50.

⁷¹ *SVF* 2.1074.

schools against the Stoics, if only on this singular issue.⁷² Consider the Peripatetic philosopher Alexander of Aphrodisias: “Surely it demeans our preconception of the deity to say that god pervades the whole of the matter underlying everything and remains in it ... and for them to make god a craftsman of grubs and gnats, just like a modeler devoting himself to clay...”⁷³ The hostility to the concept from other prevalent philosophical schools of the day illustrates its identification with Stoicism. In spite of the schools’ many agreements among one another, this was a point on which the other schools stood against the Stoic idea.

I have catalogued each time in book two that Pliny discusses anything related to concepts of divinity or the gods themselves. Pliny mentions the gods and divinity a total of nineteen times in the second book of the *Historia*. They appear to support Beagon’s contention of an Aristotelian *scala naturae*⁷⁴ (what Murphy called Pliny’s “view from on high”⁷⁵) structure not only within the whole of the *Historia*, but within individual books. That is, Pliny partitions divinity geographically—he begins on the scale of the universe, works his way downward through the lower sky, and ends by discussing aspects of divinity within the Earth itself. These nineteen instances occur throughout the text of the book, and they are easily partitioned in terms of celestial geography. The first seven instances consider divinity in terms of its cosmological nature, the next six instances

⁷² Benatouil, *God and Cosmos in Stoicism*, 23-26. As Benatouil notes, there are points of agreement between Stoics and Peripatetics against the Epicureans as well, discussed in Inna Kupreeva’s “Stoic Themes in Peripatetic Sources,” in the same book.

⁷³ Benatouil, “How Industrious,” 24. This is Benatouil’s modified version of Robert Todd’s translation in his *Alexander of Aphrodisias on Stoic Physics: A Study of the De Mixtione with Preliminary Essays* (Leiden: Brill, 1976).

⁷⁴ Beagon, “*Labores pro bono publico*,” 86.

⁷⁵ Murphy, *The Empire in the Encyclopedia*, 132.

discuss divine meteorology and the “lower” sky (that is, above the ground but below the stars), while the final six instances are concerned with the earth itself, essentially granting each category a partitioned section (though Pliny’s text includes no such partition). There is precedent among Stoic Roman authors for such a geographic partition—Cicero relates that anything lacking accuracy, order and regularity “belongs to the region between the Earth and the moon, and to the surface of the earth.”⁷⁶

Pliny’s discussions of divinity early in the book can be connected easily with his Stoic influences. Pliny opens Book Two with a declaration that the world itself is a deity, an eternal divine entity with neither beginning nor end.⁷⁷ To believe this deity’s dimensions comprehensible by mortals is, in Pliny’s view, a particular kind of madness, a madness equal to trying to discern what lies beyond its dimensions.⁷⁸ Pliny’s universe-god is “all [that] is perceived, all that is seen, all that is heard, all spirits, all of the mind, all of himself”;⁷⁹ in other words, everything in the universe, both material and immaterial. Later on he tells us explicitly that “the power of nature” is what he means by the word “god,”⁸⁰ referring to this being as “the craftsman of all nature.”⁸¹ Cicero and Pliny echo each other on the universe-god’s lack of interest in petty human affairs.⁸² In addition to attributing the idea to Zeno, Cicero has Chrysippus repeat essentially the same

⁷⁶ Cic. *Nat.D.* 2.56.

⁷⁷ Plin. *HN.* 2.1.

⁷⁸ Plin. *HN.* 2.3-4.)

⁷⁹ Plin. *HN.* 2.14.

⁸⁰ Plin. *HN.* 2.27.

⁸¹ Plin. *HN.* 2.3.)

⁸² Plin. *HN.* 2.20. Also Cic. *Nat.D.* 3.86.

sentiment.⁸³ As Beagon notes, Pliny is no philosophical purist, but the Stoic influences here are clear.⁸⁴ Pliny's cosmological, theological framework is decidedly Stoic in nature.

So from the first few lines of the *Historia's* second book, and over the course of his first several discussions of divinity and the gods, Pliny accepts the first half of the Stoic cosmological binary. He is less explicit about the feminine, latter half, but there is evidence for his acceptance of this as well. Pliny notes in a small aside that the Latin name of winds (*ventus*) is grammatically masculine, and speculates that wind "is that famous breath generative of the things of nature, wandering here and there as if in some womb."⁸⁵ This is a clear reference to the Stoic idea of the divine *pneuma*. The moon, in contrast, "is held to be a feminine and soft star, and also to loosen moisture at night and to extract, not remove it."⁸⁶ A *pneuma* analogue is also given credit for replenishing the mines of what Pliny calls black lead, a substance which is feminized in Pliny's formulation—"Air rushing through after the vents have been opened seems to do for the purpose of abundance, just as certain women after having aborted are made more fertile."⁸⁷ It seems clear that even if Pliny does not explicitly elucidate the creator-matter, masculine-feminine Stoic binary, he was at least heavily influenced by it.

Thus the *Historia Naturalis* at least implicitly follows the distinction of the Stoic cosmological binary—passive, feminine matter, and an active, masculine divine craftsman. It is no great cognitive leap to make another binary division, mirroring the

⁸³ Cic. *Nat.D.* 1.39.)

⁸⁴ Beagon, *Roman Nature*, 26-54.

⁸⁵ Plin. *HN.* 2.116.

⁸⁶ Plin. *HN.* 2.223.

⁸⁷ Plin. *HN.* 34.165..

theological one. For Pliny, that binary lies in what Williams called a “nationalistic”⁸⁸ division of culture—in short, between Rome and non-Rome. Rome stands in for the universe-god as the active, masculine, divine craftsman. Forming the other half of Pliny’s geographic binary—standing in for passive, inert matter—is the rest of the world, but more specifically, the provinces and Rome’s conquered peoples. It is a kind of Stoic cosmology on Earth—whether consciously so or not, Pliny’s theological world mirrored his political world, in a starkly-drawn binary and with no question as to the agency relationship between the two sides. As the divine craftsman behaved, acting on and improving the passive material substance, so behaved the Roman Empire. As the passive material substance behaved, inert until stirred to motion by the divine *pneuma*, so behaved the provinces.

THE ACTIVE PRINCIPLE—ROME AND CENTRALITY

Let us consider in detail each side of this second binary, Rome as the active craftsman and the provinces as passive matter, as conceptualized in the *Historia Naturalis*. This section makes the case for Pliny’s conflation of Rome with the Stoic craftsman universe-god, via a number of rhetorical strategies—geographic centralization, descriptions of Rome which associate it with the divine *pneuma*, and enumeration of the actions of heroic, quasi-divine Romans. As the Olympians were the agents of the divine

⁸⁸ *The Cosmic Viewpoint*, 41.

craftsman on Earth, in Pliny's Stoic-influenced formulation, the Romans took up that torch once Greece's moment had passed.

We can guess that it was important to Pliny that Rome occupy the center of his *orbis terrarum*, for he engages in some mental gymnastics to get it there. Echoing the common theme of a tri-partite world division of ancient writers, he writes that Europe occupies not a third, but rather a half of the Eurasian-African continents—Europe is not a third part, but “in truth equal” to Asia in size, he tells us.⁸⁹ Mentally picturing the two options of third and half, it is easy to see why Pliny chose the latter—it must be a half for Rome to be at least closer to the center. While in reality, even were it true, this would not put Rome at the center of the known land at the time, but there is still a centralizing impulse at work here. Pliny has no reason to tell us that Europe and Asia are equal in size, unless it is to move Rome closer to the world's center, at least metaphorically. There are no shortage of lines in the *Historia Naturalis* depicting Pliny's Romano-centrism; here is but one: “Unless we consider that in the center of the world, Italy and Sicily, there were nations of these monsters . . .”⁹⁰ Pliny's Romano-centric worldview has been well-documented in secondary scholarship. As Carey notes, Pliny “arranges and classifies the world as unequivocally Roman,”⁹¹ such that other peoples are measured against the greatness and accomplishments of Romans. In the words of Hine, Pliny oriented the *Historia* “at the center of the imperial world.”⁹² This was by no means a unanimous

⁸⁹ Plin. *HN*. 3.5.

⁹⁰ Plin. *HN*. 7.3.

⁹¹ Carey, *Pliny's Catalog of Culture*, 33.

⁹² H.M. Hine, “Rome, the Cosmos, and the Emperor in Seneca's *Natural Questions*,” *The Journal of Roman Studies* 96 (2006), 48.

perspective in Roman literature of Pliny's day—Seneca, notably, privileges no perspective in the cosmos, marginalizing the Roman perspective in favor of a global viewpoint.⁹³ Thus Pliny's Romano-centric perspective was present in the work of some Roman authors, but not all, and so we cannot dismiss it as being present across all Roman literature. Even relative to other Romans, Pliny's Romano-centrist viewpoint is discretely identifiable.

That centralizing perspective is also one of the author's primary tools for conceptualizing Rome as the craftsman universe-god. Stoic cosmologists placed the Earth at the center of the universe, as far back as Zeno, the founder of the school. One of the more methodical representations of this model appears in Cleomedes' *On the Circular Motions of the Celestial Bodies*, in which the author argues for a finite sphere-shaped cosmos with the Earth at the center, surrounded by water, air, ether and then the planets.⁹⁴ Pliny himself embraces this model, setting "the sky and the earth" as opposing points with all the stars lying in between them.⁹⁵ He then describes those bodies which were known to the ancients in descending order of distance, getting the order correct aside from transposing the sun and the Earth.⁹⁶ Later in the book, he states his geocentrism plainly: "It is decided by undoubtable arguments that the Earth is at the center of all the universe."⁹⁷ The Earth, God, and Rome are all at the center of their respective universes.

⁹³ Williams, *The Cosmic Viewpoint*, 42-3.

⁹⁴ Well-summarized in Alexander Jones, "The Stoics and the Astronomical Sciences," in *The Cambridge Companion to the Stoics*, ed. Brad Inwood (Cambridge: Cambridge University Press, 2003).

⁹⁵ Plin. *HN*. 2.32.

⁹⁶ Plin. *HN*. 2.32-41. Pliny's order in descending distance from the center of the solar system (which he believed was Earth) is Saturn, Jupiter, Mars, the Sun, Venus, and Earth.

⁹⁷ *Mediam esse terram mundi totius haut dubiis constat argumentis...* Plin. *HN*. 2.176.

The theme of centrality, then, appears in two notable cases in the *Historia Naturalis*' second book—with reference to the place of Rome upon the Earth, and to the Earth's place within the greater universe. In this sense, Pliny conflates Earth and Rome, and we may take him to mean that they share certain characteristics besides centrality. The primary characteristic relevant to this argument is their status as a conduit for divinity. As Mary Beagon has noted, Pliny's Earth is divinized—particularly in comparison with the relative inertness of the planets and stars—in that it is bursting forth with the power of nature.⁹⁸ Earthquakes, medicinal springs, and the vapors of the oracles' spring waters are all explained by, in Pliny's words, “the divinity diffused throughout all nature, repeatedly erupting in different ways.”⁹⁹ The divine breath of nature suffuses the Earth at the center of the universe, and Rome at the center of the Earth. Beagon sums this conflation up well, noting that for Pliny, Rome is “a second sun and second parent to the world and thus a second nature.”¹⁰⁰ Rome, like the Earth, is a centralized hub of activity and life, pervaded with the divinity of the craftsman universe-god.

So that is how Pliny centralizes both Rome and the Earth, and conceptualizes both as suffused with the divine *pneuma*, the substance of the creator-god which animates the passive matter of the world. Let us turn then to how he conceives of Rome as the active half of a Stoic god-and-matter binary. With few exceptions, anytime Pliny mentions Rome or Romans, he mentions them doing something, engaged in some sort of activity—

⁹⁸ Beagon, “The Curious Eye of the Elder Pliny,” in *Pliny the Elder: Themes and Contexts*, eds. Roy Gibson and Ruth Morello (Leiden: Brill, 2011), 75.

⁹⁹ ...*diffusae per omne naturae subinde aliter atque aliter numen erumpens*. Plin. *HN*. 2.208.

¹⁰⁰ Beagon, “Situating Nature's Wonders in Pliny's Natural History,” in *Vita Vigilia Est: Essays in Honor of Barbara Levick*, eds. Edward Bispham and Greg Rowe (London: Wiley, 2007), 20. The passages Beagon is discussing are Plin. *HN*. 27.3 and 37.201.

founding, conquering, writing or building. Of course, in reality, the picture was not quite so simplistic. Romans ruled other Romans, and they were certainly not always supreme in their history, the notable example being in the time of Alexander the Great. But ancient belief systems need not necessarily be internally consistent, and judging them in this way holds them to a standard which they did not themselves consider.¹⁰¹ The general principle holds that the Romans are conceptualized as active in the *Historia*, conflating them with the Stoic craftsman-god. This stands in stark contrast to other peoples, who often are described simply in terms of where they reside. Pliny gives Rome substantial agency primarily in two ways—through descriptions of Rome, and through descriptions of the deeds of great Roman men. Let us examine each of these in turn.

Books three through six of the *Historia Naturalis* contain, to quote the author, “the bare names of places,”¹⁰² a catalogue of geographic ports, cities and landmarks known in the ancient world. Pliny is one of only two Latin authors whose work has survived from the classical period to treat the subject at length, along with his near-contemporary Pomponius Mela’s *De situ orbis*. Mela is one among thirty-seven authorities whom Pliny notes that he consulted in composing his own geography.¹⁰³ Much of the information here consists of simple enumeration—this people resides here, that people resides there, and so forth. A single line should serve as example for this portion of the geography: “The part of the Gauls which is bathed by the Mediterranean is called the province of Narbonne, having been called Bracata before, divided from Italy

¹⁰¹ Lindberg, *The Beginnings of Western Science*, 25.

¹⁰² Plin. *HN*. 3.2.

¹⁰³ Plin. *HN*. 1.

by the river Var and the Alps...”¹⁰⁴ Much of Pliny’s geography, when he is not dealing with Rome and Italy, reads much in this fashion.

There is a marked shift in tone and treatment when Pliny comes to Rome and Italy, however. Suddenly the land is full to bursting with nature’s liveliness and activity when Pliny considers Italy “the parent of all lands and nourished¹⁰⁵ from the same, which was chosen by the divine will of the gods to make heaven itself brighter.”¹⁰⁶ Throughout this passage, Rome and Italy are described in glowing, divine terms, reinforcing the idea that Pliny sees Rome as an earthly analogy for his Stoic universe-god described at the outset of Book Two. His description of Campania further bolsters this idea: “How is the coast of Campania [to be described] through itself and its blessed and prosperous loveliness, such that obviously it is the one place for the work of rejoicing nature?”¹⁰⁷ Above all, for Pliny, Italy is a land of life and bounty, absolutely suffused with the Stoic god’s divine *pneuma*—the plains are fertile, the livestock hearty, the sheep-fleece glorious, and waters well-suited for sailing, as if the country had been designed for its inhabitants to go out and aid mankind.¹⁰⁸ Pliny even makes special note of “the breath of so many mountains,”¹⁰⁹ as if the divine *pneuma* were so plentiful in Italy that it simply blows down off the heights. After all this loving description, we return again to dry

¹⁰⁴ ...*Narbonensis provincia appellatur pars Galliarum quae interno mari adluitur, Bracata antea dicta, amne Varo ab Italia discreta Alpiumque?* Plin. *HN*. 3.4.

¹⁰⁵ As Mary Beagon put it, the flow of war treasure “symbolized the power and uniqueness of both Rome and her emperor.” Beagon, “Situating Nature’s Wonders,” 37.

¹⁰⁶ ...*omnium terrarum alumna eadem et parens, numine deum electa quae caelum ipsum clarius faceret...* Plin. *HN*. 3.5.

¹⁰⁷ ...*qualiter Campaniae ora per se felixque illa ac beata amoenitas, ut palam sit uno in loco gaudentis opus esse naturae...* Plin. *HN*. 3.5.

¹⁰⁸ Plin. *HN*. 3.5.

¹⁰⁹*tot montium adflatus...* Plin. *HN*. 3.5.41.

enumeration of places and distances. Pliny spends several chapters enumerating the cities and regions of Italy—certainly because it is the region he knew best—and then he returns to his literary trip around the known world. The language Pliny uses is deeply meaningful to the Stoic mindset. His descriptions of fertility and bounty and life in Italy, and the contrasted lack of those descriptions for other regions, tells us something of how he conceived his world. Perhaps the only region which receives a comparable description to Rome is that of the River Nile, which Pliny describes in terms of similar fertility and life.¹¹⁰ This is perhaps unsurprising, as Egyptian agriculture fed Roman society, and Egypt was an integral part of imperial activity by Pliny's time, feeding Rome and much of the empire. A statistical and qualitative study of Pliny's treatment of Egypt and Rome vis-à-vis his treatment of the other provinces would be further illuminating on this question, but for our purposes here, it is sufficient to state that Rome and Egypt are granted a quite different treatment than any of the other provinces. When he discusses the universe from a more cosmic perspective, Pliny describes the Earth as bursting with life and bounty and activity, pregnant with the divine *pneuma*. In this formulation, it is the rest of the universe which is on the other side of the binary. This will be discussed in greater depth later, but when he discusses geography from an on-the-ground perspective, it is Rome which is bursting with life and bounty and activity. In that formulation, it is the provinces and other peoples on the other side of the binary.

So that is how Pliny uses geography to substitute Rome for a Stoic universe-god on Earth. What, then, of individual Romans? Individual Romans in the *Historia Naturalis*

¹¹⁰ Plin. *HN*. 5.10.

are almost always the movers and shakers, the possessors of agency, the catalysts by which events occur. If we were forced to choose a single group who effected positive change in the world of the *Historia Naturalis*, it would be individual great Roman men. Pliny sets the stage for his *Romani magni* by describing the exploits of Hercules, the Greek demi-god described by Herz¹¹¹ as serving as the preceding example for the future deification of emperors: “[Here were] the boundaries of the labors of Hercules, on account of which the locals call the pillars of that god and they believe the columns to have been cut through to admit the sea, which was previously excluded, and to have changed the face of nature.”¹¹² Hercules, a prominent demi-god in both Greek and Roman culture, is given credit for the creation of the Mediterranean Sea. The template for a great individual, possessed of agency, is set with the origin story of Gibraltar. Hercules quite literally shaped the landscape, while the great men who follow him in the *Historia* will shape the landscape’s political fortunes.

Let us turn then to a family which also claimed divine lineage, that of the Julio-Claudians.¹¹³ Deep in the midst of a dry geographical description about the Alps, Pliny tells us where various tribes live and offers little more information about them, though he

¹¹¹ Peter Herz, “Emperors: Caring for the Empire and their Successors,” in *A Companion to Roman Religion*, ed. Jorg Rupke (Malden, Mass.: Blackwell, 2007), 315. Pliny himself also equates various Romans with Hercules later in his work: “Truly It pertains not only to one man but to the honor of the Roman Empire, to avow publicly the victories and triumphs of Pompey Magnus here in this place, which were equal to not only Alexander the Great in the splendor of matters, but also truly to Hercules, and also nearly father Liber.” (*Verum ad decus imperii Romani, non solum ad viri unius, pertinet victoriarum Pompei Magni titulos omnes triumphosque hoc in loco nuncupari, aequato non modo Alexandri Magni rerum fulgore, sed etiam Herculis prope ac Liberi patris.* Plin. *HN.* 3.26.)

¹¹² ...*laborum Herculis metae, quam ob causam indigenae columnas eius dei vocant creduntque perfossas exclusa antea admisisse maria et rerum naturae mutasse faciem.* Plin. *HN.* 3.1.

¹¹³ Julius Caesar famously claimed to be an ancestor of Venus, such that coins were minted featuring him and Venus on obverse sides, or Venus on one side and Aeneas carrying Anchises on the other, along with his name.

does inform us that a triumphal arch was erected to the emperor Augustus.¹¹⁴ In these mountains where he enumerates a great many tribes who happen to be physically present, the only positive, constructive action he bothers to mention is the creation of a monument to a Julio-Claudian emperor. This is far from the only example of this. In the midst of a long, dry paragraph describing the geography of Spain, Pliny takes time to note that there are three altars located in a particular location dedicated to Augustus.¹¹⁵ These peoples simply exist around what are positive constructions and actions, either created by Rome or created in the name of Rome. Augustus' adopted father Julius Caesar shows the "most outstanding vigor of mind," as far as Pliny is concerned.¹¹⁶ It is worth noting here that Pliny's word for the mind of Caesar and the mind of the universe-god in the opening of Book Two, *animus*, are one and the same. Later he refers to Caesar's "unconquered spirit," using the same word.¹¹⁷ Agrippa, that famous close associate of the Julio-Claudians, is accorded similar agency in the *Historia*—when he is mentioned, it is generally in the context of how distant he reckoned something from Rome, or what he reckoned the dimensions of a particular landmass to be.¹¹⁸ This echoes Murphy, who argued that Pliny's enumeration of knowledge gave him and Rome some power over that knowledge.¹¹⁹

¹¹⁴ Plin. *HN*. 3.20.

¹¹⁵ Plin. *HN*. 4.20.

¹¹⁶ Plin. *HN*. 7.25.

¹¹⁷ Plin. *HN*. 3.25.

¹¹⁸ The examples are numerous, but here is one: "Agrippa believes the length to be 800, the width 300, of Ireland the same, but the length is 200 less." (*Agrippa longitudinem DCCC esse, latitudinem CCC credit, eandem Hiberniae, sed longitudinem CC minorem*. Plin. *HN*. 3.16.)

¹¹⁹ Murphy, *The Empire in the Encyclopedia*.

Pliny grants similar agency to other great Romans besides the Julio-Claudians. The career of Julius Caesar's most prominent rival, Pompey Magnus, receives reasonably equal treatment to that of the great descendant of Venus. Our author takes a break from his mundane listing format to tell us that the shape of near Spain has been changed after Pompey Magnus subjugated almost 900 towns between the Alps and Further Spain.¹²⁰ Pliny reproduces in full for posterity the introductory text for Pompey's triumph: "After he liberated the maritime coast from pirates and he returned command of the sea to the Roman people, he celebrated a triumph over Asia, Pontus, Armenia, Cappadocia ... and beyond these, over King Mithridates and Tigranes."¹²¹ In Pliny's formulation, Pompey is in control of the landscape, shaping it to his will as the universe-god shapes matter.

Cicero's treatment in the *Historia* is even more laudatory, but in a different way—for civil, rather than military exploits. Pliny gives the first *parens patriae* credit for enjoying the first ever civilian triumph, and for being such an orator that he convinced the tribes to give up an agrarian law to their own detriment.¹²² By the power of his speech, Cicero attained the same accomplishments as Caesar and Pompey—shaping the landscape and bending the provincials to his will. Pliny himself was both a soldier and a scholar, and at the end of his section on Cicero, he states his preference for the latter: "It is greater to advance the borders of Roman genius so far than to advance the borders of the empire."¹²³ It certainly supports Beagon's point that the *Historia Naturalis* was

¹²⁰ Plin. *HN*. 3.3.

¹²¹ Plin. *HN*. 7.26.

¹²² Plin. *HN*. 7.30.

¹²³ Plin. *HN*. 7.30.

written in the same spirit of competition which inspired the Roman military ethos.¹²⁴ It also illustrates that Pliny was perfectly capable of introducing metaphor and another layer of complexity into the encyclopedia, beyond simplistic fact collection. By the power of his pen and his voice, Cicero joined the ranks of Roman Herculean demi-gods, in whose nature it was to control and act upon their surroundings. Like Pliny and Caesar, he is representative of the active Stoic god, shaping the world to his will.

Pliny makes his fellow Romans into Olympians—born of a bountiful land suffused with the divine *pneuma*, they themselves are suffused with the life-breath of the Stoic creator god; they are the rightful people to marshal its resources. The Stoic framework of an active creator god would have lent credibility to earlier Greek heroes like Hercules, and further lent credibility to the generation of heroes immediately before Pliny’s lifetime—that is, Pompey, Cicero and Julius Caesar. We shall turn then to the other side of the binary, the passive principle. This ought to require fewer words; I shall follow Pliny in according them lighter analysis.

THE PASSIVE PRINCIPLE—THE PROVINCES AND THE PERIPHERY

It would not be fair to claim that Pliny is totally disinterested in non-Roman peoples. He certainly wants his reader to know where they are, whether they have the

¹²⁴ Beagon, “Labores Pro Bono Publico.”

rights of Roman citizens, and whether they pay tribute. He simply is not interested in them doing much of anything. The contrast is almost a photo negative—where the Romans *do*, control, and conquer, for the greater part, the provincial peoples simply *exist*. When he does accord them action—in the form of their own societal customs, certainly not any action which supersedes the agency of Rome—it still reinforces the imperialist mindset. It is worthwhile to give a few examples of this to illustrate the point. Therefore this section will briefly deal with Pliny’s overall treatment of foreign peoples in his geography, and his treatment of their customs in his anthropology section.

With few exceptions, Pliny’s treatment of non-Romans in his geography can be distilled down to three categories of description: where they are, whether they pay tribute, and whether they enjoy Roman citizenship. His geography is something of a monotonous drone, filled with lines like this: “Caesaraugusta, a tax-free colony, where the Ebro River pours out, where before there was a town called Salduba...”¹²⁵ When he is describing political institutions, Pliny falls back on simple enumeration with the occasional insult thrown in: “The congregation of Lucan peoples is sixteen, unknown and with barbarian names, except for the Celtici and the Lemavi...”¹²⁶ Contrasted against his loving description of Rome, with its glorious livestock and fertile fields and copious mountain breezes, the rest of the geography reads almost like an inventory list.

If we were to find a sense of agency and activity in non-Roman peoples, the anthropological sections of the *Historia*’s seventh book would seem a likely place. But in

¹²⁵ Plin. *HN*. 3.3.

¹²⁶ Plin. *HN*. 3.3.

fact this is where Pliny places those other peoples firmly on the outskirts. Book Seven's anthropological content is composed almost entirely of *mirabilia*—that is, astonishing marvels, many of which would have been difficult to believe for Pliny's contemporary readers. Pliny seems to have recognized this, granting that some of his inclusions “will seem strange and incredible to many. For truly who would have believed in the Ethiopians before seeing them?”¹²⁷ Scythians, Pliny tells us, feed on humans, which is no surprise since they are descended from the Cyclops and the Laestrygones, the man-eating giants from the *Odyssey*.¹²⁸ Over the course of the section we find maidservants giving birth to snakes,¹²⁹ satyrs and dog-headed humans in India, and a race of far-easterners born with one leg instead of two.¹³⁰ What is the purpose of all this? As Valerie Naas has noted, *mirabilia* are a means of illustrating Rome's power, its control of the far periphery.¹³¹ To quote Alessandro Barchiesi: “The act of collecting information on the borders has strong political and moral implications ... [*Mirabilia*] implicitly declare that Roman power enables knowledge of nature.”¹³² Describing other peoples in terms of *mirabilia* places them on the outskirts, conceptualizing them as distant from the center in the geographic formulation discussed in the previous section.

So in summation of this section, Pliny's treatment of other peoples minimizes their agency and their importance relative to Rome, both implicitly and explicitly. When

¹²⁷ Plin. *HN*. 7.1.

¹²⁸ Plin. *HN*. 7.2.

¹²⁹ Plin. *HN*. 7.3.

¹³⁰ Plin. *HN*. 7.2.

¹³¹ Valerie Naas, “Imperialism, *Mirabilia* and Knowledge,” in *Pliny the Elder: Themes and Contexts*, 65.

¹³² Alessandro Barchiesi, “Centre and Periphery,” in *A Companion to Latin Literature*, ed. S. Harrison (Malden: Blackwell, 2005), 402.

discussing geography, they are accorded no more interest than a simple description of place and name, and whether or not they pay tribute or have the rights of citizens. This stands in contrast to the descriptions of Rome and Romans. When discussing anthropology, the use of *mirabilia* in describing foreign peoples effectively forces them out to the periphery, standing in contrast to Pliny's conceptualization of an active and lively Earth at the center of a passive universe, and an active and lively Rome at the center of the Eurasian-African landmass.

CONCLUSION

Pliny deploys Stoic theological concepts to great rhetorical effect in the *Historia Naturalis*. The Stoic universe is made up of two parts. Firstly, there is an omnipresent universe-god, who is both everywhere and active in everything, a craftsman both active and industrious. Secondly, there is matter, passive and inert, unless acted upon by the craftsman universe-god. Pliny's well-known Stoic background provided him a ready-made mental framework to justify Rome's imperial dominion, by rhetorically substituting Rome for the universe-god, and substituting provincial peoples for matter. He did so through several rhetorical strategies. Individual Romans are described primarily through their great deeds—all the ways in which they controlled and commanded others to bend to their will. In contrast, foreign individuals receive no such agency. Rome itself is

described as almost impossibly fertile and full of life, absolutely full to bursting with the divine *pneuma*, which in Stoic thought was the spirit of living things.

This is also where geocentrism and Romano-centrism also play a role. Pliny goes to great lengths to centralize both the Earth and Rome, Earth within the greater universe, and Rome within the *orbis terrarum*. He uses *mirabilia* in his anthropology section as a means of categorizing other peoples as far-flung in the periphery. That centralization of both Earth and Rome creates a natural comparison, particularly given how both are described as suffused with the divine *pneuma* relative to the rest of their respective systems—Earth is full of Stoic universe-god’s influence compared to the universe, and Rome is filled with the Stoic universe-god’s influence compared to the rest of the *orbis terrarum*. The conclusion here is clear—in the world of imperial activity, in the relationship between conqueror and provincial, Rome is the Stoic universe-god, and the provincials are their matter, their brick-and-mortar with which to improve the world. It is the highest good in Stoicism for things to behave according to their nature, so, for the Stoic, the Rome presented in the *Historia Naturalis* is entirely justified to engage in empire.

Chapter Two
Plinian Meteorology

All human cultures have a sky.

*Clive Ruggles*¹³³

This chapter explores the *Historia Naturalis*' treatment of meteorological phenomena and its relationship to Pliny's political perspective. Meteorological knowledge was a valuable and important aspect of life for ancient peoples. Effective application of that knowledge determined when they would plant, and how successful their crops would be in a given year. What was considered meteorological knowledge was broader in the ancient world than it is today, though, as were the sources of that knowledge. This diverse knowledge and sources of knowledge added up to a tradition of meteorology that was longstanding by Pliny's day, and, as Liba Taub notes, points to a fundamental tension between authoritative voices at the heart of Greco-Roman society.¹³⁴ The following pages ought to demonstrate that, while the tradition of meteorology was inherently conservative and resistant to change in the ancient world, Pliny's approach to the subject was unique, and that uniqueness reflected his political outlook. His ancient methods of dealing with the fundamental tension identified by Taub in the modern scholarship helped to create an outlook that can be described largely as an endorsement

¹³³ Clive Ruggles, *Handbook of Archaeoastronomy and Ethnoastronomy*, vol. 1 (New York: Springer, 2015), v.

¹³⁴ Taub, *Ancient Meteorology*, 3. "I intend to signal that these ancient works display interesting tensions regarding the status of authorities and the use of knowledge derived from them. These tensions are deeply embedded in the cultures and values of the Greco-Roman world and contribute to the rich complexity of ancient projects to predict and explain meteorological phenomena."

of the imperial project. The Roman farmer's ability to interpret the meteorological knowledge collected by Pliny made him, in the author's formulation, the ideal figure in an interconnected political system properly headed by Rome.

The modern historiography on the subject is relatively thin. Before the early 2000s, the most recent book-length attempt at a comprehensive treatment was from Otto Gilbert, originally published in 1907.¹³⁵ Owing in no small part to Liba Taub, the subject has since seen a small revitalization, particularly with the publication of *Ancient Meteorology* and 2017's *Science Writing in Greco-Roman Antiquity*.¹³⁶ Taub's treatment of the subject could not be much more different from that of Gilbert, who considers the topic from its pre-philosophical beginnings up to the Stoics, and proceeds theory-by-theory, in chronological order. Taub, in contrast, briefly treats both weather prediction and theories of meteorology, organizing by writer and motive, rather than by theory and chronology.¹³⁷

Rather than considering the subject of ancient meteorology in full, this chapter discusses specifically how Pliny's meteorology relates to his political leanings. Here, then, is a brief plan for the chapter to follow. The construction of this argument shall require three main sections. First, I give a brief overview of the meteorological tradition in Pliny's day, so as to define our terms. Second, I explain the *Historia's* departure from its disciplinary ancestors, with a focus on how that difference is not one of substance, but

¹³⁵ Taub, *Ancient Meteorology*, 10. This was Otto Gilbert's *Die meteorologischen Theorien des griechischen Altertums*.

¹³⁶ Liba Taub, "Encyclopedia," in *Science Writing in Greco-Roman Antiquity* (Cambridge: Cambridge University Press, 2017).

¹³⁷ Harry Hine, "Review of *Ancient Meteorology*, by Liba Taub," *Classical Philology* 100.1 (2005), 83-88.

one of task—covering both prediction and explanation. In so doing, as Taub notes, Pliny presents a picture of the ideal Roman farmer,¹³⁸ and we shall discuss how that figure relates to Pliny’s ideas about the Roman imperial project. Third and finally, I put forth an argument as to how this related to Pliny’s pro-imperial political leanings.

THE METEOROLOGICAL TRADITION

This subsection shall first explore the different types of sources in the ancient tradition, second, the conservative nature which they generally held in common, and third, the ancient authors’ two major purposes of prediction and explanation. The term “meteorology” was less specific in the ancient world than it is in the modern, both in terms of what constituted an acceptable source and what belonged to the field.

Meteorological texts treated not only weather patterns and events, but also certain astronomical phenomena such as comets, and certain geological phenomena such as earthquakes. Ancient peoples taught and learned meteorological knowledge from a diverse variety of literary and physical media, including prose treatises (hemerologies), astrometeorological calendrical texts, inscriptions upon stone *parapegmata*, and didactic poetry.¹³⁹ All of these sources tended to share in common an emphasis on the importance of tradition and the knowledge inherited from their ancestors, even more so, Taub

¹³⁸ Taub, *Science Writing*, 85.

¹³⁹ Taub, *Ancient Meteorology*, 15.

suggests, than other ancient disciplines.¹⁴⁰ Generally these sources sought to achieve one of two goals—on the one hand prediction, and on the other, explanation of meteorological events. These predictive and explanatory methods varied widely among authors, but these two basic purposes underlie most, if not all, of the meteorological tradition.¹⁴¹

Let us begin with prose sources. Meteorological almanacs predate Pliny's time by millennia. Babylonian scribes in the second millennium BCE composed the *Enuma anu Enlil*, a collection of omens which interpreted astronomical phenomena and weather events as signs from the gods.¹⁴² The scholars of Babylon proved to be keen observers, developing a program of astronomical study known as *nasaru sa gine*, or "regular watching," sometime during the reign of Nabonassar (747-733 BCE). These reports became known as Astronomical Diaries, of which the earliest surviving is from 652 BCE.¹⁴³ While these diaries were concerned primarily with phenomena related to the heavens, they contain a great deal of incidental meteorological observation.¹⁴⁴ In Babylon, as later in Rome, meteorological events were interpreted as triggers for omens of events that would affect the state and its ruler.¹⁴⁵ The Babylonian approach seems to have been known in Greece from the third century BCE, although Greek scholars seem to

¹⁴⁰ Taub explores this thoroughly in *Ancient Meteorology*, 15-69.

¹⁴¹ Taub, "Encyclopedia," 78.

¹⁴² Taub, *Ancient Meteorology*, 16.

¹⁴³ Taub, *Ancient Meteorology*, 16-17.

¹⁴⁴ N.M. Swerdlow, *The Babylonian Theory of the Planets* (Princeton: Princeton University Press, 1998), 18. "It appears from the Diaries ... that the weather in ancient Mesopotamia was frequently terrible, frustrating the efforts of the most devoted watcher of the heavens, with night after night of clouds and rain of various sorts, described in detail by numerous technical terms, as well as fog, mist, hail, thunder, lightning, winds from all directions, often cold, *pisan dib*, of unknown meaning but always associated with rain."

¹⁴⁵ Taub, *Ancient Meteorology*, 17.

have developed an independent tradition based around the well-developed concept of a harmonious universe.¹⁴⁶ Aristotle's *Meteorology* (*Μετεωρολογικά*) is probably the most important Greek source on the subject, covering the topics of shooting stars, colorful phenomena at night (potentially including the *Aurora Borealis*), comets, clouds, rain, snow, hail, dew, mist, and rivers.¹⁴⁷ Derived from Aristotle's lecture notes,¹⁴⁸ *Meteorology* shares a purpose similar to Pliny's a few centuries later, in that the Greek scholar sought to include the sum total of meteorological knowledge up to his present time.

Roman authors had explored the subject in depth by Pliny's time, and continued to do so during his generation and after. Notably, in 43, the geographer Pomponius Mela included the climate zone system of the *orbis terrarum* in his *De situ orbis*, articulated earlier by Eratosthenes in the third century BCE.¹⁴⁹ Pliny himself relied heavily on the authority of texts from Cato, Virgil, Caesar and Cicero, the latter of whom shared Pliny's skepticism regarding portents.¹⁵⁰ Two of Pliny's contemporaries contributed important works in the genre of meteorological prose. In his twelve volume *De re rustica*, Columella included a great many meteorological observations, all in the context of farming and agriculture. From Columella we also learn of several meteorological texts

¹⁴⁶ Taub, *Ancient Meteorology*, 18. As Taub notes, "Greek astrometeorology depended quite literally upon a harmony of the cosmos."

¹⁴⁷ H.D.P. Lee, *Aristotle: Meteorologica* (Cambridge: Harvard University Press, 1952), 36-7. Lee explores the question as to whether Aristotle's colorful phenomena are the aurora.

¹⁴⁸ Taub, *Ancient Meteorology*, 103.

¹⁴⁹ Daniela Dueck, *Geography in Classical Antiquity* (Cambridge: Cambridge University Press, 2012), 92.

¹⁵⁰ Taub, *Ancient Meteorology*, 58. Cicero's quote here is excellent: "Truly it is a danger—either by rejecting them (that is to say, portents) we are guilty of a deceit against the gods, or by accepting them we are guilty of the superstition of old women." *...est enim periculum, ne aut neglectis iis impia fraude aut susceptis anili superstitione obligemur.* Cic. *Div.* 1.4.

from others which are not extant, notably those of Aulus Cornelius Celsus and the Carthaginian Mago.¹⁵¹ Finally, about a decade prior to the publication of the *Historia Naturalis*, Seneca composed the *Quaestiones Naturales* (Natural Questions), exploring many of the same subjects covered in Pliny's second and eighteenth books.

We shall turn briefly to the primary physical media used in the ancient world to convey meteorological knowledge—calendrical texts and *parapegmata*, lists of star phases and associated weather predictions.¹⁵² While they could appear in textual form, it was also common for them to be permanently inscribed on a stone structure in a public space. Few examples of these remain extant, but in the words of Taub, “it is clear that they formed part of a long-lived practice, adopted within Roman culture as well as Greek.”¹⁵³ These are related in a sense to the afore-discussed almanacs, in that they contained much of the same information, albeit in a more practical, user-friendly form. A fragmentary *parapegmata* was found at the Campanian town of Puteoli (12 km north of Naples), inscribed with the numeral “XII” and connecting stormy weather with the setting of Delphinus, the Dolphin Constellation.¹⁵⁴ Other examples of extant *parapegmata* seem to be simply calendars, in which a movable peg served to keep track of the date but featuring no meteorological information.¹⁵⁵ Similarly, solar calendars

¹⁵¹ Col. *Rust.* 1.1.

¹⁵² Taub, *Ancient Meteorology*, 8.

¹⁵³ Taub, *Ancient Meteorology*, 173-6.

¹⁵⁴ Taub, *Ancient Meteorology*, 173-4. The numeral XII here is mysterious—since the fragment was first published by DeGrassi in 1963, it was assumed to be a calendrical date, referring to the Greek lunar calendar. LeHoux disputes this traditional view, arguing instead the Puteoli *parapegmata* was a hybrid of astrometeorological and lunar types. “Rethinking Parapegmata, the Puteoli Fragment,” *Zeitschrift für Papyrologie und Epigraphik* 157 (2006), 95-104.

¹⁵⁵ Taub, *Ancient Meteorology*, 176.

known as *menologia rustica* provided the sun's rough position in the zodiac during that particular month, the number of days in the month, the number of daylight hours, and the agricultural tasks a farmer could be expected to perform that month. One important surviving example, the *menologia rustica colotianum* (today publicly viewable at the Museum of Naples), dates to the mid-First Century CE¹⁵⁶

The last, and perhaps most counterintuitive, genre of meteorological text worthy of brief consideration is didactic poetry. The ancients considered verse to be a perfectly legitimate method of teaching and learning knowledge, and meteorological knowledge was no exception. In the Greco-Roman world, this tradition is as old as our very oldest texts. The Hesiodic poem *Works and Days*, for example, lists in its final section all the days of the month which are most favorable for agriculture.¹⁵⁷ Closer to Pliny's own time, the Roman poet Virgil composed verses (notably in his *Georgics*) that technical writers freely used as sources for practical information.¹⁵⁸ We know that for the ancients, the meteorological information in these poems was not an incidental narrative device, but rather taken as fact. Ancient authors of treatises (perhaps what we consider a more standard and effective method of teaching and learning than poetry) cited poets as authoritative voices. The anonymous author of *On the Cosmos*, for instance, cites

¹⁵⁶ Fritz Graf, *Roman Festivals in the Greek East: From the Early Empire to the Middle Ages* (Cambridge: Cambridge University Press, 2015), 91.

¹⁵⁷ Hes. *Op.* 597ff. Hesiod does not list the days of the year by specific dates, but rather refers to them obliquely. Here is an example line, referring to farming activity to be undertaken when the constellation of Orion first appears in the sky: "Rouse up your slaves to winnow the sacred yield of Demeter at the time when powerful Orion first shows himself, do it in a place where there is a good strong wind, on a floor that's rounded." Translated in Richard Lattimore, *Hesiod: The Works and Days, Theogony, the Shield of Herakles* (Baltimore: Johns Hopkins University Press, 1991), 89-91.

¹⁵⁸ Taub, *Ancient Meteorology*, 54-6.

Homer's *Odyssey* as a source for various meteorological information. Pliny himself made liberal use of Hesiod and Virgil.¹⁵⁹

So those are the primary different types of media and genres through which an ancient person might have learned about meteorology, at least that beyond their own experience, that which was handed down by their ancestors in some kind of stored media. There are two major points worth discussing which ancient meteorological texts tended to share in common. The first of those points is this: ancient meteorology was fundamentally a conservative discipline, slow to change and heavily dependent on tradition. From the very earliest meteorological treatises and farmer's almanacs, a longstanding tradition existed of naming one's sources and engaging with them.¹⁶⁰ Sometimes this engagement involved criticism—Aristotle, notably, uses the theories of others as a starting point for his own explanations for weather phenomena in *Meteorology*. He is accepting of some, building upon them with his own observations, and he is utterly dismissive of others, such as Anaxagoras' theory of hail.¹⁶¹ Pliny, for his part, tends to follow the basic facts of what his sources tell him. For instance we can trace many direct links between the ideas present in the *Historia Naturalis* to the work of Aristotle, particularly in the meteorological role of early exhalations¹⁶² and in his theory

¹⁵⁹ Taub, *Ancient Meteorology*, 166-67. As Taub notes elsewhere: "The extent to which the poets served as sources of knowledge for technical writers is worth noting; on the topics of stars and weather signs, certain writers, including Columella, Pliny and Seneca, considered the poets Hesiod and Virgil to be as valid as some specialist astronomers." Taub, *Ancient Meteorology*, 11. Pliny's eighteenth book, on farming and agriculture, is particularly replete with references to Virgil. Here is but one: "Virgil commands that the bean be covered with alkalis and olive oil dregs; thus indeed it will come forth to grow large." (*Vergilius nitro et amurca perfundi iubet fabam; sic etiam grandescere promittit*. Plin. *HN*. 18.157.)

¹⁶⁰ Taub, *Ancient Meteorology*, 30.

¹⁶¹ Taub, *Ancient Meteorology*, 95.

¹⁶² Craig Martin, *Renaissance Meteorology* (Baltimore: Johns Hopkins University Press, 2011), 86.

of comets.¹⁶³ As mentioned previously, Pliny's departure is one of method, rather than content. Whether they critiqued or agreed with their ancestors, though, ancient meteorologists working in the Greco-Roman tradition generally all worked under the common assumption of an interconnected earth and heavens, in which events occurring in one sphere affect (and sometimes comment upon) those in the other.¹⁶⁴

The second major point of commonality among ancient meteorological texts is this: with few exceptions, each of them was concerned with one of two objectives—either the prediction of meteorological phenomena, or the explanation of their origins. These two threads existed throughout the entirety of ancient meteorological writings, across all their various media. Further, nearly all of them kept exclusively to one or the other—either prediction, or explanation.¹⁶⁵ There were no chronological, philosophical or geographic trend lines in authors preferring one task or the other; rather, ancient authors in different eras, different regions, and espousing different philosophies favored either prediction or explanation seemingly due only to authorial choice. For example, in his *De re rustica (On Agriculture)*, Pliny's first century contemporary Columella highlighted the importance of rustic, homespun knowledge to predicting the weather: "...the prognostication of future weather by homely mother-wit, as they say, will prove as useful

¹⁶³ Tofigh Heidarzadeh, *A History of Physical Theories of Comets* (New York: Springer, 2009), 28.

¹⁶⁴ Taub, *Ancient Meteorology*, 188, and Taub, "Encyclopedia," 85. Further according to Taub: "...the practice of astrometeorology appears to have depended on a relatively well-articulated notion of cosmic harmony, in which the celestial influences the terrestrial." Taub, *Ancient Meteorology*, 17. Another worthwhile Taub comment: "The reliance on the work of predecessors ... is a key characteristic of Greek and Roman meteorology. The efforts of many people were incorporated into the ancient texts, which thus convey a sense of community." Taub, "Encyclopedia," 78.

¹⁶⁵ Taub, "Encyclopedia," 78.

as you can desire...”¹⁶⁶ On the other hand, in his *Physics* (Φυσική ἀκρόασις, *Lectures on Nature*), Aristotle concerns himself entirely with the explanation of meteorological phenomena. In the second book, he describes his four causes which are required to explain any object: the material, formal, efficient, and final.¹⁶⁷

To briefly sum up, the discipline was heavily focused on agriculture, and could be expressed through sculptural, artistic and literary media. Ancient meteorology was inherently a conservative, slow-to-change tradition, with a majority of authors relying on and trusting their predecessors. Finally, ancient meteorological authors almost always pursued one of two goals, those being prediction or explanation. In the next section, we shall turn to an analysis of Pliny’s treatment of meteorology, specifically focused upon how he broke with tradition.

PLINY ON METEOROLOGY— A SYNTHESIS OF PREDICTION AND EXPLANATION

Of the grand task before him, Pliny wrote in his preface that “there is nobody among us who has attempted it, nobody among the Greeks who has treated it all at once.”¹⁶⁸ This seems to have been true both of the great goal, that of a universal compendium of all natural knowledge, and also true of the current, smaller point, that of how he treats the subject of meteorology. The *Historia Naturalis* is alone among

¹⁶⁶ Columella. *Rust.* 11.1.30.

¹⁶⁷ Arist. *Ph.* 2.3.

¹⁶⁸ Plin. *HN* Pref.16.

surviving ancient texts in that it covers both the explanation and prediction of meteorological phenomena in a single text.¹⁶⁹ One broad distinction may be made—the second book of the *Historia Naturalis* covers explanation, while Pliny discusses prediction in the eighteenth book, which essentially constitutes a farmer’s almanac. Pliny followed his contemporaries and forbearers in every way except for his dual focus on both major goals. Like Aristotle, Columella and others, he presented the meteorological tradition composed of the ideas of others, but was discriminating with regard to what he included. While Pliny expressed respect for the Greek and Babylonian authors and others who tackled the subject of astrometeorology (even while explicitly scrapping many of their ideas), interestingly, Pliny both decried the lack of Roman literature on the subject and also rejected that literature’s necessity to the Roman farmer.¹⁷⁰ As Taub puts it, “Pliny makes it clear that, while astronomical knowledge can aid farmers in predicting the weather, they should not be blindly reliant on astronomical expertise.”¹⁷¹ (It is also worth noting here that, although I am treating the subject in separate chapters, for the ancient naturalist, there existed no bright line between astronomy and meteorology.)

This subsection of the chapter, then, shall demonstrate three elements of Pliny’s treatment of meteorology—first, we shall explore the meteorologically explanatory passages, second, the meteorologically predictive passages, and third, we shall discuss Pliny’s depiction of the Roman farmer, and our author’s view of the role of

¹⁶⁹ Taub, “Encyclopedia,” 79.

¹⁷⁰ Plin. *HN*. 2.45.

¹⁷¹ Taub, “Encyclopedia,” 79-83. “Pliny, while working to a great extent within these literature-based traditions, shares his own sense of what he regards as the proper Roman approach to meteorology, which is to some extent to ignore the literature, the books and the (largely Greek) authors, and to argue for relying on (good old) Roman skills.”

meteorological expertise in agriculture. As Taub puts it, “the farmer—a prime user of meteorological information—serves as the exemplar of the ideal Roman for Pliny.” For Pliny, the duty of this figure is to be curious and observant about his world, and put to use the vast interconnected web of knowledge which has been gathered at the Empire’s heart.¹⁷² And so we will return to this figure in the chapter’s conclusion. Taken together, this ought to illustrate that while Pliny’s material was largely based on the work of his predecessors, but also that his purpose was greater, more all-encompassing, due to the Roman’s rare privileged position of being able to absorb that world of knowledge.

To begin with explanation. Pliny discusses meteorology in the same rough descending pattern as he does with divinity—that is, he begins with things very high in the sky, like comets, thunder and lightning, proceeds to the winds, and finishes with ground phenomena like earthquakes. The stars and planets are accorded a great deal of explanatory power in the *Historia*, underscoring the interconnectedness of the natural system, while for lower phenomena, the natural contours of the Earth become more relevant. He emphasizes the interconnectedness of the physical and divine realms, explaining most phenomena using both approaches, sometimes at the same time, sometimes one after the other. Pliny himself credits Democritus with the initial recognition of this interconnectedness,¹⁷³ and he seems to have embraced the idea wholeheartedly.¹⁷⁴

¹⁷² Taub, *Science Writing*, 85.

¹⁷³ Plin. *HN*. 18.58.273.

¹⁷⁴ Taub, *Ancient Meteorology*, 18 and 188.

Of comets, Pliny mostly follows Aristotle but parts with his predecessor on the topic of astrology, which the Elder Pliny accepts in some passages but rejects in certain others.¹⁷⁵ Pliny describes five types of comets, based on their appearance: “javelin-stars,” “tub-stars,” “horned-stars,” “torch-stars,” “horse-stars,” and “goat-stars.”¹⁷⁶ Each of these receives only a visual description, except for the horned-star, which Pliny claims appeared in the sky during the battle of Salamis, and the javelin-star, which the author describes as a “most atrocious portent.”¹⁷⁷ Pliny describes more negative portents from Rome’s history—the sky, for our author, comments on and critiques his city’s political happenings. He describes a comet appearing in the west which seems to presage political unrest, as occurred under Augustus’ consulship, during the struggle between Pompey and Caesar, and throughout the entire duration of Nero’s Principate.¹⁷⁸ The only place in the world where a comet is worshipped as a deity, Pliny notes, is at a temple in Rome, where worshippers venerated the comet which appeared in the sky during Augustus’ games following the death of Julius Caesar.¹⁷⁹ Pliny continues that Augustus believed the comet to have been born to celebrate his own birth, even as the common people believed it to be the soul of Caesar ascending to join the gods. The author sides with Augustus here, noting that the comet was “salvation for the world.”¹⁸⁰ Curiously, perhaps because they

¹⁷⁵ Heidarzadeh, *A History of Physical Theories of Comets*, 28.

¹⁷⁶ Plin. *HN*. 2.22.

¹⁷⁷ Plin. *HN*. 2.22. That Pliny describes it as atrocious is interesting, given that the Greeks won at Salamis. We might be tempted to believe initially that Pliny’s allegiances might lie with Greece over Persia, but the picture may be more complicated. Rose argued recently, for instance, that art in the first century began to portray the Persians much more sympathetically, lending credence to the idea that Roman attitudes towards their neighbors to the east may have been softening at the time. There may be much more to say on this question, and certainly more study would be warranted. Charles Brian Rose, “The Parthians in Augustan Rome,” *American Journal of Archaeology* 109.1 (Jan. 2005), 21-75.

¹⁷⁸ Plin. *HN*. 2.23.

¹⁷⁹ Plin. *HN*. 2.23.

¹⁸⁰ Plin. *HN*. 2.23.

were perceived as belonging to the divine realm, Pliny offers no explanation as to the origin of comets.

In contrast, Pliny notes the origin of thunder quite clearly. It was the Etruscans, he writes, who discovered that thunderbolts are actually fire from the outer planets, most notably Jupiter. Here we have what may be a Plinian extrapolation from his Etruscan sources, as the author notes that Jupiter's thunderous nature is "possibly" (*fortassis*) due to its central place between the heat of Mars below it, and the moisture of Saturn above.¹⁸¹ Pliny seems a bit cagey here as to whether this phenomenon is physical or divine, which serves as a reminder that ancient peoples saw no bright line between the two. After giving the physical explanation of moisture and heat, he offers only that "thus it is said that Jupiter throws thunderbolts as javelins,"¹⁸² providing no critique of that notion, as he did in disputing the human obsession with fortune¹⁸³ or the idea that the sun is a stone.¹⁸⁴ He does lean further in the direction of a divine source with this line, letting us know that the god Jupiter and the planet Jupiter are intermingled in this conception: "thus heavenly fire comes forth from the planet, carrying to us prophecies, lest indeed he cease his divine works even in that part of himself [i.e., the thunder] which he renounced."¹⁸⁵

¹⁸¹ Plin. *HN*. 2.28.

¹⁸² ...*ideoque dictum Iovem fulmina iaculari*. Plin. *HN*. 2.28.82. The word "javelin" does not appear in the Latin, but the verb *iaculor* carries the connotation.

¹⁸³ Plin. *HN*. 2.5.

¹⁸⁴ Plin. *HN*. 2.59.

¹⁸⁵ ...*sic a sidere caelestis ignis exspuitur praescita secum adferens, ne abdicate quidem sui parte in divinis cessante operibus*. Plin. *HN*. 2.28.

Pliny continues his strategy of offering both divine and physical explanations in his various discussions of the winds. The author separates what we might collectively call winds into two separate phenomena. Pliny suggests that “gusts” (*flatus*) are local events caused by terrestrial exhalations and the contours of the land,¹⁸⁶ and “winds” (*ventus*) are worldwide phenomena identified and used by sailors, brought about by either the stars rotating in the opposite direction of the world, or by “the breath that generates the universe.”¹⁸⁷ For Pliny there are eight in total, two each originating from each cardinal direction, and he lists their names and the names used for them by various other peoples.¹⁸⁸ He proceeds to give a summary of the behavior of winds in the Mediterranean, of such detail that it is plausible that sailors could have used it as a reference.¹⁸⁹ Regardless of whether this section comports with actual meteorological reality, it is full of information that would have been seen at the time as pragmatic. He concludes the section on winds by giving a detailed explanation behind sudden windstorms and whirlwinds. He offers as their origin that Stoic idea of “exhalations from the earth,”¹⁹⁰ which so underscored his ideas about divinity, and he goes on to provide a thorough system of storm behavior.¹⁹¹

As to the origins and explanations of earthquakes, Pliny first offers a small historiography on the subject, noting that the Babylonians believed them to originate from the same three stars (that is, Jupiter, Mars and Saturn) which produced

¹⁸⁶ Plin. *HN*. 2.63.

¹⁸⁷ Plin. *HN*. 2.65.

¹⁸⁸ Plin. *HN*. 2.66.

¹⁸⁹ Plin. *HN*. 2.68.

¹⁹⁰ ...*qui exhalante terra*... Plin. *HN*. 2.69.

¹⁹¹ Plin. *HN*. 2.69.

thunderbolts.¹⁹² Providing a Stoic counter-thesis against the Babylonian theory, Pliny argues instead that earthquakes are produced by the winds, that divine breath (*spiritus*) which generates the universe: “I judge it undoubtable that winds are their cause: for never do the lands shake unless the sea is calmed and heaven so greatly tranquil that the flight of birds cannot soar because all the divine breath which carries them has withdrawn...”¹⁹³ The section explaining the varieties of different types of earthquakes is lengthy and detailed—Pliny describes the different sounds they might make and how that relates to how the land will tremble, the times of day and the year in which they are more frequent, and the safest places to hide in an earthquake.¹⁹⁴ Pliny further gives the history of the worst single earthquakes and earthquake years from his gathered sources,¹⁹⁵ and he lists their secondary consequences, chief among them the potential danger of a tidal wave.¹⁹⁶ Earthquakes, as with other meteorological phenomena, are not simply dangerous, but portentous—for, as Pliny notes, perhaps somewhat tongue-in-cheek, “never did the city of Rome tremble that some future event was not foretold.”¹⁹⁷

Thus concludes our brief summary of the *Historia*'s section regarding the explanation of meteorological phenomena. This ought to have demonstrated that Pliny was undoubtedly interested in the first half of the ancient meteorological tradition, that of explanation. Turning then to the predictive sections of the *Historia*'s eighteenth book, we

¹⁹² Plin. *HN*. 2.81.

¹⁹³ ...*ventos in causa esse non dubium reor; neque enim umquam intremiscunt terrae nisi sopito mari caeloque adeo tranquillo ut volatus avium non pendeant subtract omni spiritu qui vehit...* Plin. *HN*. 2.81.

¹⁹⁴ Plin. *HN*. 2.81-86.

¹⁹⁵ Plin. *HN*. 2.86.

¹⁹⁶ Plin. *HN*. 2.86.

¹⁹⁷ Plin. *HN*. 2.86.

find Pliny preoccupied with practical agricultural matters as opposed to philosophy, demonstrating an interest more in general rules than in calendar specificity. In other words, a farmer must ascertain for himself the day on which the west wind blows and conduct himself accordingly, rather than follow a regimen of specific calendar days.¹⁹⁸ Per Taub, as a privileged equestrian, Pliny considered himself a “man of the earth,” following an ancient Roman tradition of a life and society rooted in rustic agriculture. Taub further notes that Pliny’s approach to agriculture mirrors the Roman approach to conquered lands—that is, rules are imposed but there is no one-size-fits-all approach, as local conditions necessarily come into play as well.¹⁹⁹ They also continue to emphasize the interconnectedness of the natural system, which Pliny underscored so much in the explanatory sections of the second book. Even the predictive capacity of various meteorological phenomena is interconnected—the stars predict storms, storms predict wind, and so on. Pliny suggests several elements of nature by which a farmer might predict oncoming weather conditions, and here we shall discuss the heavens, the winds, thunder and clouds, and ground-based prediction based on animals and bodies of water.

Pliny considers the sun, moon and stars to be important enough indicators of the weather that each of them merits its own chapter in book eighteen. A bright but cool sunrise indicates pleasant weather, while a pale sunrise indicates an oncoming cold snap.²⁰⁰ A clouded sunrise suggests that the day will bring rain,²⁰¹ while a red sunset

¹⁹⁸ Plin. *HN*. 18.75.

¹⁹⁹ Taub, “Encyclopedia,” 82-3.

²⁰⁰ Plin. *HN*. 18.78.

²⁰¹ Plin. *HN*. 18.78.

predicts a fair following day.²⁰² Clouds covering the sun predict a storm, which will be worse in direct proportion to how little light breaks through, and if they form a double-layer over the sun, Pliny notes, the storm will be all the fiercer.²⁰³ Those are representative of the twenty-six separate sun-and-cloud conditions which Pliny uses to predict wind and rainstorms in book eighteen's seventy-eighth chapter. Chapter seventy-nine covers the moon, and the predictions are of a similar vein. A bright, glittering moon predicts fair weather, while a ruddy moon suggests wind and a darkened moon portends rain.²⁰⁴ This is a shorter chapter but contains about the same number of predictive assertions as the sun chapter—depending on how they are parsed, somewhere in the mid-twenties. Some of the moon's predictive powers mirror those of the sun's—Pliny expects a terrible storm, for instance, if either the sun or moon is covered in a double-layer of clouds.²⁰⁵ The next chapter takes something of a different tack with predictions concerning stars and comets—there are fewer predictive assertions, about fifteen, and they relate to full seasons rather than daily weather predictions. A sky which is equally bright across its whole expanse, Pliny writes, presages a cool and temperate autumn,²⁰⁶ while cloudless but obscured (Pliny does not suggest the mechanism by which this might happen) stars predicts oncoming storms.²⁰⁷ Winds tend to follow in the wake of shooting

²⁰² Plin. *HN*. 18.78.

²⁰³ Plin. *HN*. 18.78.

²⁰⁴ Plin. *HN*. 18.79.

²⁰⁵ Plin. *HN*. 18.79, in addition to the earlier sun citation at 18.78.

²⁰⁶ Plin. *HN*. 18.80.

²⁰⁷ Plin. *HN*. 18.80.

stars, and if many are seen in one part of the sky, wind can be expected from that region.²⁰⁸

Clouds and thunder continue the pattern of Pliny describing them as being useful to predict wind and rainfall, while wind relates to when certain agricultural tasks ought to be performed. The thunder chapter is brief, constituting only nine predictive assertions, detailing whether one could expect rain or winds based on where thunder appears in the sky.²⁰⁹ Scattered clouds in an otherwise clear sky predict wind, while clouds dispersed by a north-east wind are indicative of high winds to come.²¹⁰ When clouds settle on the summits of the mountains, Pliny writes, stormy weather is imminent.²¹¹ The wind section is lengthier, receiving two full chapters of relatively detailed theory regarding the behavior and meaning of the various winds. This portion is less predictive of weather, focusing more on prediction of agricultural performance based on the weather. Closely following Aristotle's *On the Universe* (*Περὶ Κόσμου*, or in Latin, *De Mundo*) in this section,²¹² Pliny first describes a method of identifying the winds—where the observer should stand, where the sun should be, how to draw a circle around oneself to identify the winds' source—and then gives a list of proscriptions against performing various tasks when various winds are prevalent. For example: “When the wind comes from that origin [the south], farmer, do not cut timber or grapevine.”²¹³ When the north wind is prevalent,

²⁰⁸ Plin. *HN*. 18.80.

²⁰⁹ Plin. *HN*. 18.81.

²¹⁰ Plin. *HN*. 18.82.

²¹¹ Plin. *HN*. 18.82.

²¹² Specifically Aris. *Mund.* 2.4.

²¹³ Plin. *HN*. 18.76.

Pliny suggests, the farmer should never plant.²¹⁴ Allowing a flock to feed while facing north will make their eyes bleary, according to Pliny, somehow leading to their dying of “a loose stomach,” presumably digestive issues.²¹⁵ Pliny’s unified sense of nature is clear, here—stars predict storms and wind, and wind helps predict the success or failure of crops and flocks.

In six brief chapters to conclude the eighteenth book, Pliny discusses methods by which a farmer may predict the weather based on various ground phenomena—bodies of water, man-made fires, dishware, plants, land animals, and birds and aquatic animals. Pale flames that seem to murmur presage stormy weather, while flickering, spiraling flames suggest oncoming wind.²¹⁶ Rippling or swelling seas in the harbor on an otherwise calm day are indicative of strong gusts in the near future.²¹⁷ As for aquatic animals, Pliny notes, one can predict wind based on the behavior of dolphins: “And the animals predict—when dolphins frolic in a calm sea, from that part wind comes, likewise when they scatter water in a choppy sea, peace comes.”²¹⁸ Ants, bees, worms and sheep are all useful in predicting oncoming changes in the weather, generally based on excitable behavior.²¹⁹ The trefoil plant, Pliny writes, responds to an oncoming storm by bristling and displaying its leaves.²²⁰ Finally, condensation on the exterior of various dinnerware predicts that a terrible storm is imminent.²²¹ Pliny concludes this handbook for weather

²¹⁴ Plin. *HN*. 18.76.

²¹⁵ Plin. *HN*. 18.76.

²¹⁶ Plin. *HN*. 18.84.

²¹⁷ Plin. *HN*. 18.85.

²¹⁸ Plin. *HN*. 8.87.

²¹⁹ Plin. *HN*. 18.88.

²²⁰ Plin. *HN*. 18.89.

²²¹ Plin. *HN*. 18.90.

prediction in typical fashion for him—by citing his sources, both Roman and foreign, reassuring his reader of his own authority on the subject.

CONCLUSION

The preceding summary of the treatment of meteorology in the *Historia Naturalis* demonstrated that, unlike his predecessors, Pliny was concerned with describing both prediction and explanation. Recall that, with regard to meteorology, Pliny followed his forbearers in substance and he differed from them in task. The substance is identical in some respects and similar in all respects to the work of Pliny's contemporaries—he repeats theories on various meteorological phenomena from some of his sources, and critiques and engages the ideas of others. Often enough he names the exact source he is uncritically repeating, or the source he is critically engaging. In every respect, this mirrors the pre-existing body of meteorological knowledge available in Pliny's day, and the methodology for writing about it. The only relevant difference is that Pliny both predicts and explains. This is quite a radical departure. Pliny's account is not exhaustive of every piece of ancient meteorological knowledge, but it is more exhaustive in its prospective utility than any other text of the time, in offering its prospective reader tools to both predict and explain weather phenomena. As with other ancient authors on the subject, Pliny's natural world is a many-leveled, interconnected machine, in which each part is dependent upon and affects the whole—the planets and stars affect storms; storms,

planets and lightning affect wind' wind influences the animals; wind and animals influence crop yields. All these interconnecting influences are interwoven at every level with divine influence, potential portents for future events. And the person most uniquely suited to interpreting and making use of this predictive and explanatory information is the Roman farmer. In many respects, as Taub notes, the Roman farmer is "the ideal Roman."²²²

Importantly, this deep, thorough understanding of the natural world is directed at improving agricultural yield. Meteorology is relevant for its own sake for Pliny—part of what Beagon noted as Pliny's primary theme of nature²²³—but in book eighteen we find that the primary practical application is the more productive creation of food. This is a consistent theme throughout the *Historia*, that nature's bounty existed for the betterment of the *salus humana*, the well-being of mankind. As Andrew Fear notes, for Pliny, "The point of empire is not that a united world should yield up tribute to Rome, but rather that Rome should export *salus humana* to the world." Comparing Pliny's idea of empire to Kipling's "white man's burden," Fear contrasts this with the vision of empire in Virgil's *Aeneid*, in which "the only glory is for Rome."²²⁴

If the Roman farmer is Pliny's ideal conduit for delivering the *salus humana* to the rest of the empire, our author also demonstrates in the *Historia* an acute awareness of the value of local, regional knowledge. Indeed, he values this on-the-ground experiential

²²² Taub, "Encyclopedia," 85.

²²³ Beagon, *Roman Nature*.

²²⁴ Andrew Fear, "The Roman's Burden," in *Pliny the Elder: Themes and Contexts* (Leiden and Boston: Brill, 2011), 26.

knowledge higher than he does that of the experts from whom he has sourced his encyclopedia. As Taub notes, Pliny's formulation is in essence a reflection of the imperial project—he has synthesized a massive collection of data from a geographically, culturally and temporally diverse set of sources, under the auspices of the Roman Empire's central authority. And yet, this vast body of knowledge, distilled as it is in the *Historia*, is still pragmatically subservient to the farmer's careful attention to on-the-ground conditions. This emphasis on local conditions and customs was crucial to the empire's success. As Taub puts it, “the lesson of the empire was not lost on Pliny.”²²⁵ As Trevor Murphy puts it, there is a kind of “triumphal geography” implicit in the construction of the *Historia*—it can only exist because the Roman peace has brought so much knowledge to a central location; that is, the very fact of its existence speaks to Rome's power.²²⁶

That the Roman farmer is the ideal interpreter of meteorological phenomena in Pliny's view is an extension of that Roman power. A useful metaphor might be that, as the photon is the mediating particle for electromagnetism, the Roman farmer is in this formulation the mediating particle for the Roman political ideal of expansion and imperialism. Knowledge has been drawn together into Rome from across a massive and diverse empire, collected and synthesized by Pliny in what Trevor Murphy saw as a great act of literary imperialism, and then distributed back outwards. In some respects, the farmer himself is the carrier of the Stoic *salus humana* identified by Andrew Fear. As

²²⁵ Taub, “Encyclopedia,” 84-5.

²²⁶ Murphy, *The Empire in the Encyclopedia*, 157.

Fear puts it: Pliny “could happily synthesize his philosophy with his patriotism, and must have been tempted to see the Roman Empire as the physical instantiation of the unity of mankind upon which Zeno had insisted.”²²⁷ Stoicism compelled from its adherents a belief in the unity of that mankind, and this led Pliny to a worldview where the Roman Empire was a force for improving the lot of mankind. The Roman farmer, the master of predicting and explaining the meteorological world, was a key aspect of that imperial project.

²²⁷ Fear, “The Roman’s Burden,” 26.

Chapter Three
Plinian Astronomy

Now at last, mind was dawning, raised between sun and earth...In that dawn of mind, sunrise and sunset, if not the sun itself, seemed likely to have been among the first things to have been named by the first men. Even such a being as Olduvai Man, one of the earliest known hominids...must always have been very much aware of the passage of the Sun across the gorge where he lived. He may conceivably even have used the lips stretched over his ape-like snout to frame sound expressing its coming and going. If so, then here already was a step in creation through logos.

*Jacquetta Hawkes*²²⁸

This final chapter argues that Pliny's political perspective is discoverable through his treatment of astronomy, or more properly, phenomena to which we would assign the label *astronomy*, in the *Historia's* second book. From the very beginnings of recorded human history and indeed in art and structures from prehistory, we find an interest in observing the sky and recording the movements and behavior of celestial bodies. The astronomical tradition by the first century was well-developed, built upon a variety of Babylonian, Sumerian and Greek sources across a span of millennia, and Pliny drew upon all of them for the *Historia Naturalis*, either directly or via intermediaries. Like meteorology, astronomy was considered intellectually valuable both on its own terms and as a pragmatic guide for agriculture, helping to dictate the farmer's annual schedule. Recent scholarship has explored the interactions between astronomy and political thought, and that is our concern with Pliny's work here. My contention in this chapter is

²²⁸ J. Hawkes, *Man and the Sun* (London: The Cresset Press, 1962).

that the treatment of astronomy in the *Historia's* second book reflects and can be analyzed through the lens of Pliny's political perspective, the primary aspect of which is the righteousness of Roman dominance. The workings of the sky and the workings of the Roman state provided reflections of one another, and several concepts in Stoic thought, when applied as metaphor to astronomical phenomena as Pliny does here, would serve to reinforce support for a program of Roman imperialism.

The modern historiography on ancient astronomy is broad and diverse. Scholars began to take a more active interest in ancient astronomy around the middle of the twentieth century, perhaps owing something to the growth of space programs in the United States and the Soviet Union.²²⁹ Scholarly works composed around the middle of the twentieth century tended to exhibit something close to condescension towards ancient natural philosophers. For instance Dreyer argued that philosophy came to be viewed with indifference for a time (how long, or when, Dreyer does not specify) because the philosophers differed so much from each other, due to their lack of observable facts.²³⁰ As late as 1970, Dicks was still focusing on the high degree of errors present in ancient astronomy, due to the problems inherent to naked-eye observation.²³¹ In the 1980s and 1990s the tone shifted, and scholars began to focus more on what the ancients did know, rather than the inaccuracies in their measurements. The essay collection *Astronomy of the*

²²⁹ Dicks notes that before his 1970 *Early Greek Astronomy to Aristotle*, only one book had been published on the subject in the English since 1913, a slender 1932 monograph from the same scholar. D.R. Dicks, *Early Greek Astronomy to Aristotle* (New York: Cornell University Press, 1970), 6.

²³⁰ J.L.E. Dreyer, *A History of Astronomy from Thales to Kepler* (New York: Dover Publications, 1953), 34. "...Philosophy for a time came to be looked at with indifference, while a class of men pushed themselves to the front whose sole endeavor was to prepare youths to take their places in the civic life of Athens, to the exclusion of all efforts to seek after truth for its own sake."

²³¹ Dicks, *Early Greek Astronomy to Aristotle*, 9.

Ancients, for one example, surveys the naked-eye astronomy of both Europe and the Americas, and one essay—“Medicine Wheels and Plains Indian Astronomy”—goes to some trouble to root out the “quackery” present in the field of “archaeoastronomy,” the study of ancient peoples’ interaction with astronomy and its role in their culture.²³² The overall trend-line of twentieth-century scholarship seems to be a growing respect for the accomplishments of the ancients, and tied to that, a shifting focus towards what astronomy meant to their own societies, rather than judging it by modern expectations.

Scholarship of the twenty-first century has seen an increased focus on the interactions between astronomy, cosmological systems and political movements. To be sure, there were earlier inklings of a political, sociological view of science. Perhaps most famously Kuhn’s seminal *The Structure of Scientific Revolutions* rewrote the book on how scholars think about scientific progress, whether by endorsing Kuhn’s revolutionary ideas or by reacting against them.²³³ As noted by Jean-Claude Pecker, Blamont’s 1993 *Le chiffre et le songe* explicitly illustrates the repeated relationship between scientific progress and political events.²³⁴ Pecker’s own 2001 *Understanding the Heavens* contains a section on the intersections between politics and scientific progress.²³⁵ The 2015 essay collection *Cosmologies et cosmogonies dans la littérature antique* explored various aspects of ancient astronomy, and the intersections of politics and astronomy figures

²³² John Eddy, “Medicine Wheels and Plains Indian Astronomy,” in *Astronomy of the Ancients*. Eds. Kenneth Brecher and Michael Feirtag (Cambridge: The MIT Press, 1980), 1.

²³³ Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962). In short, Kuhn developed a new model for how scientific progress occurs—rather than a slow-developing accumulation of facts occurring on a more-or-less constant line, Kuhn considered progress to occur in regular bouts of extreme productivity in between long periods of stagnation.

²³⁴ Jean-Claude Pecker, *Understanding the Heavens* (Berlin: Springer Press, 2001), 9.

²³⁵ Pecker, *Understanding the Heavens*, 5-9.

prominently in several of them.²³⁶ In 2009 Campion argued that astronomical models have been applied directly to political systems over the course of human history.²³⁷ Two more modern studies merit mention here. Williams' 2012 *The Cosmic Viewpoint*, used previously in this thesis, primarily reevaluates Seneca's *Natural Questions*, but also compares Seneca's cosmological viewpoint to his contemporary, Pliny the Elder.²³⁸ Finally, 2015's *The Handbook of Archaeoastronomy and Ethnoastronomy* explores ancient astronomical practices from a variety of viewpoints, the most relevant of which to this study is Steele's essay, "Astronomy and Politics."²³⁹ One important point regarding all of these studies is that they are split on the question of whether astronomical models and scientific progress affect political ideology, or whether it's the other way around. Blamont, for example, argues for political developments affecting scientific progress, whereas Campion argues explicitly for precisely the opposite. Steele sees both in the models and political systems which he studied. I argue that, at least in the case of Pliny, the interplay between political and natural philosophy is a two-way street, meaning they both informed and affected each other.

In what follows I argue here that Pliny's political leanings are discoverable through his treatment of astronomy, and that those leanings are an implicit endorsement of Roman dominance. In particular the Stoic ideal of *commercium*, a system of

²³⁶ Pascale Derron, ed., *Cosmologies et cosmogonies dans la littérature antique* (Vandœuvres: Fondation Hardt pour l'étude de l'Antiquité classique, 2015).

²³⁷ Nicholas Campion, "Astronomy and Political Theory," paper presented at the International Astronomy Symposium, No. 260, "The Role of Astronomy in Society and Culture," 2009.

²³⁸ Gareth Williams, *The Cosmic Viewpoint*, 17-48.

²³⁹ John Steele, "Astronomy and Politics," in *The Handbook of Archaeoastronomy and Ethnoastronomy* (New York: Springer, 2015), 93-103.

interconnected communication by which Romans improved the *salus humana* (as discussed in the previous chapter), provided for Pliny a ready-made reflection of celestial events on Earth. The construction of this argument requires a brief contextualization of both the ancient astronomical tradition by Pliny's time, and a contextualization of the concept of politically-influenced astronomy. After that, we shall discuss Pliny's treatment of astronomy, and put forward a theory for how it may dovetail with his political perspective.

THE ASTRONOMICAL TRADITION AND POLITICAL ASTRONOMY

It is impossible in the brief space here to review every relevant astronomer and cosmological model that predated Pliny and the first century; therefore, we will not attempt to do so. What follows here, then, is a truncated, roughly chronological survey of the astronomical tradition which built the various models with which Pliny would have been familiar, essentially the building blocks of his cosmological worldview. We shall rush over several millennia and different cosmologies in just a few pages, cultures separated in geography and time. Like Pliny, other ancient astronomers tended to blend divinity and astronomical observations into their cosmology, with no clear dividing line between the two.

The story begins in prehistory, before the invention of written records. Most cultures for whom we have physical evidence demonstrated some sort of interest in

celestial observation, in recording the behavior of the stars and planets. Generally, we can state that cultures of prehistory were interested in astronomy as a means of keeping time, predicting the seasons, and for religious rituals. Systems of divisions of time were created and correlated astronomical phenomena were observed to mark those divisions. These cultures then created cosmological systems to store that information, and make predictions about it. Various cave art throughout the world hints at concepts of religion and astronomy, with some paintings believed to depict the night sky.²⁴⁰ There is good evidence to believe that Stonehenge, the Medicine Wheel in Wyoming's Bighorn Mountains, and the henge at Rujun-el-Hiri in Northern Israel each served an ancient astronomical function. These ancient observatories tended to be in locations where the wind would keep them free of snow and other debris, and somewhat remote from the settlement, so that a religious figure could ensure their sole access.²⁴¹ Prehistoric astronomers, regardless of geography, all seem to have operated broadly under the same principles and tools.²⁴²

Written astronomy is as old as writing, and, like writing, seems to have been born in the ancient Near-East. We have, for instance, the eighteenth-century BCE Babylonian King Hammurabi writing to his minister, "Since the year is not good, the next month must be noted as a second *Ululu*."²⁴³ In other words, the king added a month to the calendar, in order to reconcile the lunar and solar years. From the Babylonians we

²⁴⁰ Pecker, *Understanding the Heavens*, 15.

²⁴¹ Gerald E. Tauber, *Man and the Cosmos* (New York: Crown Publishers, 1979), 22-3.

²⁴² Anthony Aveni, "Old and New World Naked-Eye Astronomy," in *Astronomy of the Ancients*, eds. Kenneth Brecher and Michael Feirtag (Cambridge: The MIT Press, 1979), 62-3.

²⁴³ Tauber, *Man and the Cosmos*, 24.

received the sixty-second minute, and the sixty-minute hour. Babylonian astronomy focused primarily upon the moon, while the Egyptians were focused upon Sirius, whose rising in the sky was connected with the all-important Nile floods. So important was Sirius that Egyptians began the year with its rising, and from them we get the 365 day calendar (originally twelve equal 30-day months, with five more days added later), and the concept of the leap year.²⁴⁴ For both the Babylonians and the Egyptians, the world was a flat disc, surrounded by a great ocean on which it floated. Above was a great vault (though some Egyptians believed it flat), the abode of the gods for Babylon, supported at its four corners by great pillars or four great mountain peaks for the Egyptians. For the Babylonians, beneath the earth was Sheol, a land of darkness and a place of the dead. It was not until Aristotle that we find records of arguments for a spherical Earth.²⁴⁵

Certainly the astronomy of the Greeks was the most important aspect of the ancient tradition in forming Pliny's own cosmology. Thales of Miletus introduced geometry to the study of the heavens in the late seventh century/early sixth century BCE, and may have been able to predict eclipses.²⁴⁶ From Thales' contemporary Anaximander, we find the first expression of the idea that the heavenly bodies are different distances (though he erred in placing the stars closer than the moon), in a series of rotating shells separated by layers of fire. In the early fifth century, the Pythagorean Parmenides placed a stationary, spherical Earth at the center of his cosmology, though the idea did not gain

²⁴⁴ Tauber, *Man and the Cosmos*, 25.

²⁴⁵ Tauber, *Man and the Cosmos*, 26.

²⁴⁶ Tauber, *Man and the Cosmos*, 35.

mass acceptance until the time of Plato and Aristotle.²⁴⁷ Parmenides kept Anaximander's spheres, but dispensed with his predecessors' concepts of the sun hiding behind the mountains or the stars being extinguished during the day.²⁴⁸ Instead, for the Pythagorean, these phenomena were due to the rotation of the spheres out of the observer's view, a major advance in cosmological thought.²⁴⁹ By the late fifth century, Democritus had returned to a flat earth model, but his model did correctly place the heavens more distant than the sun and moon, solving the problem of lunar occultation of stars.²⁵⁰ The fourth century brought the first known heliocentric model of the solar system, developed by Aristarchus, but this did not catch on, likely because stellar parallax—the changing of a star's relative position in the sky based on the earth's orbital motion—could not yet be measured.²⁵¹

A handful of Greeks stand out as giants in eventually forming Pliny's cosmological mindset. The sixth-century mathematician and philosopher Pythagoras formed a religious cult dedicated to discovering the harmony and order of the universe. We have none of his writings, and indeed Aristotle never refers to Pythagoras himself, only to the Pythagorians. But he was incredibly influential regardless, probably giving us both the words *κόσμος* and *φιλοσοφία*.²⁵² This idea of a harmonic, ordered universe

²⁴⁷ Tauber, *Man and the Cosmos*, 37.

²⁴⁸ Pecker, *Understanding the Heavens*, 49-50.

²⁴⁹ Tauber, *Man and the Cosmos*, 37.

²⁵⁰ Tauber, *Man and the Cosmos*, 37-8. From Democritus, incidentally, we see the first concepts of atomic theory.

²⁵¹ Pecker, *Understanding the Heavens*, 86-7. One small addendum: Before Aristarchus, Heraclides suggested that Mercury and Venus probably orbited around the sun, but his model most likely kept the Earth at the center of the system as a whole.

²⁵² Pecker, *Understanding the Heavens*, 47.

gained remarkable currency, becoming more-or-less widespread in the ancient world. Pliny certainly subscribed to it. The Pythagorean spherical earth was surrounded by a series of concentric spheres, on which the stars and planets rotated via the power of some unseen divine machine. As the story goes, by chance, Pythagoras observed the changing pitch brought about by the subdivisions of a plucked string, demonstrating that music intervals could be expressed according to simple numerical ratios. He then extended this to the universe, applying the same principle to the spheres and the heavenly bodies which were fixed upon them.²⁵³ One other major influence on Pliny, the second-century Bithynian Hipparchus, subscribed to the spheres model but focused his own work specifically on the mechanics of celestial movement. We have nothing of Hipparchus' own writing, but Ptolemy relied on him extensively for the *Almagest*, and both Cicero and Pliny quote him with praise. From the Bithynian Hipparchus we get our most accurate early measurement of the apparent motions of the planets and their retrogradations (Pliny mangles this, mixing in some ideas from astrology, which he rejects later), and he also discovered the precession of the equinoxes.²⁵⁴

The famous Athenians of the fourth century BCE contributed greatly to Pliny's cosmological worldview as well. Though it was not his primary preoccupation, Plato did have much to say on the shape of the universe. Deriving his model almost entirely from metaphysical principles rather than observation, Plato nevertheless described a model of the solar system which reflected a relatively high degree of physical accuracy. In Plato's

²⁵³ Tauber, *Man and the Cosmos*, 40.

²⁵⁴ Pecker, *Understanding the Heavens*, 92-3.

model, the world is the perfect object of creation, and so it necessarily had to be spherical, a sort of polyhedron with infinite sides.²⁵⁵ Of the seven possible motions in the universe—up, down, left, right, forwards, backwards and rotation—Plato believed the one that made the most sense for creation’s perfect object was rotation on its axis.²⁵⁶ As for Platonic spheres, the wandering sun, moon and planets are affixed to a series of seven spheres, governed by the Pythagorean-inspired cosmic harmony.²⁵⁷ Plato’s student Eudoxus took up the issue of planetary retrograde motion (i.e. the apparent reversal of orbit by the outer planets due to Earth’s shorter orbital period) at his master’s behest, and Aristotle maintained and modified this system. In his *Περὶ οὐρανοῦ* (*De caelo* in Latin, or *Concerning the Heavens*), Aristotle elucidates many of the concepts which would form the basis of Pliny’s cosmology a few centuries later. Critiquing the ideas of Democritus, Plato and others, Aristotle argues for a finite universe with no void, un-generated and indestructible.²⁵⁸ In the *Μετεωρολογικά* (*Meteorologica*), in passages that sound as if Pliny might have lifted them, Aristotle attributes shooting stars, comets and aurora to exhalations from the earth, one kind hot and dry, the other vaporous and moist.²⁵⁹ The general consensus is that little progress is made in the three centuries between Hipparchus in the second century BCE and Ptolemy in the early second century CE, so we may comfortably conclude our brief survey of the astronomical tradition at this point. In writing his cosmological model, Pliny had a wide array of ideas and a rich tradition

²⁵⁵ Dicks, *Early Greek Astronomy*, 98-99.

²⁵⁶ Pecker, *Understanding the Heavens*, 63-4.

²⁵⁷ Tauber, *Man and the Cosmos*, 44-5.

²⁵⁸ Arist. *Cael.* I.5-7, 10-12.

²⁵⁹ Arist. *Mete.* I.3-7.

upon which he could draw. We may presume, therefore, that he did not repeat anyone's ideas as received wisdom, but rather drew upon those ideas which most appealed to him.

Before proceeding to Pliny's astronomy, let us turn briefly to the concept of political astronomy. This seems to have been a two-way street in the ancient world, as cosmological frameworks affected political systems, and vice versa. First we shall discuss the effects of politics on astronomy. As Steele points out, "governments" (the word generally becomes more of a misnomer the further back in time we travel) have been responsible for funding astronomical research for the past 3,000 years.²⁶⁰ This often, though not always, took the form of funding for projects directly relevant to problems of the state—for example, the eighteenth century saw a great outpouring of research into star catalogues and solar system dynamics, for the simple reason that accurately measuring longitude while at sea greatly assisted in the acquisition of overseas territories. Individual astronomers understood and would sometimes exploit this relationship for personal gain, whether by taking on certain projects relevant to the state to pay for their personal projects, or by seeking patronage and state dispensation through the flattery of government officials (e.g., Galileo naming the Jovian moons for the Medicis, or Herschel giving Uranus the nickname "The Georgian Planet" after George III).²⁶¹ It was partly the wars of the fourteenth century that brought scholars west from Constantinople, causing Byzantine science to revive a flourishing scientific tradition in Italy.²⁶² Pecker cautions

²⁶⁰ Steele, "Astronomy and Politics," 94.

²⁶¹ Steele, "Astronomy and Politics," 94-5.

²⁶² Pecker, *Understanding the Heavens*, 6.

not to overestimate this phenomenon,²⁶³ but it seems difficult to deny that political development has affected the development of astronomy.

That is the effects of politics upon astronomical ideas. What of the inverse? According to Campion, it was the British archaeologist Hawkes, whose work provided the epigraph of this chapter, who first suggested that prehistoric human political organization was linked with their ideas of the heavens.²⁶⁴ It was a prevalent concept in the ancient world to link one's political organization with the society's predominant cosmological perspective, a system of governance which Campion calls a "cosmic state."²⁶⁵ Examples abound across the ancient world. In "The Dream of Gudea," dated to around 2000 BCE, the goddess Nanshe uses her "secrets of calculation" to accurately measure heaven and Earth and to "count the days." Her temple, known as *e-mul-mul* ("The House of Stars"), would have been maintained by the governmental power in the city of Eresh. Here we see the interaction of natural, divine and political forces, and the importance of astronomy and the calendar to social order.²⁶⁶

In the Hellenistic world, Plato argued for cosmogony's (distinct from cosmology in that it deals with the origins, rather than structure, of the universe) logical conclusion—individuals and the cosmos are composed of the same matter, and thus are

²⁶³ Pecker, *Understanding the Heavens*, 8. "One cannot help to see the chain of intelligences which, transcending political barriers, allowed ideas to jump from Italy to Germany, or Poland, from Denmark or Bohemia to Italy again, and later to France and England. What was more important for Copernicus himself: His travels in Italy, his readings of Ficino, his friendship with Domenico Maria de Novara, a professor at Bologna, or the political evolution of Europe in this time of great upheaval?"

²⁶⁴ Campion, "Astronomy and Political Theory," 595.

²⁶⁵ Campion, "Astronomy and Political Theory," 595.

²⁶⁶ Campion, "Astronomy and Political Theory," 596.

governed by the same principles of movement and interaction.²⁶⁷ Thus, the philosopher argued, politics and the state ought to be designed based upon the same mathematical principles as the cosmos. Across a variety of his works, Plato made the case for an earthly political system based on astronomical and cosmological events and phenomena. In *Laws* (*Nómoi*), for instance, Plato argues that political systems should be based on the tribal number of 5,040, because it had the highest number of divisors (59) and is divisible by 12, thus conforming to the months.²⁶⁸ Plato's cosmo-political ideas held sway all through Christian Europe owing to Christian admiration for the Athenian, and in fact as late as the twentieth century, Karl Popper argued that Plato's contention that only philosophers could interpret celestial law was an important building block of authoritarianism.²⁶⁹

In the Roman world, the sun was an important focus and symbol for the imperial state religion, particularly after the third century. Throughout Aurelian's reign and even after Constantine's conversion, the cult of Sol Invictus ("The unconquered sun") received imperial support, appearing on many coins throughout that period.²⁷⁰ Imperial usurpers paid particular attention to the rising of Venus in their attempts to legitimize themselves, towards the end of the fifth century.²⁷¹ It was widely accepted by the Romans that the stars and planets affected events on Earth.²⁷² In the modern world, the Copernican heliocentric solar system model initiated an uptick in monarchical philosophical

²⁶⁷ Pl. *Ti.* 42.

²⁶⁸ Pl. *Leg.* V.771.

²⁶⁹ Karl Popper, *The Open Society and its Enemies: The Spell of Plato* (New York: Routledge, 1945), 91-127.

²⁷⁰ Gaston H. Halsberghe, *The Cult of Sol Invictus* (Leiden: Brill, 1972), 155.

²⁷¹ Campion, "Astronomy and Political Theory," 597.

²⁷² Weisser, "Roman Imagery of Time and Cosmos," 172.

thought—for if the sun lay at the center of the cosmos, then the king surely lay at the center of the state. Newtonian mechanics applied to political theory may have spurred the Enlightenment ideals of the late eighteenth century.²⁷³

This concludes our brief discussion of the background astronomical research which built the tradition with which Pliny would have been familiar, and our quick overview of the idea of political systems and astronomical models affecting one another. Pliny had a wide, diverse body of work upon which to choose to create his own cosmological model, and his politics was certainly one component of his worldview that might affect the nature and character of that model. Let us turn, then, to Plinian astronomy and its political aspects.

PLINY'S ASTRONOMY AND HIS POLITICS—AN IDEOLOGY OF ROMAN SUPREMACY

Pliny's astronomy can best be described as a model synthesized from the work of his Greek and Babylonian predecessors, written in the language of primarily a first-century Stoic. As discussed in Chapter One, Pliny almost certainly experienced some other philosophical influences, but Stoicism indeed seems to have been his primary foundation, and this affected how he thought about all nature, including astronomy. In this section we shall discuss the following aspects of Pliny's astronomy, following our author's own structure of beginning at the large scale and working down towards the

²⁷³ Campion, "Astronomy and Political Theory," 598.

small: first, the cosmological structure of the Plinian universe; secondly, his treatment of the sun and moon; and finally, Pliny's treatment of astrology.

To begin with the structure of the Plinian universe. Pliny opens his second book with an eloquent description of the universe's nature and overall structure, in one of his more famous passages: "The world and this—by whichever other name it is agreeable to call the heavens by which all is covered, is correctly believed to be a deity, eternal, immense, neither born nor ever to perish."²⁷⁴ It is whole unto itself, finite but similar to infinite, at once the work of nature, and nature herself."²⁷⁵ This finite-infinite duality is difficult to wrap one's mind around, but we might also note that it is not that dissimilar to modern cosmological models which project expanding three-dimensional space into a two-dimensional surface (modern astronomers' common metaphor for this is the expanding surface of a balloon). As discussed in Chapter One, Pliny divinizes the universe itself into the Stoic creator-god, and it is pointless to consider anything beyond it.

Pliny's very next line is remarkable, an explicit comparison between knowledge of the world and that of a single person: "As if the measure of anything could be taken by one who does not know himself, or the mind of man could see that which the world does not hold."²⁷⁶ Per Miriam Griffin, the Stoics often made such comparisons, equating an individual's mind and body to the relationship between divine logos and the world. Such a comparison, Griffin argues, "clearly rules out the idea that the ruler might share power

²⁷⁴ Plin. *HN*. 2.1.

²⁷⁵ Plin. *HN*. 2.1.

²⁷⁶ Plin. *HN*. 2.4.

or even exercise the same type of power as any of his subjects.”²⁷⁷ Griffin was discussing Seneca’s use of the mind/body-divinity/world metaphor, but as is clear above, Pliny embraced the same imagery and thought process.

For Pliny, the shape of both the Earth and the heavens is that of a perfect sphere, and the Earth lies at the center of creation. In this, Pliny essentially follows Aristotle, and Hipparchus, who used Eudoxus as a previous source.²⁷⁸ As support for his model, he gives weight to rhetoric and to observational evidence.²⁷⁹ We know the world to be spherical, he writes, because the general consent of mankind has been to call it an orb. Further, we know it to be spherical because such would be the system best-suited to the revolving motion of the universe, and the skies appear concave in every direction.²⁸⁰ Pliny fixes the Earth at the center of space twice in a passage discussing the four elements and the planets: “by this force at the center of space is suspended the Earth, with the fourth element, that of the waters.”²⁸¹ The Earth, Pliny writes, “remains suspended at the pivot of the universe,” held aloft by the divine breath of life (the *pneuma*, that divine animator described in chapter two) which suffuses the universe, alone motionless, around which all else rotates.²⁸² Around the Earth orbit the planets (including the moon), and the fixed stars, and whatever falls beyond that, as previously noted in Pliny’s cosmology, is not worth speculating upon. The overall structure of the *mundum* described is that of a

²⁷⁷ Miriam Griffin, “Seneca and Pliny,” in *The Cambridge Ancient History of Greek and Roman Political Thought* (Cambridge: Cambridge University Press, 2000), 537.

²⁷⁸ Alexander Jones, “The Stoics and the Astronomical Sciences,” 329-31.

²⁷⁹ Plin. *HN*. 2.2.

²⁸⁰ Plin. *HN*. 2.2. Pliny returns to the subject in 2.65, where he describes the physical, observational phenomena in support of a spherical Earth.

²⁸¹ *...huius vi suspensam cum quarto aquarum element librari medio spatii tellurem.* Plin. *HN*. 2.4.10-11.

²⁸² *...universo cardine stare pendentem librantemque...* Plin. *HN*. 2.4.11.

stable, life-giving Earth at the center, surrounded by lesser-known, more mysterious stars, and no human mind could grasp anything beyond that.

This geocentric cosmology mirrors both Pliny's treatment of divinity and his treatment of the empire at large. In this analogy, Rome is to the Earth as the provinces and other peoples are to the planets and fixed stars. Again, there is little doubt among modern scholars, that Pliny consciously sought to place Rome at the center of his world—geographically, religiously, politically, socially. Murphy views the *Natural History* as the literary version of an ancient map of the world, with Rome at its center.²⁸³ As Talbert put it, “Pliny reorient[ed] an entire Greek and Roman intellectual universe by placing Rome firmly at its center...”²⁸⁴ Williams contrasts the worldviews of the contemporaries Seneca and Pliny, finding the latter to have a much more Romano-centric perspective. Seneca's *Natural Questions* covers much the same territory as the *Historia*, and yet their tone, purpose and perspective differ greatly. As Gareth Williams notes, the adjectival and noun forms of “Roman” and “Rome” respectively appear only six and one times in *Natural Questions*, while in the *Historia*, they each occur roughly 200 times—still a remarkable disparity even when taking into account the differing length of the two texts. Seneca's perspective deemphasizes the role of the empire, taking an on-high perspective, while Pliny takes a centralizing, inside-looking-out approach.²⁸⁵ Pliny,

²⁸³ Murphy, *The Empire in the Encyclopedia*, 20.

²⁸⁴ Richard Talbert, “Review of *Pliny the Elder's Natural History: The Empire in the Encyclopedia*,” by Trevor Murphy, *Bryn Mawr Classical Review*, December 23, 2004.

²⁸⁵ Williams, *The Cosmic Viewpoint*, 42.

Beagon notes, places his work and Rome “at the center of the imperial world...”²⁸⁶ As the Earth is at the center of the universe, Rome lies at the center of the empire.

In orbit around the Earth lie the fixed stars, the closest of which is the moon. Pliny describes the moon with much the same characteristics and language which Romans applied to the Greeks. Pliny takes note of the fact that the Moon is the nearest star to Earth, the one which “binds the admiration of everyone.”²⁸⁷ Plutarch’s Cato surely implies that Greeks (specifically their doctors and philosophers) are untrustworthy tricksters,²⁸⁸ while Cicero warns of the Greeks’ mischievous ways in a letter to his brother.²⁸⁹ Virgil’s Laocoon, of course, feared the Greeks, even those bearing gifts.²⁹⁰ In a passage of the *Historia* which seems to parallel this tone, Pliny suggests that “by the ambiguity of her many forms [i.e. phases], she [i.e. the moon] has tormented the minds of those observing her...”²⁹¹ Perhaps the closest conflation between the two occurs when Pliny explicitly associates the moon with softness and femininity.²⁹² As Catharine Edwards noted, Roman elegists were deeply concerned with their people—often specifically, soldiers—adopting a Greek, “soft” (*mollis*) lifestyle.²⁹³ Martial, for instance, attacks the Corinthian Carmenion for his effeminate personal appearance, while he

²⁸⁶ Harry Hine, “Rome, the Cosmos, and the Emperor in Seneca’s Natural Questions,” *Journal of Roman Studies* 96 (2006), 42.

²⁸⁷ Plin. *HN*. 2.6.41. Rackham translates *vincit* as the third conjugation verb “to conquer,” but I believe the fourth conjugation verb “to bind, fasten” is more likely.

²⁸⁸ Plut. *Cat. Mai.* 23.

²⁸⁹ Cic. *Ad. Q. fr.* 1.16.

²⁹⁰ Verg. *Aen.* 2.49.

²⁹¹ ...*multiformi haec ambage torsit ingenia contemplantium*... Plin. *HN*. 2.41.

²⁹² “On the contrary, they say the moon is feminine and also a soft star...” *E contrario, ferunt lunae femineum ac molle sidus*... Plin. *HN*. 2.104.

²⁹³ Catharine Edwards, *The Politics of Immorality* (Cambridge: Cambridge University Press, 2002), 93.

himself stands as a paragon of sturdy Roman masculinity.²⁹⁴ This is one of many examples one could give of a Roman writer feminizing the Greeks. None of this is to say that Pliny consciously equated the moon with the Greek people, only that Pliny used the same language and the same set of philosophical ideas to describe both.

In contrast, the Plinian sun is described in language reminiscent of the tone usually reserved in texts from this period for styling Rome and more specifically, the Roman emperor. The sun moves among the other, lesser planets,²⁹⁵ greater and more powerful than any other, much as the first-among-equals *princeps* moves among his inferior fellows on Earth. Pliny calls the sun the “spirit, and also the mind, of the whole world,”²⁹⁶ bringing to mind the previously discussed Stoic habit of a comparison between the mind governing a body to a ruler governing the state. Pliny uses an interesting verb in a passage discussing the sun’s many benefits—it carries off shadows, he writes, and also “furnishes light to all things” (*lucem rebus ministrat*)²⁹⁷. It is worth noting that, although Pliny himself may not explicitly use it as such, another meaning of *ministrare* is “to administer” or “to govern.” The sun “obscures and lights up the remaining stars,” bringing to mind the relationship between the imperial state and the provinces. Recall Andrew Fear’s summation of Pliny’s embrace of Stoic humanitarianism: “The point of empire ... is that Rome should export *salus humana* to the world.”²⁹⁸ Concluding this passage on the sun, Pliny writes that it is “famous, remarkable, observing all, hearing

²⁹⁴ Mart. *Epi.* 10.65.

²⁹⁵ “In the midst of them, the sun is borne, the greatest and most powerful...” *Eorum medius sol fertur amplissima magnitudine ac potestate...* Plin. *HN.* 2.4.12.

²⁹⁶ ...*mundi totius animum ac planius mentem...* Plin. *HN.* 2.4.13.

²⁹⁷ Plin. *HN.* 2.13.

²⁹⁸ Fear, “The Roman’s Burden,” 26.

all.” He even includes the word *princeps* in this passage, referring to Homer as the “prince of letters.”²⁹⁹ *Princeps* was the word preferred by Roman emperors, certainly in the time of Pliny.

It is no surprise Pliny would conflate the sun with Roman rulers, as those rulers embraced sun imagery throughout the imperial period. The cult of *Sol Invictus* (“The Unconquered Sun”) is more associated with the third and fourth centuries than with the first (specifically post-274, and Aurelian), but sun and sky imagery with respect to Rome and the emperor was common in Rome from the third century BCE. Weisser notes how common it was in coin imagery, to equate the royal family with stars and the sun. One example of this is coins struck by Domitian (Pliny’s contemporary, the son of his friend Vespasian, and emperor in 81, shortly after Pliny’s death), showing the empress Domitia Longina on one side, and their deceased son on the other, surrounded by stars, his spirit having joined them.³⁰⁰ The sun god features prominently in the iconography of both the *Ara Pacis* and the *Prima Porta* Augustus statue, for another example.³⁰¹ Frischer has argued recently that Augustus himself was a loyal worshipper of the sun god, who was credited with bringing peace, prosperity and Roman victory in war, via his earthly avatar, the emperor.³⁰² Cicero refers to Rome in almost the same terms Pliny used to describe the sun, as “the light of the world.”³⁰³ Pliny himself gets poetic in his preface to

²⁹⁹ ...*praeclarus, eximius, omnia intuens, omnia etiam exaudiens, ut principi litterarum Homero placuisse in uno eo video*. Plin. *HN*. 2.4.13.

³⁰⁰ Weisser, “Roman Imperial Imagery of Time and Cosmos,” 181.

³⁰¹ Bernard Frischer, “New Light on the Relationship between the *Montecitorio* Obelisk and *Ara Pacis* of Augustus,” *Studies in Digital Heritage* 1.1 (2017), 18-119.

³⁰² Frischer, “New Light,” 67.

³⁰³ Cic. *Cat.* 4.11.

Vespasian's son Titus, using words to describe his speaking style which generally refer to celestial phenomena. He uses *fulgurare* to describe the power of Titus' rhetoric, meaning "to glitter, to shine brightly," and *tonare* is used to describe how the emperor's son delivers his father's praises, meaning "to thunder."³⁰⁴ In a later section on medicinal plants, Pliny explicitly equates the Roman people with the sun: "It seems the Roman people are like a second sun, to have given so much to humanity, to have so brilliantly and efficiently spread the *salus humana*."³⁰⁵ Certainly earlier Pliny equates the sun with the emperor, but this contradiction need not trouble us. As Lindberg has noted, ancient peoples were willing to hold overlapping, occasionally contradictory beliefs.³⁰⁶ In other words, these metaphors need not be discrete categories with carefully drawn lines between them. Given the connection between the Roman people and their ruler as the representative of the state, it makes sense that Pliny might describe both people and ruler in similar terms.

In these passages, Beagon sees from Pliny a blending of his Romano-centric outlook and his Stoic-influenced humanitarian ideals. The *Pax Romana* ensures *salus humana* by protecting the life-giving gifts of nature, in much the same way that the sun ensures life's gifts by lighting the world. The Stoics also endorsed an ideal of *commercium*, a system of communication linking through mutual aid the far corners of mankind.³⁰⁷ The Roman people and their emperor, controlling nature's gifts as they did,

³⁰⁴ Plin. *HN*. pref.

³⁰⁵ *Adeo Romanos velut alteram lucem dedisse rebus humanis videntur*. Plin. *HN*. 27.1-2.

³⁰⁶ Lindberg, *The Beginnings of Western Science*, 10-11.

³⁰⁷ Mary Beagon, *The Elder Pliny on the Human Animal Book 7: Natural History* (Oxford: Oxford University Press, 2005), 26.

become equated with nature in this metaphor. Here again we return to the metaphor of the mind governing the body, as the sun, in Stoic thought, stands as the divine embodiment of the universe's rationality, and so it governs the world. Apart from Pliny, this idea appears in Seneca³⁰⁸ and Plutarch,³⁰⁹ and dovetailed well with the Hellenistic idea of the ruler as the soul or mind of his people. The practical conclusion of this blending of ideas, filtered through Pliny's various philosophical influences, is that the Roman emperor (and by extension, the Roman people) become equated with the sun. As Beagon writes, he is "the bringer of order and peace ... calming the storm-clouds in the mind of man."³¹⁰ This was never necessarily a clearly-drawn, one-to-one metaphor, but it seems clear that Pliny and other Stoics at times associated the sun with the Roman people, more often with the Roman *princeps*, always in the context of Rome serving the purpose for other peoples that the sun does for the Earth.

What, then, are we to make of Pliny's explicit rejection of astrology in the second book? For reject it he does. In spite of his quite Stoic endorsement of the metaphor of sun-as-emperor, he had no use at all for the idea that the individual stars are assigned to individual human beings: "...[They] are not, therefore, associated to each of us, as the common people believe, the brightest to the wealthy, the smallest to the poor, the shadowed to the weak, and they do not reckon their dawn according to the lot of mortals, nor do they show when anyone is born nor by their falling when someone dies."³¹¹ This

³⁰⁸ Sen. *De Clem.* 1.5-7.

³⁰⁹ Plut. *Mor.* 779 and 782.

³¹⁰ Beagon, *The Elder Pliny*, 25-7.

³¹¹ ...*non ita ut existimat volgus, singulis attributa nobis et clara divitibus, minora pauperibus, obscura defectis ac pro sorte cuiusque lucentia adnumerata mortalibus, nec cum suo quaeque homine oriuntur nec aliquem extingui decidua significant.* Plin. *HN.* 2.6.28-9.

may seem a harsh denunciation of astrology by Pliny, and thus perhaps a seeming contradiction of his embrace of the sun-as-ruler metaphor favored by Stoics and Greeks.

But if we look elsewhere in the *Historia*, specifically in the thirtieth book dealing with medicinal plants, it seems that the rejection of astrology and other branches of the magic arts constitute part of Pliny's overarching thesis of Roman supremacy. Pliny's rejection of astrology is seen entirely in terms of that supremacy, as the tone suggests that Romans are rationalists when it comes to magic, while other peoples are taken in by a con. The first seven chapters of the thirtieth book deal with Pliny's refutation of magic as a whole. He writes that the Persian Zoroaster was the original author of the magic arts,³¹² and that from there it gradually spread across Europe to the Gallic provinces.³¹³ It is clear that Pliny considers astrology to be a part of the magic arts, from his chapter on the branches of magic.³¹⁴ Pliny essentially calls the astrologers all charlatans, even implying that Nero was taken in by them for a while.³¹⁵ Pliny uses Homeric imagery again, drawing a dichotomy between how magic features greatly in the *Odyssey* but not at all in the *Iliad*.³¹⁶ The *Iliad*, of course, features greatly in Virgil's *Aeneid*, building upon Homer's story to reform the Roman foundational myth. It is not controversial to say that Romans associated themselves with the Trojans, particularly after Virgil rewrote their origin story in the Augustan era. Put another way, the Homeric story with which the Romans associated featured no magic, while the one with which they did not associate

³¹² Plin. *HN*. 30.2.

³¹³ Plin. *HN*. 30.4.

³¹⁴ Plin. *HN*. 30.5.

³¹⁵ Plin. *HN*. 30.6.

³¹⁶ Plin. *HN*. 30.2.

themselves featured a great deal of magic and superstition. The dichotomy of Roman vs. non-Roman is drawn yet again via the references to Homer and magic, if less explicitly.

Indeed, the entire tone of the section suggests that Pliny used his rejection of astrology and the magic arts to highlight what he saw as a key difference between Romans and other peoples. In two brief chapters early in the book, he compares Rome to the peoples of the Gallic provinces, noting the relative rationality of the former and the fervent belief in magic among the latter. Italians had once been as gullible as other peoples with respect to the magic arts, he writes, but the consuls Lentulus and Crassus (father of the Crassus of the First Triumvirate, not the triumvir himself) had forbade the practice of human sacrifice in Rome. Such sacrifice was no longer practiced in public, Pliny writes, and for a time it ceased altogether.³¹⁷ In the next passage Pliny discusses the pervasiveness of magic in the Gallic provinces, referring to Britain, and how Rome was able to educate the people there out of their ignorant, superstitious practices. Pliny relates that it was Emperor Tiberius who put down the Druids, going on to suggest that it is literally the obligation of the Roman people to put down these monstrosities where they find them.³¹⁸ He marvels at how the magic arts began in Persia, but then crossed the ocean, and the Gallic people believed in them so fervently that it seems the ideas were communicated directly from Persia to Britannia.³¹⁹

The message here is clear: that once was us, but thanks to our robust political system and the wisdom of our political leaders, we Romans have moved on. The Plinian

³¹⁷ Plin. *HN*. 30.3.

³¹⁸ Plin. *HN*. 30.4.

³¹⁹ Plin. *HN*. 30.4.

rejection of astrology can only be properly viewed in the greater context of his rejection of magic as a whole, and that is most properly viewed in the context of an ideal of Roman supremacy. Pliny surely held beliefs and defended practices which most modern people would categorize as magic or supernatural, but this ought not trouble us. As Lindberg has noted, “science” is a term often applied as a general term of approval, an epithet attached to something we regard as rational and what we wish to applaud.³²⁰ The Orientalism which Edward Said³²¹ identified—an irrational, weak, effeminate foreigner contrasted with the rational, strong masculine culture of one’s own tribe—is present here in the *Historia*. The relevant difference is that for Pliny, his tribe and the “Other” are not aligned along an east-west axis. Pliny’s tribe lies at the center, with the “Other” arrayed all around.

CONCLUSION

By the middle of the first century, astronomy was a well-developed, indeed ancient enterprise, a scholarly conversation that had worked its way out of the Fertile Crescent into Southern Europe. It is conventional wisdom that little was added to the body of knowledge between Aristotle and Ptolemy. On the basic facts of Plinian astronomy, this is certainly true. He follows his forbearers in a mish-mash of various influences, contributing nothing in the way of original ideas on the basic facts. What he does contribute is an astronomy filtered through the same Stoic perspective that first century Stoics applied to their political ideas. Sometimes these comparisons are direct

³²⁰ Lindberg, *The Beginnings of Western Science*, 2.

³²¹ Edward Said, *Orientalism*, 40, 45, 138.

and explicit, and sometimes it is simply a case of using the same language to describe seemingly disparate concepts. The *Historia*'s astronomy is certainly not devoid of political themes, but it need not follow that the work is consciously political.

Ancient peoples generally accepted the idea that celestial events reflected and commented upon the worldly. This constitutes Pliny's astronomical contribution, to construct and lay down a model of the universe centered upon the politics and society of Rome. It is an astronomy built around the idea of the rightness of Roman supremacy. Roman thinkers regularly employed the Stoic metaphor of the mind governing the body (often in reference to the emperor's relationship to the people), and Pliny deploys it here with respect to both the sun and the divine spirit of the universe, that all-encompassing nature deity with whom he begins the second book. Pliny associates both the sun and the earth with Rome and the emperor, each in different ways, and he associates the other stars and the rest of the sky with the provinces and other peoples. As the sun provides light and life to the world, so the Roman system of government and the Stoic ideal of *commercium* provided life and stability to the provinces and peoples under their purview. The Stoic worldview that guided Pliny's thoughts naturally led his treatment of astronomy in a political direction.

Conclusion
A Plinian Political Cosmology

No one has ever heard of a collective that did not mobilize heaven and earth in its composition, along with bodies and souls, property and law, gods and ancestors, powers and beliefs, beast and fictional beings. Such is the ancient anthropological matrix, the one we have never abandoned.

*Bruno Latour*³²²

Pliny came of age in a Rome ascendant. His great-grandparents would have been alive to witness the civil wars of Julius Caesar and Pompey, and his grandparents would have been the proper age to have been in Italy for the war between Augustus and Antony. For Pliny, these horrors would only have been a story, roughly equidistant in time as the Great Depression and the Second World War are from my own generation. His parents, Gaius Plinius Celer and Marcella,³²³ lived their lives in the early empire, and Pliny himself was born in the reign of Tiberius, the very same year that Tiberius' son Drusus died. He was a toddler when Tiberius sequestered himself away from Rome, and on the cusp of adulthood when Caligula came to power. Claudius was five years into his reign when Pliny entered the army at age 23, and he was to spend the next two decades of his life there, participating in conquests of the Germanic Chatti and Chauci and working his way through the ranks, both through prowess and by making connections with fellow men of letters.

³²² Bruno Latour, *We Have Never Been Modern* (Cambridge: Cambridge University Press, 2006).

³²³ Attested in *CIL*. V.1.3442.

If life was less comfortable for Pliny under Nero, it was so only by comparison—he remained in Rome during that time, writing of his witnessing of the building of Nero’s *Domus Aurea*.³²⁴ It is not known whether Pliny was frozen out of public service during these years, or if the respite from state business was a deliberate decision made out of a desire to avoid the wrathful eye of his emperor, but this was a productive time for him, and he seems to have remained unmolested by Nero and his partisans. The Year of the Four Emperors in 69 CE brought much trauma and strife to many a Roman, but Pliny appears to have come through it relatively unscathed, and his fortunes certainly seem to have been improved even further when it was his friend and fellow *eques*, Vespasian, who was left standing at the end of that chaotic year. Vespasian respected the literary arts and in fact patronized them generously,³²⁵ and so this was an ideal environment for Pliny to compose his best-known work. He began the *Historia* eight years into his friend’s reign, and was not quite finished revising it when he died at Herculaneum two years after, Vespasian preceding him in death by two months. Pliny’s birth had been a fortunate one—he missed the darkest of times, and lived in an era of expansion, prosperity and relative safety. It should come as no surprise that Pliny the Elder supported an imperialist program. There was little in his world to argue against it.

It is generally agreed among modern scholars that, to the best of our knowledge, Pliny broke new ground with the *Historia Naturalis*. It has been called “the world’s first encyclopedia,” though whether Pliny himself conceived of it as such is open to debate. It

³²⁴ Plin. *HN*. 36.24.

³²⁵ Suet. *Vesp.* 17-18.

is an unusual document, unlike anything else to reach us from antiquity. Since its creation, the *Historia*'s reputation has fluctuated, from valuable source of knowledge about the world before about the fifteenth century, to uncreative, unsophisticated recitation of facts after it, to a cogent, more sophisticated expression of certain of its author's values in the late twentieth and early twenty-first centuries. One line of that modern investigation has delved into Pliny's inclusion of political themes in the *Historia*, both implicit and explicit. One of those modern arguments has suggested that Pliny wrote the *Historia* explicitly as a political treatise, a carefully argued apologia for imperial expansion. It is the contention of this thesis that there is absolutely an undercurrent of support for imperialism and imperial expansion in the *Historia*, and the content of Book Two supports this. However, the presence of a pro-imperial political position in the *Historia*, more specifically its second book, need not owe to a conscious effort on Pliny's part to define Roman imperialism. Rather, a world in which imperialist expansion was a positive was simply the world and culture in which Pliny lived. Nothing in his experience would have suggested any other conclusion.

This thesis lies at the intersection between several lines of scholarship. Recent studies have considered the political implications of the *Historia*, and a concurrent course of scholarship has examined the linkages between political and cosmological systems. As I stated at the outset of this thesis, to my knowledge, there has yet been no study of the political aspects of Pliny's second book, before this present one. This thesis lies squarely at the juncture of two lines of modern scholarship—firstly, the one relating to Pliny and

what we are to make of the *Historia*, and secondly, the one relating to the political aspects of ancient astronomy and cosmology.

Chapter One discussed Pliny's treatment of divinity, and the intersections between ancient religion and ancient political systems. The divine was a critical component of cosmological frameworks in the ancient world, and divinity and politics were ever intertwined, one obvious and common example in antiquity being that of "catasterism," the enrolling of recently-deceased mortals among the gods. The Stoic binary concept of an active creator-god on one side, and a world of passive, acted-upon matter on the other, plays heavily into Pliny's formulation of divinity, and the political parallels here are not subtle. Pliny associates rather clearly the active creator-god to Rome, and the provinces to the passive, acted-upon matter of the universe, via a number of rhetorical strategies. He centralizes both Rome and the Earth, and both Rome and the Earth are described as literally bursting forth with the divine *pneuma*, the air or spirit which the active creator-god uses to animate and bring life to its otherwise lifeless, inert surroundings. The anthropological sections of the *Historia* support this, as Pliny's descriptions of the provinces are relatively lifeless, dull iterations of where a people are and whether they pay tribute to Rome, but when he describes Italy, the contrast in tone could not be more apparent—Italy, like the Earth, is bursting forth with life, the divine *pneuma* which the creator-god (described in Pliny's very opening line) uses to animate the surrounding lifeless matter. This case is further bolstered by Pliny's treatment of prominent individuals—Romans are uniformly described in terms of their accomplishments, often with regard to their deeds in service to the growth of empire.

This is even true of Cicero, about whom Pliny contributes what I regard to be one of the more remarkable lines in the *Historia*, suggesting that it is greater to further the knowledge of mankind than to further the borders of the empire. I should stress here that none of this need have been conscious on Pliny's part—rather, as Cicero before him, the language of politics and the language of the natural world shared enough in common as to insist upon an unconscious intersection of the two.

In chapter two we considered Pliny's treatment of meteorology, specifically his respect for his sources, his lamentation of the lack of Roman literature on the topic, and above all his respect for the superiority of the Roman farmer as the primary, qualified interpreter of meteorological phenomena. In the ancient world, meteorology was fundamentally a conservative discipline, resistant to change, and nearly all authors working in the subject were concerned with one of two aspects; first, prediction, and secondly, explanation. Pliny is alone among surviving literature from the period, in that he considered both prediction and explanation in the *Historia*. He expresses support and deference to his Babylonian and Greek forbearers, but he stresses that the foremost expert for interpretation of meteorological phenomena—even as he criticizes the lack of Roman literary contributions on the subject—is the Roman farmer. This is a different sort of imperialism, reflecting both Pliny's status as a man of letters and that rustic ideal of the privileged Equestrian class, that quasi-lionization of the Roman farmer. If the empire itself is represented in the encyclopedia, per Murphy, then the imperial project is also represented in the persona of the Roman farmer, who is best suited to correctly

identifying and reacting to local conditions and phenomena, via his on-the-ground expertise.

Chapter three outlined the various ways politics has affected astronomy, and vice versa. These range everywhere from Plato suggesting that a state ought to be governed based on the same mathematics present in astronomical events, to political leaders funding astronomical research and using it to bolster their position for most of recorded history, to Campion's argument that political systems have actually followed cosmological systems. It covered several rhetorical strategies present in the *Historia*, which conflated celestial phenomena and the political events and environment of Pliny's day. Pliny references Cicero's Stoic-inspired idea of a leader governing a polity in the way that the mind governs the body, but he also extrapolates it to include the sun governing the solar system, in a similar fashion. I put forward a theory that, if Pliny saw the sun as fundamentally Roman, he saw the Moon as fundamentally Greek—tricky, feminine, mysterious, but still worthy of respect in some ways. The two systems bore similarity in his mindset, as the sun and moon bear a special relationship to the Earth, Greece and the Romans bear a special relationship to Italy at the geocenter, and there are mysterious *stellae* beyond, which stand in for the provinces and all their unusual *mirabilia*, and what lies beyond is not even worthy of consideration, for it is beyond our reach. If Pliny conceives of the Earth as Rome in certain passages and the sun as Rome in other passages, well, a nation is both its land and its people. *Roma* was both *gens* and *patria*. He describes the sun as furnishing light and life to all things, in the same Stoic sense of *commercium* that Rome furnishes the *salus humana* to other peoples. Romans

conflated their ruler with the sun more clearly in later centuries, generally in physical media, but Pliny does so here in literary form. The rhetorical argumentation discussed in Chapter One of this thesis is everywhere in Pliny's treatment of astronomy.

So what then, here at the end, are we to make of Pliny? This document has fascinated me, from the very moment I was aware of its nature and existence. The fluctuating intellectual reputation of this document fascinates me as much on the day I write these words, as it did on the day when I set out on this task. In many respects I, Thomas Laehn, Mary Beagon, Aude Doody, Trevor Murphy and every other modern scholar studying the *Historia* stand at the other end of this document's 2,000-year journey, a journey which is still ongoing. The work was granted authority in antiquity due to Pliny's privileged position, his connection to the Flavians, and the enormous volume of research he conducted. There was no need to accord it any special, sophisticated status for it to have a high reputation—there were many other reasons in his own society (and for centuries, those that followed) to accord it that high status. Beginning in the early modern era and lasting until the late twentieth century, the *Historia*'s reputation was quite low, and all those modern scholars I mentioned have been part of a vigorous reaction against that poor reputation.

In some cases, this reaction may have been overzealous. Consider Laehn's argument that the *Historia* is written as intentional, careful political treatise, an apologia for imperial expansion, based around an ancient concept of man as the only being in the

world capable of passing his discoveries on to his ancestors.³²⁶ In this he argues directly against Doody, who only a few years earlier wrote that “Pliny does not appear interested in advancing a positive theoretical position or in engaging with philosophical debates ... his concern is with discrete, concrete facts about observable things in the world around him.”³²⁷ Laehn does not include Book Two in his argument, but a careful reading of the material in Book Two (and material in the rest of the *Historia* tangentially related to that in the second book) supports the case that the *Historia* does contain themes of political support for imperialism. As to whether it supports Laehn’s case that Pliny wrote this support intentionally into the *Historia*, on that, I confess myself skeptical. While it may well have been intention on Pliny’s part, I argue here that it need not have been. The presence of political themes in the *Historia* do not necessitate it having been written as a conscious political treatise.

As Miriam Griffin has noted, Stoicism generally offered no hard directives on the ideal governance, nor explicit directives for proper ruler behavior. Seneca, for example, was not explicitly political in his writings. Rather, Stoicism provided a vocabulary for engaging with the world, as well as various examples and precepts applicable to the real world through analogy and inference. To quote Griffin: “They show how the fundamental dogmas about divine providence, the social nature of man, the cosmopolis, could be used to illuminate the use of political power, the relationship between ruler and ruled, the obligations of members of the governing class. Seneca’s political thought is thus both

³²⁶ In Laehn, *Pliny’s Defense of Empire*.

³²⁷ Doody, “Literature of the World: Seneca’s Natural Questions and Pliny’s Natural History,” in *A Companion to the Neronian Age* (Somerset: Wiley-Blackwell, 2013), 289.

abstract and concrete, of its time, but universal.”³²⁸ Griffin does not mention Pliny the Elder in this passage—the “Pliny” of her chapter title is Pliny the Younger, the Elder’s nephew—but it neatly and precisely encapsulates my response to the argument of Laehn. Pliny’s political position can be discerned in the *Historia* because his language for interacting with the natural world was the same as that used to engage with political concepts. The three cords of LeHoux’s “three-fold cord of Roman thought”—nature, divinity, and politics—were not separated, because they were described in the same language, supported by the same philosophical foundation. This is not a rare phenomenon in the ancient world—Steele, Campion, Pecker and others have described many examples. To paraphrase the Latour quote which opens this chapter, political collectives tend to mobilize heaven and earth in their politics and lawmaking. Perhaps, as with Pliny, it is the case with others of them—their cosmology and politics dovetailed, because they used the same language and concepts for each.

The second book of the *Historia* entirely supports the thesis that Pliny was an ardent imperialist, but this does not necessitate the author making a conscious case for imperialism. In the scholarship of the *Historia*’s politics, this thesis leans more towards Beagon and Murphy, and less towards Laehn’s political treatise thesis. The *Historia*’s pro-imperialist themes need not be there because Pliny coded them into the text—the simpler explanation is that they are there because that is the intellectual world in which he was raised. Pliny was born into a fortunate situation—he was a member of a privileged class, in a time of relative privilege for the people of Rome. From his youth to his death,

³²⁸ Griffin, “Seneca and Pliny,” 558.

he lived in an Empire that, in spite of a few bumpy years here and there, grew and prospered, generally more so as he grew older.

The *Historia* was composed near the end of his life, a mighty compendium of all human knowledge, made possible by the Empire in which its author was born,³²⁹ spurred on by the competitive ethos which animated the privileged elite of Pliny's class to strive and accomplish.³³⁰ His worldview was Stoic, but not entirely Stoic, and the language and precepts of Stoicism would have suggested that an ascendant Rome surrounded by subject peoples and provinces was the world operating precisely as it should. That pro-imperialist worldview comes through for the same reason that it often comes through in ancient writings on the natural world—the language and mindset which authors used to approach them were one and the same.

There is a broader point here that perhaps invites further study. It speaks to the cage in which any scholar of any era finds themselves—that of the framework and prism of their own times. Describing his own scholarly field around the turn of the millennium, J.E. Lendon argued that every modern classicist was “taught to view relations between states in terms of power and security.”³³¹ As the modern classicist was unable to escape the Realist lens dominating explanations of international relations, so Pliny was unable to escape the framework of his own day. Even those such as Pliny, ostensibly recounting a collection of facts about the world culled from books he had collected, was unable to compose such a piece without an underpinning theory. Laehn, and perhaps also Murphy,

³²⁹ Murphy, *The Empire in the Encyclopedia*.

³³⁰ Beagon, “Labores Pro Bono Publico.”

³³¹ Lendon, “Primitivism and Ancient Foreign Relations,” 376.

would argue that this was intentional. I would suggest instead that, for Pliny and indeed for every scholar, it is unavoidable.

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Appendix
The Manuscript Tradition

It seems clear that Pliny was well-respected and read throughout antiquity, the medieval period and the Renaissance. It should come as no surprise, then, that the pre-printing manuscript tradition for the *Historia Naturalis* is reasonably robust, although by no means does that tradition form a continuous line. Five ancient codices contain portions of the text, each of them highly fragmentary.³³² Created in the fifth and sixth centuries, all five were written in the uncial script³³³ common for the period, and three are palimpsests—that is, the pages were composed and then scrubbed off at a later time to make way for some new composition. In an era without readily available paper and with parchment always carrying a high market price, this was a common practice. All three palimpsests were created in the fifth century, discovered at Carinthia (modern-day Austria), Rome and Paris, and contain portions of books 11-15, 23-25, and 8-9, respectively. A fifth-century manuscript from Vienna was discovered to have portions of books 33-34 in sheets reused as bindings, and a sixth-century Parisian text contained part of book 18 in its own binding.³³⁴

³³² Lisa Verner argues that this need not frustrate us terribly in the case of the *Historia Naturalis*, for the simple reason that it “was a big book to copy” and the manuscripts may indeed have always been partial in nature. “One might say the same of the Bible, and yet the dissemination of its separate books did not lessen the influence exerted by its complete form.” Lisa Verner, *The Epistemology of the Monstrous in the Middle Ages* (New York: Routledge, 2005), 12.

³³³ A version of this script was used to create perhaps the world’s most famous manuscript, the *Book of Kells*. It is now a highly available font in the modern world, on Photoshop and Microsoft Word.

³³⁴ L.D. Reynolds and Peter K. Marshall, *Texts and Transmissions: A Survey of the Latin Classics* (Oxford: Clarendon Press), 308-9.

Surviving manuscripts proliferate considerably from the start of the Carolingian era. Latinists divide these texts into two groups; the *vestutiores* and the *recentiores*. Frustratingly, the surviving pieces of the older *vestutiores* are as piecemeal as the ancient texts—a Parisian codex contains medical passages from books 19-20, a manuscript from Northern England gives us books 2-6 (albeit with enormous “lacunae,” or gaps in the text), and one from the Palace Scriptorium of the ninth-century Frank Louis the Pious (the son of Charlemagne) is the only manuscript to preserve the final books of the *Historia*, containing books 32-37. In spite of their narrower lacunae and more complete nature (indeed, two of them reproduce all 37 books), the younger *recentiores* are generally considered to be inferior to the *vestutiores*, for a simple reason—in the tenth century the manuscript tradition appears to have gone astray. The common ancestor of all five primary *recentiores* lost several pages, and swapped several pages from Books Two and Three with Four and Five. Whatever the nature of this “wind through the window, scattering the papers” event, it created a sort of butterfly effect where an indeterminate number of copies reproduced the same erroneous version over the course of the following two centuries. Shortly after that, though, it appears the mistake was discovered, and manuscripts seem to have gone back to following the superior *vestutiores*.³³⁵

Following the invention of the Gutenberg press, interest in reprints of the *Historia* exploded, beginning when Joannes Spira printed it for the first time in 1469. In the sixteenth century, new editions were published at an average rate of nearly one per year. At least sixty-two more were published in the following two centuries, and while the

³³⁵ Reynolds and Marshall, *Texts and Transmissions*, 309-313.

1800s saw just thirty-two more editions,³³⁶ German scholars working at the end of that century at last produced a critical edition (that is, an edition taking account of all available evidence): the Teubner edition of Karl Mayhoff and Ludwig von Jan.

Undoubtedly the most common modern version of the text is Harris Rackham's early twentieth-century translation, which is found in the popularly available Loeb Classical Library. The middle of the twentieth century saw the inception of the Latin-to-French *Budé* translation, published as one book per volume over roughly the next thirty years.³³⁷

³³⁶ E.W. Gudger, "Pliny's *Historia Naturalis*: The Most Popular Natural History Ever," *Isis* 6.3 (1924): 271-4. "This article is ... an effort to show the great popularity and influence of Pliny's work during the 450 years following the invention of the printing press and its first issue therefrom."

³³⁷ These were published as one book per volume starting in 1950.