The Importance of Wind and Air in Book 6 of Lucretius’

*De Rerum Natura*

by

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Class of 2012

A thesis submitted to the
faculty of Wesleyan University
in partial fulfillment of the requirements for the
Degree of Bachelor of Arts
with Departmental Honors in Classics

Middletown, Connecticut

April, 2012
Acknowledgements

I would like to sincerely thank my parents for all their support during both my four years at Wesleyan University and for this thesis. I would also like to thank my thesis advisor, Professor Andy, for all his feedback and his wonderful use of the “thesis encouragement boots”.

Chapter 1: Wind and Air

In his only known work, De Rerum Natura or “On the Nature of Things”, the enigmatic Titus Lucretius Carus, who lived in the 1st century B.C.E, seeks to provide his readers with scientific views of the universe and the events that take place within it. A staunch follower of the Greek philosopher Epicurus, who lived from the late 4th to early 3rd century B.C.E., Lucretius reiterates a great number of the themes present in his predecessor’s teachings. Among the most important principles are that atoms are the fundamental particles of the universe and that everything is composed of atoms, including the body and soul. Indeed, Lucretius’ complex descriptions of atomic interactions and the events that arise from them largely seem to provide a scientific explanation for the workings of the universe, but this is not Lucretius’ ultimate goal. Like Epicurus, Lucretius hopes that understanding natural processes will lead his readers to shed any fear of the gods and death and subsequently strive to attain ataraxia, a state of mind described by Epicurus as mental and emotional tranquility and clear conscious thought. This overarching purpose is perhaps best exemplified by a passage that appears at several places in the book which explains to readers that “this terror then, this darkness of the mind, must needs be scattered not by the rays and the gleaming shaft of day, but by the outer view and the inner law of
nature” (hunc igitur terrem animi tenebrasque ncessest / non radii solis nec lucida tela diei / discuant, sed Naturae species ratioque – DRN 6.39-41).

While De Rerum Natura has garnered much scholarly attention throughout the past 500 years, most recently from Stephen Greenblatt in his 2011 work The Swerve, the sixth and final book of Lucretius’ poem remains relatively unexplored. In this book, Lucretius seeks to offer his readers insight into the natural causes and processes behind both destructive and benign natural phenomena, explanations that should allow his audience to dispel any remaining fear of the gods. It is important to note that Lucretius is not advocating that his readers remain unafraid when confronted with destructive natural forces like earthquakes or hurricanes, but rather that they understand the sources of such events and no longer fear their origin or what awaits them after death. David Konstan perhaps best explains the distinction between the two types of fear when he describes how a physical hazard “represents a real and immediate threat to safety, and is feared on this account.” The destructive natural events that Lucretius describes within Book 6 represent genuine danger for the lives of mortals, and so the fear that surrounds such phenomena is completely justified. However, fear of the gods or death represents an alternate sort of concern where “the object is not clearly perceived” and “might be

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1 Translations of Lucretius and Latin text unless otherwise noted are by Cyril Bailey. (1947), Titi Lucreti Cari De Rerum Natura Libri Sex. Vol 1. Oxford: Clarendon Press

something falsely imagined as a threat.” Lucretius views such unnecessary anxiety as detrimental to the human race and seeks to convince his readers of the same. In Book 6, Lucretius tackles the formidable task by providing descriptions of the atomic interactions that underlie such natural phenomena. While his explanations range in length and amount of detail from a few lines to multiple passages, they all develop from the earlier discussions of atoms and the atomic world. Of course, this book must be taken in light of the work as a whole and indeed, Lucretius states in the opening passages of Book 6 that while its initial purpose is to tell of “all else which mortals see coming to pass on earth and in the sky” (cetera quae fieri in terries caeloque tuentur / mortales – DRN 6.50-51), ideally this knowledge should lead his readers to embrace the ideals of Epicureanism and seek to attain ataraxia.

Despite the multitude and variety of different processes that Lucretius discusses within Book 6, ranging from thunder and lightning to earthquakes, the majority of natural events all share one property: the presence of wind and air. At first glance, such an observation may not seem to be of any great significance, as air and wind are obviously present nearly everywhere in the natural world. Lucretius, however, stresses their importance through specific word usage, analogy, and other literary devices. Their significance is also emphasized early in Book 6 as Lucretius proclaims that he wishes to “<tell how the tempests> of the wind arise, and are appeased and all that once was raging is changed again, when is fury is appeased” (<proelia > ventorum existant placentur <ut> omnia

3 Konstan (2008), 49.
While this passage does contain a lacuna that makes its meaning less certain, the presence of wind (found in the text as ventorum) remains undisputed by scholars.

As mentioned before, Lucretius’ interpretation of natural phenomena revolves mainly around the interaction of various elemental particles, among which wind and air seldom play a passive role. Instead, these two physical entities are the principal stimuli for many other natural processes including lightning bolts, earthquakes, and even volcanic eruptions. Because of the role wind and air play in generating natural phenomena, they are also intrinsically tied to the destruction and fear that such events generate. I will argue that Lucretius emphasizes wind and air as the primary driving forces behind many natural processes in order to set up a stark contrast with the old terrors featuring angry and vengeful deities.

Since Lucretius takes it upon himself to write a lengthy work firmly based on the teachings of Epicurus, his explanations for natural phenomena echo those of his predecessor. Even though the majority of Epicurus’ work has been lost, three letters written by the philosopher remain preserved in the Lives and Opinions of Eminent Philosophers, a historical compendium of Greek

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4 Bailey’s bracketed section of his translation is based on text from a Latin translation of Aristotle’s De Mundo (most likely by Apuleius), which reflects both the essence and grammatical structure of Lucretius’ Latin. The phrase “To explain how the battles” was chosen based on context and the presence of ventorum proelia within both Apuleius and Virgil’s Georgics. For the original article that describes this passage, see A.E. Housman (1897). “Lucretiana” Journal of Philology, 25.50, 245-6. For Bailey’s footnote on this subject see C. Bailey (1947), Titi Lucreti Cari De Rerum Natura Libri. Vol. 3, Claredon Press: Oxford, 1562.
The “Letter to Herodotus” and the “Letter to Menoeceus,” deal primarily with topics unrelated to the natural world, but traces of both letters appear in Books 1-5 of De Rerum Natura. The letters address Epicurus’ views on atomic theory and how an individual can attain happiness and live the best life possible. The third letter, the “Letter to Pythocles,” however, deals with the causes and origins of several meteorological phenomena. I will constantly refer back to this letter to illustrate the clear similarities between Epicurus’ explanations and those offered by Lucretius in Book 6.

Before delving into the definitions and intricacies of Lucretius’ treatment of air and wind, one must distinguish between the two elements in order to understand how Lucretius treats each one individually and how this distinction relates to the topics addressed within his work as a whole. The clearest differentiation that Lucretius makes in Book 6 between air and wind appears in his discussion of volcanoes, in which he rather casually remarks that “air becomes wind, when it is set in motion and aroused” (ventus enim fit ubi est agitando percitus aer – DRN 6.685; emphasis added). If the presence of motion and the force that accompanies this motion are the primary features that differentiate wind from air, it stands to reason that both should have a similar initial elemental composition. No element is isolated in the natural world; it interacts with other constituents of the universe and is altered as the particles mingle and mix with each other. So, for example, in describing the formation of lightning bolts, Lucretius says that wind “loses some larger elements of matter
which cannot penetrate through the breezes so well; other elements it scrapes together from the air itself and carries them, tiny things as they are which when blended in cause the fire in flight” (amittens in cursu corpora quaedam / grandia quae nequeunt partier penetrare per auras / atque alia ex ipso contradens aere portat / parvola quae faciunt ignem commixta volando – DRN 6.302-5). Here, wind interacts with the surrounding air by exchanging minute particles in a manner that effectively alters the properties of both members of the exchange: the wind accumulates lighter bodies that make it prone to ignite while the surrounding air amasses dense particles that cannot pass through it.

Bailey, however, notes that the comparison between air and wind may not be so clear-cut. Lucretius’ earlier books concerning the principles of the universe contain several different and contrasting views on these elements. Book 1 contains a lengthy passage on wind, explaining that even though atoms exist as “bodies which you must needs confess yourself are among things and yet cannot be seen” (accipe praeterea quae corpora tute nescesset / confiteare esse in rebus nec posse videri – DRN 1.269-270), they can still have a dramatic effect on the natural and physical world. Lucretius provides numerous examples, including “unseen bodies of wind, which sweep sea and land, yea, and the clouds of heaven, and tear and harry them with sudden hurricane” (sunt igitur venti nimirum copora caeca / quae mare quae terras quae denique nubile caeli / verrunt ac subito vexantia turbine raptant – DRN 1.277-279); another

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manifestation is the disappearance of moisture from wet clothes drying in the sun. Although Lucretius emphasizes the visible effects of wind, he does not mention air as a definite or probable constituent of the element.

In Book 3, Lucretius draws a distinction between wind (aura) and air (aer) in his discussion of the elements that form the soul. Lucretius divides the soul into two distinct but interconnected entities: the mind (animus), which is located in the breast and is the ruling component of the soul, and the spirit (anima), which obeys the mind and is dispersed throughout the body (DRN 3.136-144). Lucretius also breaks down the soul into its four elemental constituents: wind (here, aura), heat (vapor), air (aer) and a fourth element that is nameless (east omnino nominis expers – DRN 3.232-242). Thus he distinguishes between air and wind in the soul as if they were in fact separate elements. This distinction when coupled with the lack of any connection between air and wind in Book 1 contradicts Lucretius’ description of wind as just air in motion, but several scholars have proposed an explanation that allows the two seemingly different viewpoints to work in harmony: namely, air and wind can still be composed of the same inherent material, but in a different kind of arrangement.\(^7\) Thus the agitation of air moves around the particles that comprise it, losing some to the surrounding environment while picking up others, and ultimately this reordering leads to the formation of a new substance: wind.\(^8\) Unfortunately, Lucretius never provides a source for this agitation and no appears in the fragments of Epicurus’ work. Nonetheless, it is clear that air and

\(^7\) Bailey (1947), Vol. 3, 1656.
\(^8\) Bailey (1947), Vol. 3, 1656.
wind really should be treated as separate entities, and Lucretius is careful to use different words for each entity.

Since wind is defined by motion and air is largely stationary, it seems predictable that the former plays the more active role in natural processes. Lucretius employs several words that all can be roughly translated as “wind,” but each one has a distinct usage that separates it from the others; conversely, air is exclusively represented by the word aer. Ventus serves as Lucretius’ most versatile word and he typically uses it to describe a wind that actively contributes to a natural process. Aura represents a collective group of winds or breezes (as it is almost always found in the plural), the surrounding movement in the air. Such breezes generally play little to no active role in the creation of natural events, but rather simply act as the medium in which the phenomenon forms.  

Occasionally Lucretius also employs the word anima (usually as a genitive paired with some word for force like impetus or vis) much as he uses ventus, and although anima has special importance in Lucretius’ work (the animus/anima combination that comprises the soul of the human being), this use of anima does not completely transfer into his discussion of natural phenomena. Within Book 6, there are three distinct usages of anima. Lucretius uses anima in

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9 Bailey often chooses to translate aura as “air,” particularly in the phrases per auras or in auras, which become “through the air” or “to the air.” (Bailey (1947), Vol. 3, 1678). However, these translations inadvertently imply that aura has the same elemental composition as air, which cannot be true since Lucretius uses the very same word to stand for the wind component of the soul, for aura in the singular is identical to ventus. Thus, Godwin’s translation of the two phrases as “into the winds” or “through the breezes” seems far more appropriate. For an example, see Godwin (1991), 35.
his description of poisonous lakes to mean “spirit” when he describes how it is foolish to believe that “there is a gate of Orcus in these regions” and “the gods of the dead lead the souls below from this spot to the shore of Acheron” (ianua ne pote eis Orci regionibus esse / credatur post hinc animas Acheruntis in oras / ducere forte deos manis inferne reamur – DRN 6.762-4). Later in the book, however, when he describes the effects of the Athenian plague on the populace, he mentions how those affected would have “their breath cut off by the excessive sweetness of the waters” (interclusa anima nimia ab dulcedine aquarum – DRN 6.1266)\(^{10}\). Clearly, both definitions described above relate to a vitalizing power, be it the soul itself or simply the breath that powers it.

Lucretius’ third usage of anima in Book 6 contrasts sharply with the previous two in that it contains almost no connections to the spirit or life force that forms part of the soul. His description of earthquakes contains several uses of the word anima, often in possessive form with a word like vis or impetus. Vis animae in this context seems to fit into a similar context as ventus since the two are juxtaposed in a passage suggesting that earthquakes can be caused by a wind or a great force of anima (ventus ubi atque animae subito vis maxima – DRN 6.578). Before determining what differentiates anima from the other words for wind, it is crucial first to prove that anima is wind and not air, since Lucretius does distinguish between the two. If anima is identical to ventus, then the parallel in the passage does not seem to work, for the two causes of earthquakes would translate as “wind” and “a great force of wind”. Selecting anima to mean

\(^{10}\) Godwin (1991), 89.
air would seem to be the more logical choice for this passage, since *vis animae* as “a great force of air” and equivalent to wind is consistent with Lucretius’ definition of wind as air in motion (as well as the elemental change that accompanies this motion).

In his subsequent discussion of earthquakes, Lucretius mentions how the rush of *anima* and the savage force of the wind can dispersed throughout the abundant holes of the earth (*impetus ipse animai / et fera vis venti per crebra foramina terrae / dispertitur – DRN 6.591-3*)\(^{11}\). Here, *impetus animai* is juxtaposed with *vis venti* so that the two genitives really do seem to have the same meaning, namely “wind”. The two translators of the *De Rerum Natura* that this paper cites both have similar issues with this conundrum. Bailey chooses “air” for *anima* in his translation (selecting “great force of air” for *vis animae* and “impulse of the air” for *impetus animai*), but his commentary implies that *anima* should serve as a synonym for *ventus* for these same passages.\(^{12}\) Godwin also chooses “air” to stand for *anima*, but he mentions in his commentary that this word can also be translated as wind or breeze.\(^{13}\) However, I propose a different interpretation of *anima*. Since *anima* has special significance in Lucretius’ work, my interpretation of its presence in book 6 also relates back its earlier use. *Anima* is in fact a type of wind, and thus possesses all the qualities associated with this element, but the property that defines it refers to its origin; *animae* are

\(^{11}\) Clearly, *animai* must just be an alternate form of *animae* and both Bailey and Godwin translate it as such.


winds that form within enclosed spaces. The difference between *ventus* and *anima* is apparent in an earlier passage (see p.9), where Lucretius suggests that earthquakes can be driven by wind or a force of *anima* “either from without or within the earth itself” (*aut extrinsecus aut ipsa tellure coorta*– *DRN* 6.579). So *ventus* and *anima* simply differ in their place of origin. This idea of an *anima* enclosed within another substance has a precedent within *De Rerum Natura* since the *anima* that forms part of the soul is also shut up in a vessel, namely the human body. This definition of *anima* does not prevent Lucretius from using *ventus* to describe an enclosed wind, since *ventus* really is a general term that can be applied to any type of breeze; *anima* is used by the poet when he wishes to put extra emphasis on the element’s location. Clearly, Lucretius does not use all the words for wind arbitrarily, but rather deploy each one carefully to represent a specific aspect of the element.

Lucretius occasionally conveys the importance of wind through his use of adjectives and participles, but such modifiers occur very rarely in Book 6 of *De Rerum Natura*. In fact, Lucretius’ words for standard types of wind (i.e. *ventus* and *aura*) remain almost completely unmodified. In the few cases when Lucretius does choose to add descriptors to his many words for wind, they typically call attention to the element’s primary properties, ranging from emphasizing its inherent sense of motion (i.e. *petulantibus auris* or “boisterous breezes” – *DRN* 6.111) to depicting its violent and forceful nature (i.e. *pugnantibus ventis* or “the winds are fighting in combat” – *DRN* 6.98). Perhaps the most notable instance of such adjectives occurs in Lucretius’ discussion of
thunder where the phrase *validi venti* occurs twice in line 124 and line 137. The use of *validi* here seems to hint at a nearby later passage in which Lucretius describes the extreme power of atmospheric wind, explaining that “what the blast can do there is shown by things clear to see here on earth, where the wind is gentler and yet it tears out and sucks up tall trees from their lowest roots” (*quid possit ibi flatus manifesta docet res / hic ubi lenior est in terra cum tamen alta / arbusta evolvens radicibus haurit ab imis – DRN 6.139-141*). Thus, Lucretius employs the alliterative *validi venti* to emphasize the strength of the celestial winds.

Lucretius also stresses the importance of wind by means of an interesting literary device that Gareth Williams in his discussion of Seneca’s *Naturales Quaestiones* calls “the domesticating use of analogy.”

Lucretius compares complex natural events to more mundane ones and thus enables his readers both to understand the mechanics of the process and to avoid becoming troubled by the fear of such events. Lucretius employs this trope primarily when he wishes to reduce the intense emotions in the reader that are typically brought on by his descriptions of natural phenomena and particularly the harmful effects that such events can generate. One example of such an analogy occurs in Lucretius’ discussion of thunder. He compares various sounds clouds produce when they collide in different ways to similar noises produced by

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16 Conte (1994), 152 n. 49.
everyday events that occur on a local scale, as when “an awning stretched over a
great theatre gives a crack as it tosses among the posts and beams” (carbasus ut
quondam magnis intent theatris / dat crepitum malos inter iactata trabes – DRN
6.109-110) or “a sound as when the winds buffet with their blows and beat
through the air a hanging garment or flying papers” (aut ubi suspensam vestem
chartas volantis / verberibus venti versant planguntque per auras – DRN 6.114-5).
Lucretius wants his readers to connect the vast natural processes to
unremarkable events and come to understand the causes of the former.
Lucretius uses such comparisons when he wishes to reduce the intense emotions
in the reader that may arise from his descriptions of natural phenomena and
particularly the harmful effects that such events can generate.

While G. B. Conte’s observation that Lucretius’ “need to diminish the
frightening phenomena” leads to a “comparison with banal and controllable
experiences” seems valid, he perhaps overlooks another aspect of the
comparison.¹⁷ Lucretius strives to equate the two sides of his analogies as much
as possible, and so he focuses on specific comparanda that he deems important
to understand. For example, if Lucretius wished to discuss the rumbling of
thunder in a cloud, he might include an analogy about the crashing of a wave on
the shore in order to emphasize the magnitude of the sound. An excellent
example does appear in his discussion of different types of thunder. Here, he
explains how thunder can occur “when the force and fierce onslaught of the wind
have weakened [the cloud],” and “it splits and makes a rending crash with a

¹⁷ Conte (1994), 152 n 49.
frightful cracking sound”; he then compares this celestial process to a terrestrial counterpart – “a little bladder full of air often likewise gives forth a little noise if suddenly burst” (ubi comminuit vis eius et impetus acer / tum perterricrepo sonitu

dat scissa fragorem . . . cum plena animae vensicula parva / saepe haud dat

parvum sonitum displosa repente – DRN 6.128-131. The small sound (parvum

sonitum) from the bursting of the bladder is like the massive crash (perterricrepo

sonitu) of the exploding cloud. Lucretius also takes pains to make the two

comparanda resemble each other on a physical level, so that when wind appears

as the main element in a natural process, he tries to include wind within the

simile as well. For example, the battling winds that drive the soaring ethereal

clouds together (concurrunt sublime volantes / aetheriae nubes contra

pugnantibus ventis – DRN 6.97-8) in a clash of thunder are like the rushing

breezes that rend the awning asunder with the sound of ripping paper (perscissa

furit petulantibus auris / et fragilis sonitus chartarum commeditatur – DRN 6.111-

2). Likewise the tempest of strong winds (validi venti conlecta procella – DRN

6.124) that hollows out and eventually bursts a cloud is compared to the wind

that fills a small bladder (plena animae vensicula parva – DRN 6.130). Also,

Lucretius chooses here to use the word anima for wind because this wind is in

fact contained within a corporeal body: in this case, the bladder.

Not all of Lucretius’ analogies relating to wind are so tightly drawn.

During the poet’s discussion of lightning bolts, he mentions how “a force of wind

emitted without fire still catches fire over the course of its long journey” (venti

vis missa sine igni / igniscat tamen in spatio longoque meatu – DRN 6.300-1); he
compares this process to "the same way as often a lead missile gets hot in the course of its flight when it dismisses many elements of coldness and has caught fire in the breezes" (plumbea saepe / fervida fit glans in cursu cum multa rigoris / corpora dimittens ignem conceptit in auris – DRN 6.306-7). Although wind and lead have very little in common, Lucretius has created a very effective simile. Both the wind and the leaden ball start out lacking in heat and both eventually grow hot as they shed dense particles in their course and then acquire smaller bodies that cause an increase in temperature. What is so clever about this analogy however, lies in the choice of lead for the other material, for even ancient authors must have known about its high density and weight. Here Lucretius is using hyperbole, by introducing a comparison with a substance that is so unlike wind. The purpose of this analogy is less to reduce fear of natural phenomena than to make the properties of wind more comprehensible by making an exaggerated comparison of wind to a tangible substance.

Aside from the brief passage discussed earlier that uses wind to illustrate the existence of invisible particles, Lucretius does not specifically describe the different properties of wind. Wind does have violent and forceful tendencies as is exemplified in the phrase vis venti or “force of wind,” but I will discuss the importance of the phrase in the next chapter. All the other properties of wind appear in Lucretius’s descriptions of various natural phenomena in Book 6. He never explicitly says that wind is insentient. Although wind is animate because it possesses motion, it cannot have any consciousness or intent since it does not 

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18 Translation by Godwin (1991), 35.
have either an *anima* or *animus*, which serves as the vitalizing force of living or divine beings. Lucretius insists that the gods have nothing to do with the natural world or with humans, frequently mentioning their silent abodes and tranquil lives.\(^\text{19}\) Everything in the natural world results from atomic processes, uninfluenced by any divine action. Wind is no exception. Lucretius occasionally refers to the winds by the name of their associated deity (e.g. *Zephyrus*), but in Book 2 he explains that there is no harm in doing so: “if anyone is resolved to call the sea Neptune and corn Ceres, and likes rather to misuse the title of Bacchus than to utter the true name of the vine-juice, let us grant the he may proclaim that the world is the Mother of the gods if only in very truth he forbear to stain his mind with shameful religious awe” (*hic siquis mare Neptunum Cereremque vocare / constituet fruges et Bacchi nomine abuti / mavolt quam laticis proprium proferre vocamen / concedamus ut hic terrarum dictitet orbem / esse deum matrem dum vera re tamen ipse / religione animum turpi contingere parcat* – DRN 2.655-660). Lucretius seeks to remove any religious connotations from such names and to allow them to simply take on the same meaning as the words that they replaced. Still Lucretius only rarely mentions the classical wind gods by name, and in those few cases the names do not imply the existence of a personified deity.\(^\text{20}\)

One of the key topics of Book 5 is that of cyclical processes and events, such as the changing seasons and the rotations and revolutions of celestial bodies. The theme appears again in Book 6, where Lucretius applies it to wind

\(^{19}\) For examples, see *DRN* 3.18 and 2.646-48.
\(^{20}\) For examples see 5.745 and 6.125
and other natural processes: "all that once was raging is changed again, when its fury is appeased" (*ut* *omnia rursum / quae fuerent, sint placato conversa furore – *DRN* 6.52-3). As mentioned before, Bailey selects the phrase *procella ventorum* to forerun this passage, a decision that underscores the role of winds in the natural world. 21 Lucretius goes on to mention the other natural events shortly afterward, describing "all else which mortals see coming to pass on earth and in the sky, when often they are in suspense with panic-stricken mind" (*cetera quae fieri in terris caeloque tuentur / mortals pavidis cum pendent mentibu' saepe – *DRN* 6.50-1). The poet does not neglect including the other natural phenomena, but he does begin his synopsis by describing the most important elemental force (wind) as one that follows a repetitive path of arrival and departure.

The theme of wind as a cyclical phenomenon appears again in Lucretius' discussion of earthquakes (Lines 535-607). Lucretius first argues that subterranean winds locked in the catacombs of the earth can all at once buffet the sides of these recesses and cause the earth to tilt and shudder. He then explains that because this shaking does not happen all the time, one must

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21 The key distinction between Bailey's interpretation of this passage and that of other translators like Godwin is Bailey's use of the word *furerent* "to rage" rather than *fuerint* "to be." Bailey's substitution of *furerent* for *fuerint* further emphasizes the dichotomy of tranquility and chaos already expressed in this passage by the words opposites *placato* and *furore*. Conversely, the presence of *fuerint* in the passage suggests a more comprehensive view of the world rather than simply focusing on wind as Godwin translates it as "everything that exists is transformed, its madness placated." I think Bailey's analysis is more plausible due to the frequent references to wind throughout Book 6 and its importance in natural processes as a whole. See Bailey (1947), Vol. 3, 1561-2. and Godwin (1991), 96-7.
assume that the winds are not always active, but instead “turn by turn, they breathe in and then grow violent, because, as it were, they rally and charge again and then are driven back and give ground” (respirant alternis inque gravescunt / et quasi collecti redeunt ceduntque repulsi – DRN 6.570-1) Leonard and Smith note how the source of these winds seems to be functioning as a giant lung that draws the wind into itself before pushing it back out again: Lucretius’ use of contrasting verbs (respirant and in . . . gravescunt, redeunt and cedunt) supports this interpretation.22 Bailey, however, notes that respirant must denote a cessation of movement, rather than an inward movement, that takes place during the periods between earthquakes.23 Although respirant literally means “to breathe in,” as Bailey translates it, his commentary provides an alternate definition, “to stop breathing out” and thus “to stop altogether.”24 In addition, he translates in . . . gravescunt as “to set on again”, thereby suggesting that the winds do in fact stop moving before starting up again. However, his interpretation is problematic, since wind deprived of its motion may revert to being air, through the accumulation of light particles that are easily ignited. Lucretius does not specifically mention whether elemental wind can exist in a motionless form, but his earlier definition that “air becomes wind, when it is set in motion and aroused” suggests that it cannot. Since Lucretius says that one cause of earthquakes is that fierce winds smash into underground caverns and cause the earth to sway in the direction of impact, we must assume that the

subterranean winds need not be completely motionless to prevent the earth from moving. Instead, the winds could just blow softly, preserving their elemental properties, but having no discernable impact on the world.

The interaction between wind and other elemental particles such as fire is important for Lucretius in his discussions of natural phenomena. The most prevalent mixture occurs when wind blends with fire particles to form a fast-moving, superheated mass that has a huge amount of energy. Although the process occurs both in celestial and terrestrial settings, Lucretius pays most attention to explanations of thunder and lightning bolts and the different ways they come to be. In his discussion of the components of the soul in Book 3, Lucretius declares that never “is there any heat that has not air too mixed with it” (*nec calor est quisquam cui non sit mixtus et aer* – *DRN* 3.234), and so perhaps it is fitting that the mixture of wind and fire too is common in natural processes, since elemental wind is easily formed from air. The natural phenomenon that forms from the mixture of wind and fire is determined by how the two elements blend. For example, both the lightning flash (*fulgor*) and the lightning bolt (*fulmen*) are typically created inside a cloud hollowed out by the wind, but while *fulgor* is created by wind scooping up the particles of fire from the cloud and scattering them haphazardly throughout the air, the *fulmen* is a more concentrated mix of wind and air that becomes ignited and shaped by its own motion.

Lucretius’ description of Mt. Etna’s volcanic eruptions also refers to the mixture of wind (and air) and fire: “the nature of the whole mountain is hollow
beneath, resting everywhere on arches of basalt. Moreover in all these caves there is wind and air” (totius subcava montis / est natura fere silicum suffulta cavernis / omnibus est porro in speluncis ventus et aer – DRN 6.682-4). Air, since it possesses no motion and is found everywhere in the natural world, acts as the medium in which the wind becomes hot and ignites. In fact, Lucretius has already accounted for such mixtures in his discussion of the different components of the soul in Book 3, where he mentions that “heat moreover draws air with it” (vapor porro trahit aera secum – DRN 3.233). Since Lucretius has already indicated that air and wind are different elements, it would be foolish to assume that heat and fire are fundamentally the same elements, especially since he uses distinct words for each (vapor for heat and ignis for fire). However, fire must contain some amount of heat particles, which account for its high temperature, and thus must also contain the air that is present within it. Indeed, Lucretius broadens the specific example of air mixing with heat in Book 3 to a more universal significance in Book 6 by stating that “all things must have air in their body seeing as they are rare of body” (res omnes debent in corpore habere / aera quandoquidem raro sunt corpore – DRN 6.1034-5). Thus, air generally plays a passive role in most natural processes because it both surrounds the elements and is present within them.
Chapter 2: The Driving Force of Nature

Of all the properties of wind that Lucretius refers to in De Rerum Natura, none is more important than its motion. The movement of bodies in the natural world is a familiar topic in the poet’s work, as he devotes much of Book 2 to it. He describes how “movement passes upwards from the first-beginnings, and little by little comes forth to our sense, so that those bodies move too, which we can descry in the sun’s light; yet it is not clearly seen by what blows they do it” (a principiis ascendit motus et exit / paulatim nostros ad sensus ut moveantur / illa quoque in solis quae lumine cernere quimus / nec quibus id faciant plagis appet aperte – DRN 2.138-141). Thus, the motion of atoms “either by their own weight or sometimes by the blow of another” (aut gravitate sua ferri primordia rerum / aut ictu forte alterius – DRN 2.84-5) through the void of the universe causes all the perceptible movements of bodies in the physical world. While Lucretius mentions the forces that bring about atomic movements, he does not directly explain how the speed of a body can influence its force and destructive capabilities; such an assumption needs to be confirmed in order to understand how wind can have such a tremendous influence on the natural world. Lucretius does draw a connection between speed and power when he compares the warming effects of the sun’s rays to the destruction caused by lightning bolts. Despite the similarities in composition between lightning bolts and sun rays, the particles that make up the lightning bolts are “tiny swift-moving bodies” (minutis mobilibusque / corporibus – DRN 6.226-7 and when brought together, they create
“a flame to which nothing at all can be a barrier” (ignem . . . cui nil omnino obsistere possit – DRN 6.227). After Lucretius has established the rapid speed of the atoms that comprise lightning bolts, he proceeds to describe how “so much swifter and more masterful [than the sun’s rays] is this force of the thunderbolt” (tanto mobilior vis et dominantior haec est – DRN 6.238; brackets added). The violent force of the thunderbolt can now be explained based on the breakneck speed at which it travels, and the same analysis applies to wind as well. When Lucretius first mentions wind in book 1, he says that, “scouring the plains with tearing hurricane, it strews them with great trees” (rapido percurrens turbine campos arboribus magnis sternit – DRN 1.273-4). The howling winds inflict damage on the natural world because they possess a great deal of force. Such power in turn stems from the fast motion of the element, emphasized by the words “rapido” and “percurrens”.

Lucretius employs many different words in Book 6 to describe the force and violence of the wind in book 6. He uses the word vis, typically translated as “force” or “power,” as a broad term signifying a physical effect or a physical potential on the natural world. It is very hard to attach a single overarching definition to vis because the word has so many applications. When vis is used with reference to wind in the common expression vis venti or vis animae, the word simply refers to the physical force that derives from the motion of the wind.

25 Vis usually means potential energy with which an object can affect other things. My definition is deliberately vague because there are many different ways that vis can be used. Examples include: the force of the blow when wind strikes cloud (plagae vis – DRN 6.309), the greatest power of the gods (summa deum vis – DRN 6.75) and the potency of the smell of charcoal (carbornumque gravis vis atque odor – DRN 6.802).
and allows the element to influence other bodies in the natural world, sometimes violently. Such “force of the wind” (vis venti – DRN 6.281), as I have noted, generates many of the natural phenomena in the world. While Lucretius often does use vis venti to indicate the physical capacity of wind, he also occasionally chooses to add either ictus or plaga to emphasize the collision between wind and another element. Both words are translated simply as “stroke” or “blow” and represent the actual violent impact between the atoms of wind and the other body. Lucretius links vis, ictus and plaga in his discussion of lightning bolts, when he describes how a wind can create fire within a cloud. He mentions that, “the force of the very blow rouses fire, when the force of the wind, starting cold without fire, has struck its stroke (ipsius plagae vis excitet ignem / frigida cum venti pepulit vis missa sine igni / nimirum quia cum vehementi perculit ictu – DRN 6.309-11). While vis here represents the violent capacity of the wind, both ictus and plaga refer to the collision between particles of wind and cloud, although this latter element is not directly mentioned.

Lucretius also uses of several words that emphasize both the power and the motion of the element. The word impetus, like vis, does not have a single clear-cut definition. Bailey chooses to translate impetus as “onset,” “attack,” and “onslaught,” which express both force and motion. However, Bailey also note that in addition to using the word to express force and motion, Lucretius occasionally employs impetus to mean “extent” or “expanse” without implying any sort of kinetic properties.26 The difference between the two general

meanings of *impetus* is clear when one compares two passages from Book 6 in which Lucretius repeats same phrase. In one of the passages, Lucretius explains how the lightning flash "comes to pass in thick clouds which are also piled up high one on the other in wondrous slope" (*densis fit nubibus et simul alte / extractis aliis alias super impete miro* – DRN 6.185-6). By contrast, Lucretius remarks in another passage how once a cloud can no longer contain a thunderbolt, "its force is squeezed out and so flies with wondrous impulse" (*exprimitur vis atque ideo volat impete miro* – DRN 6.328). The phrase *impete miro* occurs in both passages, but only in the second passage does it convey a sense of motion and power like that found in wind. Lucretius seems generally to use *impetus* to connote force rather than extent, and although *impetus* does not necessarily refer to wind, the two words are often found in the same passages in Book 6.

Lucretius also conveys wind's force by means of verbs that denote violence. Since listing every word Lucretius uses in connection with wind would be impossible, instead I will simply provide a few examples of verbs that represent specific actions of the element. As seen previously in this essay in the discussion of *ictus* and *plaga*, the most common action of wind is to ram into another constituent of the universe, an endeavor often represented by words such as *incidere* "to fall upon" or *premere* "to press upon."²⁷ Sometimes the force of the wind is so great that it smashes open whatever it has hit, be it a

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²⁷ Examples include: the rushing force of wind falling upon the cloud (*vis . . . incita venti / incidit . . . nubem* – DRN 6.295-6) and the clouds being violently pressed by the wind (*vehementer . . . nubila . . . premuntur . . . impete venti* – DRN 6.517-8).
cloud or even the surface of the earth. When Lucretius describes such a
cataclysmic event occurring, he uses verbs such as *perscindere* “to rend” or
*erumpere* “to cleave” to express the forceful motion of the wind acting upon
another element.\textsuperscript{28} Finally, particularly when confined, wind tends to rave and
move around in a cyclical motion, mixing itself with the surrounding elements, a
process made evident by Lucretius through the use of verbs such as *versare* “to
whirl” and *fremere* “to rage.”\textsuperscript{29}

We may now consider more precisely how, in Book 6, Lucretius depicts
wind as a driving force in the natural world. I will point out how Lucretius’ views
 correspond with those of Epicurus. Lucretius organizes the natural processes
into two distinct categories. He begins with meteorological phenomena (6.96-
534) before moving to terrestrial phenomena (6.535-1137) and finally
concluding with his famous account of the plague of Athens (6.1138-1286). He
also moves from events that are clearly discernable such as lightning and
earthquakes to processes that seem to have no clear visible source like magnets
and disease. However, the majority of the natural events that he discusses do
have wind as a driving force.

Before analyzing the meteorological phenomena that Lucretius
investigates in Book 6, it is important to take note of one property of

\textsuperscript{28} Examples include: the aroused force (of the wind) breaking open the earth and
creating a chasm (*incita...vis / exagitata foras erumpitur et simul ultam
diffendens terram magnum concinnat hiatum – DRN 6.582-4*) and the wind
rendering a cloud (*vis...venti...nubem / quam...perscidit – DRN 6.295-7*).

\textsuperscript{29} Examples include: wind raging inside the hollows of the earth (*ventus...in
loca...cava terrai...fremit – DRN 6.578-581*) and the wind invading a cloud
and whirling around within it (*ventus...invasit nubem et versatus – DRN 6.175*).
atmospheric wind that Lucretius mentions in his discussion of thunder. In a passage mentioned earlier (p. 12), Lucretius explains that celestial winds are greater in force than those at the surface of the earth. Such surface winds still possess a great deal of force, as they are able to rip out trees from their roots and hurl them across great distances. But the winds in the upper reaches of the sky can impact even larger targets such as clouds and strike them with a much larger force.

Lucretius begins his exploration of celestial phenomena with three connected processes that all originate in storm clouds: in order of exposition, thunder (tonitrus), the lightning flash (fulgor), and the lightning bolt (fulmen). Lucretius provides seven main explanations for thunder. Bailey notes that whenever Lucretius provides multiple explanations for a natural phenomenon, he does not mean to imply that only one of the causes can be true. Instead, all the causes exist in the natural world concurrently and each one leads to a different manifestation of the natural event. Epicurus discusses multiple causes in the “Letter to Pythocles” where he remarks that, “the facts invite us to give a plurality of causes”. The first explanation appears in a passage that I have already cited, where “the clouds in high heaven, scudding aloft, clash together when the winds are fighting in combat” (see above p.14). Although the collision of clouds causes thunder, the winds serve as the driving force behind the

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32 Epicurus, Ad Pythocles (Trans. R. D. Hicks, 1972) 100 καὶ τὸ ὅλον καὶ τοῦτο τὸ μέρος / πλεοναχῶς γίνεσθαι λέγειν ἐκκαλεῖται τὰ φαινόμενα. See pp. 4-5 for source
process, so that without them, the clouds would be unable to move and unable to dash against each other. However, the clouds produce different types of thunder depending on how they collide. When “clouds cannot so much clash together face to face, but rather pass along the flank, moving from diverse quarters and slowly grazing body against body” (non tam concurrere nubes / frontibus adversis possint quam de latere ire / diverso motu radentes corpora tractim – DRN 6.116-8) they produce a completely different sound when a cloud is “rent by boisterous breezes” (percissa . . . petulantibus auris – DRN 6.111). Nevertheless, no matter what type of thunder is produced by the collision of clouds, the winds initially set them in motion. While Epicurus does state that thunder can be caused by “the rending and disruption of clouds,” a phrase that recalls with the verb percissa, Epicurus does not specifically cite wind as the causing the initial crash.¹³

Lucretius’ next explanation of thunder also depicts wind as a driving force. The poet mentions how once “a gathered storm of mighty wind has twisted its way into the clouds” (validi venti collecta procella / nubibus intorsit DRN 6.124-7), it hollows the cloud out through its whirling motion. When the cloud can take no more of this pressure, “it splits and makes a rending crash” (dat scissa fragorem – DRN 6.129). Epicurus also mentions such a process in the “Letter to Pythocles,” stating that “thunder may be due to the rolling of wind in the hollow parts of the clouds.”³⁴ Bailey points out that in Lucretius’ passage, it is the cloud that produces thunder because the participle scissa must agree with

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¹³ Ad. Pyth. 100 καὶ κατὰ ῥήξεις δὲ νεφῶν καὶ / διαστάσεις
³⁴ Ad. Pyth. 100 βροντὰς ἐνδέχεται / γίνεσθαι καὶ κατὰ πνεύματος ἐν τοῖς κοιλώμασι τῶν νεφῶν / ἀνείλησιν
the feminine *nubes* and not the masculine *ventus*, while on the other hand, the wind is directly responsible for thunder in Epicurus’ explanation.\(^{35}\) Such minor discrepancies between Epicurus’ and Lucretius’ works are common and may be due to the difference in language between the two authors. In Book 1, Lucretius acknowledges the superiority of the Greek language when discussing philosophy, explaining that “it is a hard task in Latin verses to set clearly in the light the dark discoveries of the Greeks, above all when many things must be treated in new words, because of the poverty of our tongue and the newness of the themes” (*Graiorum obscura reperta / difficile inlustrare Latinis versibus esse / multa novis verbis praesertim cum sit agendum / propter egestatem linguæ et rerum novitatem – DRN 1.136-9*). However, the differences may not necessarily stem just from mistranslation or misrepresentation, as there are several causes of natural phenomena in *De Rerum Natura* that do not have obvious counterparts in Epicurus’ surviving works. Bailey suggests that such discrepancies occur because we do not possess all the works of Epicurus, such as his lost treatise *De Natura*, and the unparalleled examples in *De Rerum Natura* are drawn from the lost texts.\(^ {36}\) While Bailey’s proposition is highly plausible, I feel it is important to note that Lucretius could also have gathered his information from other sources such as the Pre-Socratic philosophers, Aristotle, and Theophrastus.

Lucretius’ next explanation for thunder does not have a parallel in Epicurus’ surviving works. He reveals that, “there is also another way [to create

\(^{35}\) Bailey (1947), Vol. 3, 1570.

\(^{36}\) Bailey (1947), Vol. 3, 1552.
thunder] when winds blow through clouds, whereby they may make a noise” (est etiam ratio cum venti nubila perflant / ut sonitus faciant – DRN 6.132-3; brackets added). Although it is unclear whether the winds (venti) or the clouds (nubila) make the sound (sonitus faciant), Lucretius adds a simile to clarify the cause of the thunder. He mentions that the process is like “when the blasts of the north-west blow through a dense forest” and “the leaves give out a noise and the branches a resounding crash” (ut crebram silvam cum flamina cauri / perflant dant sonitum frondes ramique fragorem – DRN 6.135-6). Since the wind in the analogy (flamina cauri) is paralleled with the wind (venti) in the natural process, it is clear that the leaves and branches (frondes ramique) represent the cloud. Just like the passage discussed earlier (p. 27), the clouds physically produce the crash of thunder, but the wind acts as the driving force behind its creation.

In his next explanation of thunder, Lucretius describes how “the whipped-up force of a mighty wind tears a cloud apart, bursting through it with a direct hit” (validi vis incita venti / perscindat nubem perfringens impete recto – DRN 6.137-8). Bailey indicates that such an explanation has no direct correlation in Epicurus’ “Letter to Pythocles,” but I believe that it may originate from Epicurus’ description of the “rending and disruption of clouds” (see p. 28). My interpretation is based on the fact that Lucretius’ use of the verb perscindere “to rend” strongly echoes Epicurus’ use of ῥῆξεις “to tear.” Epicurus makes no reference to whether the rending of the cloud occurs from the inside or outside, while Lucretius, based on the phrase impete recto, chooses an assault

38 See note 33
from the outside. I will argue that both explanations (p. 28 and p.30) when taken together correspond to Epicurus’ description.

While Lucretius’ next description of thunder does not mention wind in any capacity, the following explanation refers to the element, albeit indirectly. Lucretius mentions how if a dry cloud interacts with a flame, “it is at once fired and burns with a vast noise; just as if among the laurel-leafed mountains flame were to roam beneath the eddying of the winds” (uritur ingenti sonitu succensa repente / lauricomos ut si per montis flamma vagetur / turbine ventorum DRN 6.151-3). Although wind is only mentioned within the analogy in Lucretius’ work, its presence outside the analogy is confirmed by a passage in the “Letter to Pythodles” where Epicurus states that thunder in clouds can originate from “the roaring of fire in them when blown by a wind.”

If Lucretius’ explanation is derived from Epicurus, then wind must also play a significant part in the creation of thunder.

Lucretius’ final explanation for thunder describes the presence of hail and ice in the clouds. He reveals that, "when the wind packs them tight, the mountains of storm-clouds, frozen close and mingled with hail, break up” (ventus . . . cum confercit franguntur in artum / concreti montes nimborum et grandine mixti – DRN 6.158-9) and create a massive noise. Epicurus also mentions a similar cause of thunder: “the friction and splitting up of clouds when they have become as firm as ice.”

Bailey notes that the existence of hail and ice in the clouds may be the reason why they can produce noise when they rub against

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39 Ad. Pyth. 100 καὶ παρὰ /πυρὸς πεπνευμα- / τωμένου βόμβον ἐν αὐτοῖς
40 Ad. Pyth. 100 κατάξεις πῆξιν / εἴληφότων κρυσταλλοειδῆ
each other, (see p. 27). His interpretation also explains why Lucretius describes clouds as “rough-edged” (aspera – DRN 6.134). Once again, the wind drives the natural process by crushing the frozen clouds together, but does not produce the actual sound of thunder.

Before moving on to Lucretius’s next discourse on the causes of lightning, I wish to note an idea that the poet failed to include in his discussion of thunder. In all of Lucretius’ explanations of thunder, he never once suggests that clouds could move of their own accord; rather, the wind would always act as the force behind their motion. However, as I have already mentioned (p. 21), any movement in the natural world originates from the movements of atoms and such “first-beginnings of things move of themselves” (moventur . . . per se primordia rerum – DRN 2.133). While some elements do possess the ability to move of their own accord, such as wind and fire, all movements of atoms do not translate into visible movements since there are objects such as rocks and barrels that do not move of their own accord. Therefore, it is important to determine whether Lucretius believes that clouds can move by themselves.

In his first explanation of lightning, Lucretius mentions how the flash is produced “when the clouds at their clashing have struck out many seeds of fire” (nubes ignis cum semina multa / excussere suo concursu – DRN 6.161). Lucretius’ belief echoes that of Epicurus, who agrees: “when the clouds rub against each other and collide, that collocation of atoms which is the cause of fire generates

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41 Bailey (1947), Vol. 3, 1576.
lightning.”\textsuperscript{42} Despite the implication that the clouds here are causing their own motion, as evident by the possessive \textit{suo}, I believe that many readers may think the wind is behind such movement, especially since Lucretius failed to mention such a phenomenon anywhere in his discussion of thunder. Indeed, the last time in his work that Lucretius mentioned clouds colliding with each other, it was due to the fierce winds (see p.14). But Epicurus states in another passage in his letter that the particles of light enclosed in clouds from stars can be “driven about by their motion and by that of the winds” (emphasis added).\textsuperscript{43} The “their” referenced in his statement must refer to the clouds because of the placement of τῆς κινήσεως within the prepositional phrase υπὸ νεφῶν. Such a statement reveals that the Epicurus and also Lucretius did believe that clouds were capable of motion by themselves.

Lucretius reaffirms the presence of wind in natural processes with his next explanation of lightning. He states that wind can invade a cloud and hollow it out while becoming hot through its own motion and “when this heated wind has torn through the black cloud, it scatters abroad seeds of fire, as though struck out all at once by force, and they make the pulsing flashes of flame”

\textit{(fervidus hic nubem cum perscidit atram / dissipae ardoris quasi per vim expressa repente / semina quae faciunt nictantia fulgura flammae – DRN 6.180-2).} Such an example combines two explanations in the “Letter to Pythocles” where Epicurus describes how lightning may “arise from the combustion of wind brought about

\textsuperscript{42} \textit{Ad. Pyth.} 101 γὰρ κατὰ παράτριψιν καὶ σύγκρουσιν νεφῶν ὁ / πυρὸς ἀποτελεστικὸς σχηματισμὸς ἐξολισθαίνων ἀστραπῆν / γεννᾷ

\textsuperscript{43} \textit{Ad. Pyth.} 101 συνελαυνομένου υπὸ τῆς κινήσεως νεφῶν τε καὶ πνευμάτων
by the violence of its motion and intensity of its compression; or when the clouds are rent asunder by winds, and the atoms which generate fire are expelled.” (emphasis added)

Furthermore, Lucretius reveals that such a process can only occur in huge masses of clouds, and the thunder that accompanies the lightning is generated by the winds themselves, rather than the clouds. Indeed, he describes how once the hollows of the cloud are filled by winds, “with loud roar they chafe prisoned in the clouds and threaten like wild beasts in cages” and “send forth their roaring throughout the clouds” (*magno indignantur murmure clausi / nubibus in caveisque ferarum more minantur… fremitus per nube mittunt – DRN 6.197-199*). Even though the winds are compared to beasts in Lucretius’ simile, the poet is not implying that the element possesses any form of intelligence or sentience. The winds do serve as the driving force behind both thunder and lightning in Lucretius’ explanation.

Like many of the examples I have mentioned earlier, Lucretius’ next explanation of lightning is derived from Epicurus’ “Letter to Pythocles.” Both Epicurus and Lucretius suggest that light from above the clouds can become trapped within their expanse, but they differ in opinion regarding the source of such light. While Epicurus choose the stars as the source, Lucretius picks the sun, describing how its rays contain minute particles of fire.

The wind again plays a prominent role in the creation of lightning, for it compresses and packs

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44 *Ad. Pyth. 102 κατὰ τὴν τοῦ / πνεύματος ἐκπόρωσιν τὴν γινομένην διὰ τε συντονίαν / φορᾶς καὶ διὰ σφοδρῶν κατείλησιν καὶ κατὰ ῥήξεις / ἀπὸ πνευμάτων ἐκπτωσιν τε πυρὸς / ἀποτελεστικῶν ἀτόμων

45 *Ad.Pyth ἀπὸ τῶν ἀστρων κατεσπαρμένου φωτός

the clouds together until "they squeeze out and pour forth the seeds which make the colours of flame to flash" (expressa profundunt / semina quae faciunt flammae fulgere colores – DRN 6.212-3). Lucretius moves quickly into his fourth and final explanation that displays wind in a gentle setting. He tells how once the clouds grow thin, “the wind lightly draws them asunder as they move and breaks them up” (ventus eas leviter diducit / euntis dissoluitque – DRN 6.215-6), leading to the seeds of fire falling out without any sound. Bailey explains that no thunder occurs in the fourth explanation because the clouds were not violently attacked or hollowed by the wind, and I agree with his interpretation as it further emphasizes the importance of the force of wind in the creation of thunder.47

In comparison to Lucretius’ analysis of the causes of thunder and lightning, his discussion of lightning bolts is much more extensive (nearly 200 lines).48 I believe that he does so because of the dramatic physical effect that the bolts have on whatever they strike. Additionally, the lightning bolt may be the most easily recognized and feared phenomenon in antiquity for it was viewed as the weapon of choice for Zeus. The lightning bolt’s connection with Zeus can be traced all the way back to the Greek poet Hesiod, who describes how Zeus “came immediately, hurling his lightning: the bolts flew thick and fast from his strong hand together with thunder and lightning.”49 While wind does play a important role in the creation of the lightning bolts, Lucretius reveals that the bolt’s true

48 The terms “lightning bolt” and “thunderbolt” are used interchangeably in this paper, as I tend to use “lightning bolt” while Bailey opts for “thunderbolt”
49 Hesiod, Θεογονία 690-2: ἀστράπτων ἔστειχε συνωξαδόν: οἱ δὲ κεραυνοὶ / ἱκταρ ἃμα βροντῇ τε καὶ ἀστεροπῆ ποτέοντο / χειρὸς ἀπὸ στιβαρῆς
Translation is by H.G. Evelyn-White, 1914
nature “is shown by the blows and the burned marking of their heat and the brands which breathe out noisome vapours of sulphur” and notes that “these are marks of fire not of wind nor rain” (declarant ictus et inusta vaporis / signa notaeque gravis halantis sulphuris auras / ignis enim sunt haec non venti signa neque imbris – DRN 6.220-2). I have already mentioned that lightning bolts are a mixture of fire and wind and are composed of “tiny swift-moving bodies “ (pp. 19-20), a phrase that refers back to the principles of atomic motion. Like wind, fire possesses the ability to move of its own accord, so that the movement of a lightning bolt is controlled by both its elemental components: wind and fire.

However, Lucretius’ first explanation of lightning bolts reveals the crucial role that wind plays in the creation of the phenomenon. The process begins in a similar manner as that of lightning, where wind squeezes out fire particles from the clouds, but here the wind “has mingled itself with the fire” (eo commiscuit igni – DRN 6.276). One the two elements have mixed “an eddy finds its way in there and whirls round in a narrow space and sharpens the thunderbolt” (insinuates ibi vertex versatur in arto / et . . . acuit fulmen – DRN 6.277-8) which eventually “rends the cloud and shot out is borne on” (perscindit subito nubem ferturque . . . percitus – DRN 6.283-4). Bailey mentions that Lucretius chose to combine two of Epicurus’ explanations into one.50 Indeed, in the “Letter to Pythocles,” Epicurus describes how a lightning bolt can be created when “winds are repeatedly collected, imprisoned, and violently ignited; or when a part is

torn asunder and is more violently expelled downwards” (emphasis added). However, the properties of the lightning bolt are connected to those of both fire and wind. The lightning bolt is finished and leaves its confinement only when “the force of the wind has grown exceedingly hot <and> the fierce onset of the fire has entered in, (percaluit venti vis <et> gravis ignis / impetus incessit – DRN 6.281-2). So the fully mature lightning bolt possesses incredible heat, powerful force and unparalleled speed and such qualities arise from the elements that comprise it. However, wind plays a more important role in its creation as it not only drives out the seeds of fire from the clouds and gathers them together, but also it heats the bolt through its own motion and shapes the bolt into its final form.

Lucretius’ second explanation of lightning bolts is mentioned very briefly in the space of 5 lines. Bailey notes that this explanation serves as an addition to Lucretius’ previous one, since it does not reveal how the phenomenon is created, but rather how the bolt is released from the cloud. While in the previous process, the lightning bolt was driven out of the cloud by the internal heat and movement of the wind and fire, Lucretius now reveals an alternate process: “the rushing force of wind falls from without upon the cloud hot with its new-forged thunderbolt” (vis extrinsecus incita venti / incidit in calidam maturo fulmine nubem – DRN 6.295-6) and drives it out. Bailey notes that direction of the lightning bolt can be determined based on the direction of the wind that releases

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51 Ad. Pyth. 103 κατὰ πλείονας πνευμάτων / συλλογάς καὶ κατείλησιν ἵσχυράν τε ἐκπύρωσιν: καὶ / κατάρρηξιν μέρους καὶ ἕκπτωσιν ἰσχυρότεραν αὐτοῦ ἐπι / τοὺς κάτω τόπους
Thus, the wind not only creates the lightning bolt and imbues it with force and motion, it can also direct the path of the bolt.

Lucretius’ third cause is also treated with some degree of haste, and contains the analogy that I have already discussed (see p. 14). As Bailey notes, Lucretius’ explanation is vague, as the poet simply mentions that, “the force of the wind, starting without fire, yet catches fire on its course and long wandering” (venti vis missa sine igni / igniscat tamen in spatio longoque meatu – DRN 6.300-1). Lucretius makes no clear reference to the lightning bolt or how the ignited wind leads to the creation of the bolt. As I have discussed (see pp. 35-6) Epicurus does refer to the ignition of winds as a cause of lightning bolts in his “Letter to Pythocles,” but such winds are collected within the clouds. Therefore, I propose that Lucretius’ third explanation describes another way in which the fire particles in the cloud are ignited. Rather then through the force and power of wind inside the cloud, the stimulus that ignites the bolt is brought from an external wind.

Lucretius’ fourth and final explanation also remains very problematic as again it is unclear how the lightning bolt fits into the process. The poet describes how “the force of the very blow rouses fire, when the force of the wind, starting cold without fire, has struck its stroke...just as, when we strike a stone with iron, fire flies out” (ipsius plagae vis excitet ignem / frigida cum venti pepulit vis missa sine igni... ut lapidem ferro cum caedimus evolat ignis – DRN 6.309-10 and 6.314). While his theory makes a great deal of sense, since it proves that fire can

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be produced from the collision of cold materials, Lucretius does not mention the lightning bolt at all, apart from crudely stating that “a thing must also be set on fire by the thunderbolt if its happens to be suited and fit for the flames” (res accendi fulmine debet / oppertuna fuit si forte et idonea flammis – DRN 6.317-8).

Since the statement describes the effects of a lightning bolt rather then the cause, Lucretius’ readers still have no idea where the lightning bolt is created: whether it originates in the cloud as in his first explanation or it forms at the point of impact between the wind and the cloud. In fact, we as readers must deduce that Lucretius is talking about the collision of wind and cloud, since there is no discernable word for cloud (e.g. nubes, nubilum) anywhere in his example.

Unfortunately, there is no clear parallel in Epicurus’ letter for such a process. I believe that, as in his third explanation of lightning bolts, Lucretius is not describing the creation of the bolt, but rather the process that causes its ignition. An alternate way of viewing the fourth explanation is that the lightning bolt is created from the collision of wind and cloud, but since Lucretius does not refer it by name (e.g. fulmen), my interpretation seems more valid. Thus, his first explanation (see pp. 35-6), illustrates the only real “cause” of lightning bolts while the following three simply depict the different ways that the bolt is released from its cloud and ignited. All four descriptions do present wind as a driving force.

After explaining the destructive effects of the lightning bolt, a topic that will be analyzed in the next chapter, Lucretius moves on to a discussion of two more atmospheric phenomena: whirlwinds and waterspouts. Bailey notes that
the progression from the first three phenomena (thunder, lightning flash, lightning bolt) to whirlwinds and waterspouts remains highly rooted in tradition and such a sequence can also be found in Heraclitus, Aristotle, and Epicurus.\textsuperscript{55} Lucretius indicates that waterspouts, which he refers to by their Greek name \textit{presteres} (πρηστήρες), are simply whirlwinds that occur at sea, but the cause of both is the same: a whirling column of wind. Although it may seem excessive to analysis a process whose cause is so apparent (i.e. revealing that whirlwinds are caused by wind), I believe Lucretius chooses to do so because, as Godwin notes, \textit{presteres} were thought to be another weapon of Zeus, similar to the lightning bolt.\textsuperscript{56} Lucretius mentions that \textit{presteres} form when “the force of the wind whipped up is unable to break through the cloud it is trying to burst: it only pushes it down so that it behaves like a column sent down from the sky” (\textit{non quit vis incita venti / rumpere quam coepit nubem, sed deprimit, ut sit / in mare de caelo tam quam demissa columna – DRN 431-3}).\textsuperscript{57} Eventually, the wind does burst the cloud and forms a massive whirlwind (\textit{turbo}) that brings the cloud down to the water and it “immerses itself totally into the water and arouses the whole sea, forcing it to bubble and boil with a terrific noise” (\textit{in aquam subito totum se inmittit et omne / excitat ingenti sonitu mare fervere cogens – DRN 6.441-2}).\textsuperscript{58} The importance of wind in such a process is obvious. Unlike the process that drives lightning bolts, the wind is not mixed with another powerful element of the universe (only with cloud particles), so that the destruction that

\begin{itemize}
\item \textsuperscript{55} Bailey (1947), Vol. 3, 1616.
\item \textsuperscript{56} Godwin (1991), 124.
\item \textsuperscript{57} Godwin (1991), 43.
\item \textsuperscript{58} Godwin (1991), 43.
\end{itemize}
the prester wreaks upon the natural world derives solely from the power of wind. Lucretius also acknowledges the existence of an “imitation” prester that occurs when “an eddy of wind by itself wraps itself in clouds, gathering together seeds of cloud from the air” (involvant venti se nubibus ipse / vertex corradens ex aere semina nubis – DRN 6.443-4). The imitation is not a true prester since the whirlwind is formed outside of clouds.59 Lucretius concludes his discussion by stating that whirlwinds can occur on land, but are seen at sea more due to its flat expanse. All of Lucretius’ observations are anticipated in the “Letter to Pythocles” where Epicurus refers to such phenomena as presteres and also attributes their formation to wind. Bailey notes that both Epicurus and his Latin successor fail to follow the earlier Greek tradition of distinguishing between the τυφῶν, which was comprised solely of wind, and the πρηστήρ, which had an element of fire.60 However, as neither Epicurus nor Lucretius make any references to fire, I believe that they both are describing only the τυφῶν, but giving it the inaccurate name of πρηστήρ.

Lucretius continues his exploration into atmospheric phenomena by describing the different ways in which clouds form. His first explanation suggests that clouds develop “when many bodies as they fly in this upper expanse of heaven have all at once come together” (ubi corpora multa volando / hoc supero in caeli spatio coiere repente – DRN 6.451-2). Such particles “first of all cause little clouds to form; then these grip hold of one another and flock

59 Bailey (1947), Vol. 3 1616
60 Bailey (1947), Vol. 3 1618 and for derivation of prester see Godwin (1991), 124.
together, uniting they grow and are borne on by the winds until at last a furious tempest has gathered together” (faciunt primum parvas consistere nubis / inde ea comprehendunt inter se conque gregantur / et coniungendo crescent ventis feruntur / usque adeo donec tempestas saeva coortast – DRN 6.455-9). Despite the fact that the particles that compose them are clearly in motion, Lucretius fails to acknowledge any form of movement by the fully formed clouds; instead he has the winds carry them through the sky. As said above (p.32), Lucretius does seem to believe that clouds can move of their own accord, but only refers to such movement in that one passage, and all other times the winds control their motion. Since the cloud particles are mobile before they begin to cluster in dense formation, I will argue that the very accumulation of such particles is what is responsible for their cessation of movement. I believe that once they have reached a certain bulk or density, such movement is impossible.

Epicurus offers an additional insight into what causes the cloud particles to remain still once they are clumped close together. While Lucretius notes that the particles are held together both by being “intertwined in slight manner” (modis . . . indupedita / exiguis – DRN 6.453-4) and by “pressure” (compressa), Epicurus clarifies the latter of these reasons, remarking that clouds form “because the air is condensed under the pressure of winds” (emphasis added). Although Bailey notes that Epicurus’ explanation here is not directly paralleled in Lucretius’ first cause of clouds, the Greek philosopher’s assertion that wind

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61 Ad. Pyth. συνίστασθαι καὶ παρὰ πυλήσεις ἀέρος πνευμάτων συνώσει
can hold particles together still remains valid.\textsuperscript{62} Thus, the winds serve two
distinct roles in the Lucretius’ first explanation. First, the force and pressure of
the winds keeps the clouds particles together when they are bonded to each
other only tenously. Second, once the clouds are bonded together and incapable
of movement, the winds move them across the sky.

Lucretius’ second explanation of clouds also portrays wind as the driving
force behind their formation. He describes how ”when first the clouds form,
before the eyes can see them still thin, the winds carry them and drive them
together to the topmost peaks of the mountain” (\textit{cum consistent nubila primum /}
\textit{ante videre oculi quam possint tenvia venti / portantes cogunt ad summa}
\textit{cacumina montis} – DRN 6.462-4). Lucretius also reasserts that power of wind is
intense at high altitudes (see pp. 25-6), when he proclaims that ”clear fact and
our sense, when we climb high mountains, proclaim that windy regions stretch
above” (\textit{nam loca delarat sursum ventosa patere / res ipsa et sensus montis cum}
\textit{ascendimus altos} – DRN 6.468-9). The winds function in the very same way as in
Lucretius’ previous example: namely, they drive the clouds across the sky and
collect them together. Additionally, based on the passage from the “Letter to
Pythocles” (p. 42), we can assume that the pressure of wind also holds together
the wispy newly formed clouds. Lucretius’ third and fourth explanations of
clouds do not mention wind in any capacity, but rather suggest that the particles
of cloud originate either from wispy vapors rising up from the ground or from
particles that fall from outer space.

\textsuperscript{62} Bailey (1947), Vol. 3 1620.
The last atmospheric phenomenon that Lucretius chooses to discuss is rain, a topic also touched on briefly by Epicurus. As Lucretius has just referred to exhalations rising from the earth in his discussion of clouds, he simply elaborates on the idea, stating that, “many seeds of water rise up with the clouds themselves from out of all things” (\textit{semina aquai / multa simul . . . consurgere nubibus ipsis / omnibus ex rebus – DRN 6.497-9}). The exhalations (\textit{aestus}) do not appear to be related to wind in any way; the same word appears again in Lucretius’ discussion of Avernian lakes and plagues, a topic that will be discussed later. The winds do contribute to the accumulation of water in the clouds since they “carry the clouds over the great sea” (\textit{supera magnum mare venti nubila portant – DRN 6.505}) where such moist vapors are more abundant. However, once the water is firmly packed into the clouds, the winds also play a part in releasing the rain. Lucretius describes how “the force of the wind pushes it on and the very mass of the clouds, driven together in greater throng, presses on it and weighs it down from above, and makes the showers stream out” (\textit{vis venti contrudit et ipsa / copia nimborum turba mariore coacta / urget et e supero permit ac facit effluere imbris – DRN 6.510-2}). Following his description, Lucretius distinguishes between the cause of a gentle shower and a violent rainstorm. A gentle shower is sent forth from the clouds when they “are thinned by the winds or broken up, smitten by the sun’s heat above” (\textit{rarescunt . . . ventis / aut dissolvuntur solis super icta calore – DRN 6.513-4}) while a downpour occurs when clouds “are violently pressed by either force, their own mass and the
impulse of the wind” (*vementer utraque / nubile vi cumulata premuntur et impetem venti – DRN 6.517-8*). In both cases, wind plays a prominent role.

Before turning to Lucretius’ exploration of terrestrial phenomena, it is important to note a passage that serves as a conclusion to his discussion of meteorological phenomena. Lucretius mentions that although there are “other things which grow and are formed up above and which gather in the clouds” such as wind, ice and snow, “it is very easy to find out and to see mentally how all these things are made and why they are brought into being when you have fully grasped the characteristics with which their atoms are endowed” (*cetera quae sursum crescunt sursumque creantur / et quae concrescunt in nubibus . . . perfacilest tamen haec reperire animoque videre / omnia quo pacto fiant quareve creentur / cum bene cognoris elementis reddita quae sint – DRN 6.527-8 and 6.532-4*). In the “Letter to Pythocles,” Epicurus does mention how each of these phenomena forms in great detail, but for this essay, I will only discuss wind. Epicurus says that, “winds arise from time to time when foreign matter continually and gradually finds its way into the air; also through the gathering of great store of water. The rest of the winds arise when a few of them fall into the many hollows and they are thus divided and multiplied.” While Hicks’ translation is somewhat unpolished, Epicurus makes it clear that wind is different from air as a result of the “foreign matter” (Ἀλλοφυλίας). I have also

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63 Godwin (1991), 49.
64 *Ad. Pyth. 106* Τὰ δὲ πνεύματα συμβαίνει γίνεσθαι κατὰ χρόνον / ἀλλοφυλίας τινὸς ἀεὶ καὶ κατὰ μικρὸν παρεισδυμένης καὶ / καθ’ ὦδατος ἀφθόνου συλλογήν τὰ δὲ λοιπὰ πνεύματα / γίνεται καὶ ὄλγων πεσόντων εἰς τὰ πολλὰ κοιλώματα / διαδόσεως τούτων γινομένης.
included the passage from Epicurus to demonstrate how winds can multiply within hollows because Lucretius will provide the same explanation in his discussion of earthquakes and volcanoes.

Lucretius introduces earthquakes as his first terrestrial phenomena and Bailey indicates that the poet’s choice of earthquakes may be explained by “the large part played in their causation by wind.”

Lucretius begins his discussion by stating that the “the earth below, just as above, is full on all sides of windy caverns and that it bears in its bosom many lakes and many pools and cliffs and sheer rocks” (terr... subter item ut supera ventosis undique plenam / speluncis multosque lacus multasque lacunas / in gremio gerere et rupis deruptaque saxa – DRN 6.536-539). However, while Lucretius does place considerable emphasis on wind in his discourse on earthquakes, his first two causes do not involve the element. Instead, both causes involve large subterranean disturbances such as the collapse of a cave or the toppling of a huge mass of soil into the pools. Lucretius’ third cause of earthquakes does give wind a crucial role. He reveals that “when the wind gathering through the cavernous place of the earth blows strong from one point, and with all its weight presses on the lofty caves with mighty strength, the earth leans over to where the swooping force of the wind presses it” (ventus cum per loca subcava terrae / collectus parte ex una procumbit et urget / obnixus magnis spelunca viribus alas / incumbit tellus quo venti prona permit vis – DRN 6.557-560). Lucretius’ explanation is somewhat paralleled in Epicurus’ surviving writings, but no exact

65 Bailey (1947), Vol. 3 1633.
counterpart exists. In the “Letter to Pythocles,” Epicurus states that, “earthquakes may be due to the imprisonment of wind underground and to its being interspersed with small masses of earth and then set in continuous motion, thus causing the earth to tremble.”\(^\text{66}\) Another explanation of Epicurus exists in a pseudo-Plutarch compilation of quotes by Aetius where he declares that "it is possible that the earth is moved by being violently thrust upwards when struck by the air from below, which is humid and dense; it’s also possible that it happens because the earth is cavernous underground, and thus jolted by the wind, which bursts into its cavities, which are like caverns, and diffused into their interiors."\(^\text{67}\) As elements of both quotes of Epicurus are found in Lucretius’ third cause, Bailey has little doubt that his explanation did derive from that of his Greek predecessor.\(^\text{68}\) However, Lucretius’ description is much more extensive as he not only emphasizes the importance of wind to the creation of earthquakes, but also the cyclical nature of wind that I have already mentioned (see pp. 18-9).

While Lucretius’ third cause depicts wind influencing the motion of the surrounding earth, his fourth attributes even more power to wind. The wind in the third cause has a great deal of force since it was able to cause the earth to sway, but in his fourth cause, the winds have enough force to split the earth itself. As noted above (p. 11), the wind can either originate from within the

\(^{66}\) Ad. Pyth. 105 Σεισμοὺς ένδέχεται γίνεσθαι καὶ κατὰ πνεύματος ἐν τῇ γῇ ἀπόληψιν καὶ παρὰ μικροὺς ὀγκοὺς αὐτῆς παράθεσιν καὶ συνεχῆ κίνησιν, ὅταν κράδανσιν τῇ γῇ παρασκευάζῃ

\(^{67}\) Aetius. Doxography, III.15.11 (Plutarch, III 15.9); Greek text unavailable; translator unavailable; translation from <http://www.epicurus.info/etexts/epicurea.html>

\(^{68}\) Bailey (1947), Vol. 3, 1639.
earth or from outside; either way the effects are the same. The winds “rage among the great caves in turmoil, and rise, carried on a whirl; and when afterwards the moving force drive forth burst out and at the same time cleaves the earth and causes a huge chasm” (speluncas inter magnas fremit ante tumultum / versabunda<que> portatur post incita cum vis / exagitata foras erumpit et simul altam / diffindens terram magnum concinnat hiatum – DRN 6.581-4).

While the tremendous force of wind has already been established through many of the natural phenomena already discussed, here wind takes on a truly destructive role and becomes a substantial threat to human life due to the immense cavern it leaves behind. The destructive effects of wind and the fear it generates will be discussed at greater length in the next chapter.

Not all the winds can generate the amount of force needed to split the surface of the earth and Lucretius explains what damage such winds can still cause. The poet reveals that “even if it does not burst forth, yet the very impulse of the air and the fierce force of the wind are spread, like a fit of shivering throughout the riddling passages of the earth, and thereby induce a trembling” (quod nisi prorumpit tamen impetus ipse animai / et fera vis venti per crebra foramina terrae / dispertitur ut horror et incutit inde tremorem – DRN 6.591-3).

Such an explanation correlates very well with Epicurus’ descriptions within Aetius and the “Letter to Pythocles.” In order to better convey such movement of the earth, Lucretius even adds an analogy, stating that the wind is like “cold, when it comes deep into our members” and “shakes them against their will and constrains them to tremble and to move” (frigus uti nostros penitus cum venit in
artus / concutit invitos cogens tremere atque movere – DRN 6.594-5). Like with the third cause, the earth itself trembles but the force and movement of the wind instigate this motion.

Following a brief discussion of the constant size of the sea, Lucretius moves on to describe the cause of the volcanic eruptions of Mt. Etna. Unlike in his discussions of other phenomena, Lucretius here provides only one explanation. The depths of Etna are filled with hollow caverns of wind and air, just like those below the surface of the earth (see p. 20). As with lightning, the wind enclosed within the hollows grows hot through its motion and heats the surrounding rocks as well. Once the wind “has struck out from them a fire hot with swift flames, it rises up and so drives itself forth on high straight through the mountains jaws. And so carries its heat far” (terramque et ab ollis / excussit calidum flammis velocibus ignem, / tollit se ac rectis ita faucibus eicit alte / fert itaque ardorem longe – DRN 6.687-690). Such a process is remarkably similar to the generation of lightning bolts and the main difference between the two events is the surrounding material, for lightning bolts form in storm clouds while volcanic eruptions form surrounded by solid rock. Additionally, the force of the wind in the volcanic eruption is tremendous. Lucretius describes how the wind “scatters the ash and rolls on a smoke with thick murky darkness, and all the while hurls out rocks of marvelous size” (longeque favillam / differt et crassa volvit caligine fumum / extruditque simul mirando pondere saxa – DRN 6.690-2). Despite terrestrial wind possessing less strength than celestial wind (see pp. 26-7), the wind below and at the surface of the earth still has enough force to carry
massive rocks through the air. Lucretius adds a brief passage to the end of his
discussion explaining where much of the material cast out of the volcano
originates. He explains that the waves of the ocean can interact with the volcanic
substances since “sea caves stretch underneath right to the lofty jaws of the
mountain” (*mari speluncae montis ad altas / perveniunt subter fauces – DRN
6.696-7*). While Lucretius’ discussion is tied specifically to Mt. Etna, Bailey notes
how it can be applied to all the other volcanoes that were known by the Romans,
since all these volcanoes were located near the coast.69

Furthermore, Lucretius states that some forces (presumably the winds)
“lift up the flame and cast up rocks and raise clouds of dust” (*extollere flammam
/saxaque subiectare et harenae tollere nimbus – DRN 6.699-700*). Thus, the sand
and rocks that are carried up through the mouth may have come from outside of
the mountain.70 Unfortunately, the passage contains a lacuna that prevents us
from translating it directly and Lucretius’ account does not have a parallel in
Epicurus (or any Greek text). However, Bailey has discovered a passage of Justin
that is remarkably similar to that of Lucretius. In the passage, Justin describes
how “when a strong wind passes in through the openings of the cavities, heaps of
sand are cast up” (*et ubi acrior per spiramenta cavernarum uentus incubuit,
harenarum moles egeruntur – Hist iv. 6*).71 Justin goes on to reveal that “the
shock of the waters forces into the depths a portion of air hurried along with it,
and then keeps it confined till, being diffused through the pores of the earth, it

70 Bailey (1947), Vol. 3, 1657
London: http://www.forumromanum.org/literature/justin
kindles the matter which nourishes the fire” (Nam aquarum ille concursus
raptum secum spiritum in imum fundum trahit atque ibi suffocatum tam diu tenet
donec per spiramenta terrae diffusus nutrimenta ignis incendat – Hist. iv. 15). The
passage declares that wind not only sweeps sand and other debris out of Mt.
Etna, it also brings up such material from the sea; the latter statement was
impossible to confirm in Lucretius’ work because of the lacuna.

In the remaining topics of Book 6, Lucretius surprisingly fails to mention
wind at all. His discussion of Avernian lakes instead touches upon the idea of
exhalations from the earth denoted by the word aestus. Bailey notes how in De
Rerum Natura, Lucretius uses multiple definitions for aestus from the more
standard “heat” to “spray” to the more obscure “exhalation.”72 Although the
exhalation does possess motion and force, the connection with wind is tenuous
at best, as the element is not mentioned once in the discussion. Air, like in all the
other natural processes, does serve as the medium through which the
exhalations flow, but it takes no active role in the process. In Book 6, Lucretius’
final discussion, concerning plagues, also contains no direct references to wind.
Rather, the “atmosphere, which chances to be noxious to us, sets itself in motion,
and harmful air begins to creep forward, in the form of cloud and mist” (se
caelum quod nobis forte alienum / commovet atque aer inimicus serpere coepit /
ut nebula ac nubes – DRN 6.1119-1121). As I have already mentioned that
Lucretius believed that wispy clouds do possess the ability to move of their own

accord (see p. 31), I believe that wind does not contribute to the development of plagues because he would have mentioned it directly.
Chapter 3: Destruction and Fear

As has been shown, wind plays a crucial role in many natural processes. Due to its rapid movement and the force that derives from this movement, wind can effectively act upon others bodies of the universe. However, now that the presence of wind as a driving force behind natural phenomena has been clearly established in Book 6, it is important to look at the impact that these natural processes have on human life: both the physical destruction that they can cause and the fear that they generate within the human mind. Lucretius does want his readers to fear destructive natural phenomena such as lightning bolts and earthquakes since these events represent a genuine threat to human lives. However, Lucretius believes that the fear and anxiety that men have concerning the origins of destructive phenomena are unnecessary. Such events were created not by angry and vengeful deities bent on human extermination but by simple atomic interactions. However, wind one of the most important. I am not suggesting that Lucretius considers that wind is the arche (ἀρχή or “origin”) since he has already made his beliefs clear on the subject.73 In Book 1, Lucretius scathingly attacks the Greek Monists, stating that "those who have thought that fire is the substance of things … and those who have set up air as the first beginning for the begetting of things, or again all who have thought that moisture fashions things alone by itself, or that earth creates all and changes into all the natures of things, seem to have strayed very far away from the truth” (qui materiem rerum esse putarunt / ignem … et qui principium gignundis aera rebus

73 The ἀρχή in ancient Greek philosophy referred to a substance from which everything in the universe was created
In Book 6, wind does not create new substances from itself, but rather moves the existing elements of the universe around to generate natural events. Wind is simply a very important driving force behind many natural processes.

Lucretius frequently describes the destructive effects of natural phenomena, emphasizing that such events represent real physical danger. However, not all of the phenomena that he analyzes in book 6 pose a threat to human life and Lucretius is careful to distinguish such events from their hazardous counterparts. For example, wind itself can be dangerous and Lucretius takes note of the fact in his discussion of invisible processes in book 1. He describes how “the might of the awakened wind lashes the ocean and o’erwhelms vast ships and scatters the clouds ... and harries the mountain-tops with blasts that rend the woods: with such fierce whistling the wind rages and ravens with angry war” (venti vis verberat incita pontum / ingentisque ruit navis et nubile differt ... montisque supremos / silvifragis vexat flabris ita perfurit acri cum fremitus saevitque minaci murmure ventus – DRN 1.271-2 and 274-6). His use of the verb ruere “to destroy” for the wind’s effect on the ships highlights the dangerous potential of the element.

While thunder and the lightning flash do not endanger humans, the lightning bolt poses a real threat. After his introductory passage on lightning

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74 For other passages, see pp. 6, 12 and 23.
bolts, Lucretius describes how the bolts are "made with such force that they can with their blows burst open towers, overthrow houses, pluck up beams and joists, and upheave and move the monuments of men, take the life from men, lay low the flocks on every side" (impete tanto / fiant ut possint ictu discludere turris / disturbare domos avellere tigna trabesque / et monumenta virum commoliri atque ciere / examinare homines pecudes prosternere passim – DRN 6.239-243). Here, Lucretius even states outright that humans and their structures (monumenta virum) perish from the mighty force of the lightning bolt. Even though Lucretius denies the divine origin of lightning bolts, he still admits the danger of the bolt; humans “are struck and reek of the flames of lightning with their breast pierced through” (icti flamas ut fulguris halent / pectore perfixo – DRN 6.391-2) and how an individual can be “wrapt and entangled . . . in the flames, caught up in a moment in the fiery whirlwind of heaven” (volvitur in flammis . . . inque peditur / turbine caelesti subito correptus et igni – DRN 6.394-5). Lucretius also mentions the lightning bolt’s ability to destroy shrines, temples and statues. Although he does not want us to fear the source of the lightning bolt, Lucretius certainly believes that the fear of the bolt itself is justified.

Although whirlwinds and waterspouts are hazardous to mortal lives, Lucretius only briefly mentions their impact on the human world, possibly due to the brevity of his discussion. He does reveal that the column of cloud “descends from the sky into the sea, around which the surges boil, violently stirred by breathing blasts and all ships that are then caught in that turmoil are
harried and come into great danger” *(in mare de caelo descendat, quam freta circum / fervescunt graviter spirantibus incita flabris / et quae cumque in eo tum sint deprensa tumultu / navigia in summum veniant vexata periclum – DRN 6.427-30)*. Since Lucretius associates *presters* with other phenomena that form from storm clouds (such as thunder and lightning bolts), perhaps he expects his readers to fear *presters* in the same way as those phenomena. In addition, Lucretius has already described how dangerous wind can be in his discussion of invisible processes, and as *presters* are formed predominantly from wind, he may not find it necessary to repeat the violent events found in those lines (1.271-279).

Apart from the plague at the end of Book 6, no other event seems to cause more physical damage to the lives of humans than earthquakes. Lucretius’ first description of the effects of earthquakes focuses on dwellings: “the houses that are built up upon the earth, yea, the more they are severally raised towards the sky, bend over in suspense, tottering . . . and the timbers driven forward hang out ready to drop” *(supera terram quae sunt extracta domorum / ad caelumque magis quanto sunt edita quaeque / inclinata minent . . . protractaeque trabes inpendent ire paratae – DRN 6.561-4)*. As in his discussion of the lightning bolt (see pp. 52-3), Lucretius includes descriptions of the destruction of manmade buildings to emphasize how dangerous some phenomena can be. His next description of earthquakes expresses just how harmful such events can be for larger communities: “many walled towns have fallen through great movements

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on land, and many cities have sunk down deep into the sea, inhabitants and all”

(\textit{multaque praeterea ceciderunt moenia magnis / motibus in terris et multae per mare pessum / subsedere suis partier cum civibus urbes} – DRN 6.588-90).

However, his final account of the destructive effects is by far the grimmest and it relates back to an earlier discussion. In Book 5, Lucretius states that since the world had a beginning, it must have an end, at which time “the massive form and fabric of the world, held up for many years, shall fall headlong” (\textit{multosque per annos / sustentata ruet moles et machina mundi} – DRN 5.95-6). In the same passage, the poet even hints at how the end of the world will begin, suggesting that “within a little while you will behold earthquakes arise and all things shaken in mighty shock” (\textit{graviter terrarium motibus ortis / omnia conquassari in parvo tempore cernes} – DRN 5.105-6). In Book 6 he repeats the message and the poet places special emphasis on the fact that the end of the world will happen. He offers a warning to those who “believe as they will that heaven and earth will be indestructible, entrusted to some everlasting protection” (\textit{quamvis caelum terramque reantur / incorrupta fore aeternae mandata saluti} – DRN 601-2), explaining that even such a belief will falter when “the very present force of danger applies on some side or other this goad of fear, lest the earth, snatched away suddenly from beneath their feet be carried into the abyss, and the sum of things, left utterly without foundation, follow on, and there be a tumbling wreck

\footnote{76 Lucretius does mention that the end of the world will culminate in a final war between the major elements (air, earth, wind and fire) before either the sun burns everything or the rivers flood all on earth. See Lines 5.380-415 and for commentary on these lines, see W. M. Green, (1942). “The Dying World of Lucretius,” \textit{The American Journal of Philology}. Vol. 63, No. 1 51-60.}
of the whole world” (praesens vis ipsa pericli / subdit et hunc stimulum quadam de parte timoris, / ne pedibus raptim tellus subtracta feratur / in barathrum rerumque sequatur prodita summa / funditus et fiat mundi confusa ruina –DRN 6.603-7). It is clear that Lucretius wants his readers to fear earthquakes not only because of the massive amount of physical damage they can inflict on the world, but also because of the part they may play in the destruction of the physical universe.

In all of his discussions of natural phenomena, Lucretius’ primary purpose is to explain that such events are caused by atomic interactions rather than by divine influence. Lucretius believes that much of the anxiety and fear that surround natural phenomena is based on the assumption that they are of divine origin. In the beginning of Book 6, Lucretius explains how such events can affect mortals: “things which bring their (i.e. humans’) hearts low through dread of the gods, and bow them down groveling to earth, because their ignorance of true causes constrains them to assign things to the ordinance of the gods and admit their domination” (faciunt animos humilis formidine divom / depressosque premunt ad terram propterea quod / ignorantia causarum conferre deorum / cogit ad imperium res et concedere regnum – DRN 6.56-9; parenthesis added). Lucretius explains that, “the causes of these workings they can by no means see, and think that a divine power brings them about” (quorum operum causas nulla ratione videre / possunt ac fieri divino numine rentur – DRN 6.60-1). Lucretius believes that the gods do not interfere with any of the processes and events on earth, but rather remain up in the sky, isolated and content (see p. 16).
Mortals ignorant of the teachings of Epicurus will needlessly attribute natural events to divine beings and tremble at such manifestations of the power of the gods.

Lucretius’ “protest against the theological view” of lightning bolts serves as the best example as to why his readers should not fear the origin of such phenomena. He clearly states at the beginning of his argument that studying the atomic processes is the best way to understand the true nature of the lightning bolt, “not by unrolling vainly the Tyrrhenian prophecies and seeking out tokens of the hidden purpose of the gods” (non Tyrrhena retro volventem carmina frustra / indicia occultae divum perquirere mentis – DRN 6.381-2). Following such a declaration, Lucretius asks a series of rhetorical questions aimed at convincing his readers of its veracity. All of Lucretius’ statements are phrased in a similar fashion: “If Jupiter and the others gods shakes the shining quarters of heaven with awe-inspiring crash and hurl the fire to whatever point each may will” why does/does not something occur: (si Iuppiter atque alii fulgentia divi / terrifico quasiuint sonitu caelestia templ / et iaciunt ignem quo cuiquest cumque voluntas – DRN 6.387-389). Lucretius emphasizes events that seem illogical and contrary to the gods’ moral nature. For example, he asks, “why does Jupiter never hurl his thunderbolt to earth and pour forth his thunders when the heaven is clear on all sides?” (denique cur numquam caelo iacit undique puro / Iuppiter in terras fulmen sonitus – DRN 6.400-1). Lucretius

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expects his readers to realize that such actions do not make logical sense, and thus the lightning bolts cannot originate from the gods.

For the final part of my essay, I would like to compare Lucretius’ discussion of wind with that of another Roman philosopher, Seneca the Younger, who lived from 4 B.C.E to 65 C.E. Seneca, like Lucretius, was committed to explaining the origins of natural phenomena. He compiles many different explanations from a variety of sources in his *Naturales Quaestiones*, written toward the end of his life. Since Seneca is a Stoic philosopher, he adapts many of the explanations to better fit with the philosophy. Additionally, while *De Rerum Natura* cannot be said to be completely devoted to the analysis of natural phenomena, Seneca fills his entire work, made up of seven books, to discussions of such events, including one book specifically devoted to wind. Before considering how Seneca treats wind in the *Naturales Quaestiones*, it is important to get a brief sense of how the Stoics viewed the world. Like the *animus/anima* in Epicureanism, the Stoics believed that there was a vitalizing force that they called “breath” or *pneuma* (*spiritus* in Latin), which was a mixture of air and fire.\(^78\) In the Stoic doctrine, however, the whole universe is a living organism and every object within it, animate or inanimate, possesses *pneuma*.\(^79\) The Stoics also believed that a rational deity controls the whole world and instigates every all phenomena within it.\(^80\) Such principles are diametrically opposed to those

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\(^79\) Hine, 3.

\(^80\) Hine, 2.
put forth by Lucretius who denies that the gods have any influence over the events on earth.

As I have said (p. 51), I believe Lucretius uses wind as the driving force behind many natural processes. Seneca also employs winds to explain various natural processes, but, as Williams notes, he also uses winds to stand for various aspects of human character and morality. One example of such a comparison can be found in book 5 of the Naturales Quaestiones in a series of passages where Seneca analyzes violent formations of wind. Williams notes how the poet’s discussions on such violent formations are preceded by depictions of more serene winds, a deliberate juxtaposition that sets up a stark contrast between natural behavior and “unnaturalness.”

Seneca mentions how cloudbursts, whirlwinds and waterspouts can form before turning to a discussion of the different cardinal winds. However, later in the book, he mentions how that winds relate to the violence of men in the world, explaining that “the god who manages the world gave the wind the task of keeping the air moving and poured out winds from all directions to prevent anything becoming desolate through neglect – it was not so that we could cram armed soldiers into fleets that would take control of a large part of the sea nor so that we could search for an enemy on the sea or beyond the sea” (dispositor ille mundi deus aera uentis exercendum dedit et illos ab omni parte, ne quid esset situ squalidum, effudit, ut nos classes partem freti occupaturas compleremus milite armato et hostem in mari aut post

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82 Williams (2005), 422.
Williams believes that such violent depictions should be compared with the equally destructive natural phenomena mentioned earlier, suggesting that “just as whirlwinds and other forces of nature can bring chaos to the ordinary cycle of things, so the implication is that Seneca’s human whirlwinds are themselves ‘natural’ deviants, the ordinary working of human/social (Stoic) ratio overthrown by the excesses of these occasional but (experience tells us) inevitable transgressors.” Conversely, Lucretius chooses in *De Rerum Natura* to not associate wind and other elements of nature with different kinds of moral character, but instead focuses on their activity in the natural world.

Seneca argues that winds do play an important role in the natural world, but he does so in a completely different way than Lucretius. He says that, “he (the rational deity) gave the winds to control the temperature of the sky and the earth, to elicit and restrict the flow of water, to nurture the fruit of crops and trees” (*edit ille ventos ad custodiendam caeli terrarumque temperiem, ad euocandas supprimendasque aquas, ad alendos satorum atque arborum fructus* – *NQ* 5.18.13; parenthesis added). Although Lucretius may agree with Seneca concerning the role of wind in natural processes, the latter’s depiction of “god our maker” (*auctore nostri deo* – *NQ* 5.18.13) creating the winds goes against all of Lucretius’ beliefs. Furthermore, Seneca denounces the theory of atoms and atomic motion, stating that, “some people form air from discrete particles, like

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83 Translations are by H. Hine (see note 75) and Latin text is from <http://naturalesquaestiones.blogspot.com>
84 Williams (2005), 422.
dust. They could not be further from the truth” (*Hunc quidam ex distantibus corpusculis, ut puluerem, struunt plurimumque a uero recedunt* – NQ 2.6.2).

Instead, he adopts the Stoic idea that air is filled with “tension” (*intentionem* – NQ 2.6.3) and possesses a “natural capacity for self-motion” (*naturalem vim movendi se* – NQ 5.5.1).

Perhaps it seems foolish to contrast Lucretius with Seneca as the two poets embrace philosophies that are so different. However, I have shown that Seneca, like Lucretius, makes an effort to explain the role of wind in the natural world, but does so from the standpoint of Stoicism. While Seneca includes the gods (or god) as the driving force behind all events in the universe, Lucretius turns away from such an idea, and instead explains how everything is governed by atomic theory and the “outer view and the inner law of nature” (see p.1). Wind is simply an animate but insentient element that drives many of the natural phenomena in the world.
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