Apuleius, *On the Cosmos*

INTRODUCTION

[285] When I have been reflecting, and delving deeper, it has often struck me, Faustinus, my son, that philosophy is the pursuit of virtue and scourge of the vices: it participates in things divine. That is especially true in the present case, since the ability to interpret nature and to investigate things that are far beyond what we can see is something that philosophy claims for itself. Others quail at the magnitude of the subject: they think that the work this sort of thing requires is difficult and deep. Only philosophy does not doubt its own ability, or think itself unworthy, [286] because to philosophy is given judgement of matters divine as well as human. On the contrary, in fact: it believes that these beautiful sciences, and the work they involve, are consistent with its calling, that such an occupation suits its interests and inclinations. [287] Human beings cannot physically visit the cosmos and its interior, cannot leave behind their terrestrial home to inspect those regions; but taking the lead of philosophy and steeped in its discoveries they have dared to travel intellectually through the regions of heaven, taking roads which their own incisive investigation showed them to be passable only in thought and for the wise. So, although nature wanted our distance from the cosmos to keep us away from its neighbourhood, [288] our agile thinking gains us an acquaintance with it, with its size and its careering circuits. The mind possesses godlike 'eyes' which can easily make out and recognise the well-springs of the cosmos, and the intellect passes this knowledge on to others – [acting] just like prophets, who are filled by the majesty of the gods and reveal to everyone else what they alone, thanks to their divine gift, can see.

There are people who find no shortage of avid readers for their descriptions of the character and qualities of a particular place: the walls of a city, a stream that flows somewhere, the beauty and grandeur of the mountains, and all the many other things they have described. They enthuse about the cliffs at Nyssa, the caves at Corycus, the shrines at Olympus, the steeps of [Mount] Ossa – and so on, each and severally. [289] But I pity them: all their work, and it captures nothing of any size, nothing with the slightest claim on wonder. But it is not surprising that this is how it is with them: they have no inkling of anything greater, and do not attend to anything which a bit more effort would open to contemplation. If they could, just once, contemplate the

[Aristotle], *On the Cosmos*

Philosophy has often struck me as a godlike and divine thing, Alexander, especially in cases where it alone can elevate us to the contemplation of the universe, and concerns itself with knowing the truth about them. Others keep their distance from it because it is too elevated, too vast. But philosophy is not afraid of this subject, and does not think itself unworthy of what is more beautiful than anything else. On the contrary, it supposes that it has close affinity with it, and that it is especially suited to learning about these things. We cannot reach heaven physically, or leave the earth in order to inspect the holy country there [10] – as the foolish Aloiadai once had it in mind to do. But thanks to philosophy, the soul, led by the intellect, is elevated and transported; it finds itself on a tireless journey, and in the regions of the mind it surveys things that normally stand far away. It easily recognises what is akin to it, I suppose, and the soul's divine eye grasps things that are divine – and delivers them as prophetic revelation to humans.

And so it is: for the soul wishes to communicate to everyone whomsoever, as far as it can, everything it values. This is why some people have laboured to sketch for us the nature of some particular place, or the layout of some particular city, or the extent of a river, or [20] the beauty of a mountain – all the kinds of thing people have done. Some of them talk about Ossa, some Nyssa, some the cave at Corycus, others whatever there happens to be in whatever place. One should pity them for their small-mindedness: they are struck with wonder at anything, and make a huge deal out of a trivial scene. This happens to them because they cannot see what is greater – I mean the cosmos, and the larger components of it. If they really knew, they would not

terrestrial sphere, or the entire cosmos in the same way, it would convince them that the small individual parts which make up the whole were not so worthy of praise. Walking in the footsteps of Aristotle, the wisest and most learned of philosophers, and of Theophrastus, the writer, I shall, then, as far as my thought can achieve it, speak of the entire celestial system: I shall cover the kinds of things it includes along with their functions, and explain why and how they move.

COSMIC SPHERES

1. The cosmos as a whole consists in the combination of heaven and earth, and the nature of everything that belongs to either. Here is another [way of defining it]: the cosmos is an ordering adorned by god's generosity and governed under the protection of the gods. [290] Its solid and immobile pivot (that is how I would render [the Greek word] *kentron*) is occupied by the earth, which is mother and nurse of all living things, and whose entire surface, as one can see, is enclosed and wrapped in the fluid air, which is like a vault. Beyond [the air] is the home of the gods, which we call 'heaven'. We can actually see that it is full of divine bodies: those fires of unsurpassed beauty, the dazzling sun, the moon and the other stars. Heaven follows their circular paths through the cycles of day and night, leading the chorus of stars which slip along unceasingly, and will never come to an end for want of time. Since the whole heaven revolves in this way, like a ball, it has to be held – rooted as it were. Divine craftsmanship has fixed its vertices in just the way that a craftsman holds his wood in pincers when he turns it evenly on a lathe. We call these vertices 'poles': they are like axle-mounts, and the line which extends through is called an 'axis', bisecting the cosmos, and acting as a limit, keeping the earth's sphere in its centre. The vertices, which, as I said, are fixed, are so positioned that one appears above us, to the north (the 'Arctic', as we call it), while the other (the 'Antarctic') is on the other side of the earth, in a place made humid and languid by the southern vapours.

[291] Heaven itself, and the stars which it nurtures, and the whole sidereal network, is referred to as 'aether' – not, as some think, because it is on fire and 'burning', but because of its 'continual and rapid' revolutions. Aether is not one of the four elements which everyone is familiar with, but is very different [from them]. It is counted as a fifth [element], but it is first in rank: divine and invulnerable in kind.

ever experience wonder at any of these things, [391b1] but everything else would seem trivial to them, and not worth a thing in comparison to its superiority. So let me speak and, as far as it is achievable, theologise about all these things, the nature and disposition and movement of each. And I think it is fitting for you, as the best of leaders, to engage with an account of the greatest of things, not to use philosophy to think about anything trivial, and for philosophy not to think about anything trivial, but welcome the best [men] with gifts like these

So the cosmos is a system made from heaven and earth and [10] all the kinds encompassed within them. ('Cosmos' is used in another sense too, to mean the ordering and disposition of the universe protected by god and through god.) The life-giving earth is in the centre of it, unmoved and foundational, the hearth and mother of all kinds of living things. The upper part of the cosmos, which is entirely bounded by an outermost limit, is the dwelling-place of the gods, and is called 'heaven' [*ouranos*]. It is full of divine bodies, which we call 'stars'; it is in eternal motion, and unites the unceasing dance of them all within a revolving circuit they all share. The whole heaven and cosmos is spherical [20] and is, as I said, in continual motion: but there must be two fixed points, opposite each other, as there are in the case of a ball rotating on a lathe, which remain fixed and hold the ball in place, and its whole mass turns around them. These fixed points are called 'poles': [392a1] if you imagine a straight line connecting them – some call this the 'axis' – it will be the diameter of the cosmos, with earth occupying the centre and the two poles its limits. The poles are unmoving. One is always visible, because it is over our heads in the northern region – it is called the 'Arctic'; the other is always hidden on the other side of the earth to the south, and is called the 'Antarctic'.

We call the substance of the heaven and of the stars 'aether' – not, as some say, because it is fiery and 'blazes' (they confuse it with the completely different power possessed by fire), but because it 'always rushes' in a circular path: it is an element different from the four [elements], as one that does not mix and is divine.

2. One group of stars, an uncountably large number of them, moves in the plane of the 'fixed' sphere. Around this runs the band of signs [= the zodiac], which surrounds it at an oblique angle, lit up by its twelve signs. Another group of stars are 'wanderers': they do not move like those in the first group, and indeed they differ from each other in their courses and speeds. They are set on different globes, and serve what I could call an 'uncoordinated order'; some lie further out, some closer in. The stars whose nature is such that they are not believed to deviate at all are part of an infinite horde, but they form a crown for something single, the 'back' of the aether, with the wonderful and holy beauty of their light. Conversely, the seven stars which famously bear the names of gods are set on as many spheres, which lie in a nested series so that the highest sphere is also the largest. These [spheres] are connected in sequence by reciprocal bonds, and are contained within the embrace of the so-called 'fixed' sphere. They are: the globe of Phaeno, which we call Saturn; then, second, that of Phaetho, which we call Jupiter; third, that of Pyroeis, which many people call [the star] of Heracles, and more still the star of Mars; Stilbo follows next, which some people name [the star] of Apollo and others [the star] of Mercury; fifth is light-bringing Juno, also supposed to be the star of Venus; then comes the sphere of the sun, and last of all the moon. [The moon] is the near limit of the towering aether which nourishes the divine and immortal lives of all these [celestial] fires, dissolving and restoring them by making provision in due order and without variation.

[10] Of the stars that the cosmos encompasses, some revolve along with the whole heaven, without wandering, but keeping to the same place. In the middle of them, the so-called 'zodiac' forms an oblique girdle between the tropics; it is divided into twelve areas corresponding to the signs [of the zodiac]. Other stars, the 'wanderers' [= 'planets'], do not move with the same speed as the former, or as each other, but they all have their own circles, so that, among them, one is closer to earth and another further out. The number of the fixed stars is undiscoverable to humans, although they move on the single plane of the whole heaven. But that of the planets amounts all told to seven, situated on as many circles, which are arranged in sequence [20] so that the higher is larger than the lower. The seven circles are nested in each other, but all are surrounded by the sphere of the fixed stars. The circle of Phainon, also called that of Cronus, always has the place next in from it; and then that of Phaethon, also known as the circle of Zeus; then Pyroeis, known as the sphere both of Heracles and of Ares. Sixth is Stilbon, which some call the sphere of holy Hermes, but others that of Apollo. After that comes the circle of Phosphorus, which they call Aphrodite (but others again Hera); then that of the sun, and finally that of the moon, which is the lower limit of the aether [30] which embraces all the divine bodies and their serial movements.

Air / Atmosphere

3. After that part of the cosmos which lies within the bounds of the aether (which has a distinct size and weight, and is invariable in its nature) comes the mortal region, closer now to the earth. The outer parts of this region are somewhat thin and vaporous where they touch the hot lower limit of the aether (to the extent that a tiny thing can 'touch' something enormous, or something sluggish what moves very fast); but it is scorched at the edges by the sun as it makes its circuit. Flames, which are clearly visible to our eyes, can be seen as they are emitted, and leap up and flare. The Greeks call these 'comets', *docidae* ['planks'] and *bothyni* ['trenches']. We often see them streaking by: they light up readily and are even more readily extinguished.

Immediately after the aetherial and divine part of the cosmos – which we affirm to be organised and undisturbed, unwavering and impassive – comes the part which is everywhere easily affected and disturbed and, in brief, is destructible and perishable. The first bit of it is the thin and flame-like substance [392b1], which is ignited by the aether, because of its size and the speed of its motion. In the fiery and supposedly chaotic [substance], lights shine out, flames shoot forth, and 'planks' [*dokides*] and 'trenches' [*bothynoi*] and what are called 'comets' are frequently ignited and extinguished.

Next to this, the lower air pours in, more turbid in quality. It is suffused with glacial cold: but it also shines under the effect of light from above and its

Next to this pours in air, misty and frosty in its own nature; but at the same time, it is illuminated by this [fire above] and even burned and becomes

neighbour's heat, and is sometimes cloaked in a purer light. Its state changes frequently, as fragile things do: it is compressed into clouds, and then torn apart by gusts [of wind blowing] back and forth, or burst open by violent storms; it shivers with ice when it snows, and suffers a beating when hailstones are falling; it becomes tempestuous when gales and typhoons are gusting and whirlwinds attack, but catches fire [when assailed by] lightning bolts and the [rest of the] celestial artillery.

Earth and sea

4. Connected to the air is the earth, which carries the seas within itself. It is teeming with animals, clothed in the greenery of the forests, and refreshed by everlasting springs. It conveys cool river streams through meandering landscapes, or pours them into the depths of some sea. It blooms in infinite colours. Mountain heights, level plains and shady groves give it variety. It curves with its sinuous beaches, or is separated out into islands. It glows with villas and cities, which human beings, a species [capable] of wisdom, have constructed to support communities. It has not escaped me that many people who have written on this subject have divided the terrestrial sphere as follows: they have claimed that islands form one part of it, while the rest is a 'continent' [lit.: 'container']. What they do not realise is that all the immensity of this territory is held in the embrace of the Atlantic sea, so that it is itself just one island alongside the islands within it. The Ocean flows around others just like it, some larger and some smaller. But not surprisingly we do not know about them, since we cannot even travel all the way around the one that we inhabit. For just as the islands in our [sc. Mediterranean] sea are separated by its waters, so these [greater, 'continental' islands] lie in a global sea, surrounded by channels of water that are all the wider.

5. Reciprocal bonds between the elements are kept intertwined through artfully contrived relationships. Five 'marriages' give a series of ordered couplings such that lighter elements adhere to heavier. Earth contains water within it (or water, as other thinks, carries the earth); air arises from water; fire is exhaled from the [relative] density of air. Aether, for its part, along with its fires, is set alight by the vitality of immortal god. (Ignited by this divine fire, they burn as bright torches spread throughout the arc of the whole cosmos.) This is why the higher gods have the heights [of the cosmos] for their seats, while creatures of the other, lower species occupy places on earth, where rivers and springs and seas wind along, break out and bubble up, all bright and warm. It is itself of an easily affected capacity, and it is very mutable, and within it [10] clouds form and showers beat down, there are snows and frosts and hail, gusts of winds and of typhoons, and even thunder and coruscations, and thunderbolts coming down, and storm-clouds colliding in their thousands.

Next to the aerial nature earth and sea are set. They teem with plants and animals – and springs and rivers, some of which drain into the earth, while others disgorge into the sea. Thousands of plants give it variety, and lofty mountains and thick copses, and cities built by the intelligent animal, the human. There are islands and continents in the sea. [20] The common account divides our inhabited realm world into islands and continents, but it is unaware that the whole of it is a single island, surrounded by the so-called Atlantic sea. Probably there are many other [such islands] corresponding to this, lying on the other side of it, some larger, some smaller, but all except this one invisible to us: what is true of our islands in relation to the local sea is also true of the inhabited realm in relation to the Atlantic sea (and to the many other such realms in relation to the sea as a whole). They are just large islands washed by large seas. The [30] moist nature as a whole predominates. It allows certain so-called 'cliffs' of earth to appear, and these are inhabited; but water is the dominant nature after the air. Below it, within its depths, at the very centre of the cosmos, all the earth is to be found, compressed and squeezed, immobile and unmoving – and this is everything in the cosmos that we refer to as 'below'.

These five elements [393a1], in their five places, are disposed as spheres, the smaller [spheres] surrounded by the larger: earth by water, water by air, air by fire, fire by aether. They constitute the whole cosmos. The whole of the region above is the home of the gods, that below is home to ephemeral animals; part of it is wet (we call that rivers and springs and seas), part dry (we call that earth and continents and islands).

having their courses, their channels, and their origins in the bosom of the earth.

Inhabited realm (seas, continents, islands)

Of those islands which are in our sea, Trinacria [= Sicily], Euboea, Cyprus, Cyrnus [= Corsica] and Sardinia, Crete, the Peloponnese and Lesbos are worth mentioning. There are some smaller ones which are scattered, like moles, through the open regions of the sea, and others, called the Cyclades, which face the waves in a denser grouping of landmasses.

Some islands are large, including [10] (as has been said) this whole inhabited region, and many other such regions surrounded by the great seas. Others are smaller – those that we can see within [the inhabited realm]. Some of these deserve mention: Sicily, Sardo [= Sardinia], Kyrnos [= Corsica], Crete, and Euboea and Cyprus and Lesbos. There are lesser islands still, such as the Sporades and the Cyclades; others have other names.

6. The greater seas are the Ocean and Atlantic, which are the boundaries curving around our realm. From the west, the sea is funnelled in through a narrow opening and flows through some extremely narrow gulfs. After the Pillars of Hercules, it is poured out again, and spreads over an immense area. In places where the land on either side lies close together and forms straits, as it often does, the sea is constricted; but where they separate, it spreads out. If you sail through the Pillars [of Hercules], the sea to your right is at first framed by two large bays: the first comprises the two Syrtes, the other is twisting and irregular. But the water gets divided into the major seas: one called the Gallic, another the African (although Aristotle prefers to call it the Sardinian); the third is the Adriatic sea. They are linked to the Sicilian sea and after that to the Cretan; and to them in turn the Pamphylian, Syrian and Egyptian seas (though the boundaries between them are indistinct). But before you get to these, there are the Aegean and Myrtoan seas. Pontus is near them, the largest gulf of our sea: it reaches Maeotis at its furthest extreme; but its source is in the Hellespont. The entrance to it is called Propontis.

The sea outside the inhabited world is called the 'Atlantic' and the 'Ocean': it surrounds us. It comes into [the inhabited realm] from the west through a narrow opening near what are known as the Pillars of Heracles, and flows into the inner sea, as if into a harbour. [20] Gradually it spreads out, and fills a series of large gulfs which are connected to each other – in some places being confined in narrow straits, in others spreading out again. If you sail in through the Pillars of Heracles, the sea is at first said to be shaped by two gulfs on your right: the so-called Gulfs of Syrtis: one of them is called Syrtis Major, the other Syrtis Minor. On the other side, there is no similar gulf, but the sea divides into three: what are called the Sardinian, Gallic and Adriatic seas. Across from these is the Sicilian sea, and beyond this the Cretan sea. That is continuous with the Egyptian, Pamphylian and Syrian seas, on one side, and, [30] on the other, the Aegean and Myrtoan seas. Following the length of these is the Pontic sea, with its many subdivisions. The innermost part is called Maiotis; the outer part, [393b1] towards the Hellespont, is connected by a channel to what is called Propontis.

The Ocean lies in the east, and gives us the Indian and Persian seas. The shores of the Red sea open out from here. <The Ocean also> snakes its way through narrow and remote inlets to become the Hyrcanian and Caspian bays. Beyond this are seas believed to be of enormous depth; then a little further on the straits of Scythia and Hibernia [= the Irish sea], and then the sea formed where the encircling Ocean encloses the Gallic bay and those Pillars at Cadiz, which are the 'turning-posts' of our realm.

Over to the east, the Ocean flows in, opens out into the Gulf of India and the Gulf of Persia, then straight afterwards gives us the Red sea (which has no outlet). Passing in the other direction through a narrow and long strait, [the ocean] widens again, setting the bounds of the Hycanian and Caspian seas. Beyond this deep, it occupies the place beyond the harbour of Maiotis; then, a bit further out, beyond the [lands of the] Scythians and Celts, it surrounds the inhabited world towards the Galatic [= Gallic] Gulf [10] and the

7. In another part of [our] realm lie the land-masses of some large islands: these are the two British isles, Labeon and Hibernia, both larger than those we mentioned before; but these are situated on the borders of the Celtic lands. There are also some smaller islands beyond India: Probane and Loxe. And many others too, which are scattered as if in a circle to give variety and ornament to this island of ours (that is, to the lands which make up this realm), which I said was [one of the] 'great' [islands]. These [smaller islands] decorate it as ornaments; and in their continuity they crown it, like a sort of garland. The length of the land that we inhabit is 40,000 stades, its breadth 70,000. The lands of this realm are divided into Asia and Europe, and Africa along with them or, as many people say, beside them. Europe's boundaries reach from the Pillars of Hercules to the Pontic and Hyrcanian seas and the river Tanais. Asia goes from the same straits, those of the Pontic sea, to the straits which lie within the Arabic bay and the periphery of the inner sea: it is contained by the Ocean's girdle in concert with our sea [sc. the Mediterranean). (Other people, though [do this] in a different way, and measure the boundaries [of Asia] from the origin of the Tanais to the openings of the Asian Nile.) Africa should be reckoned to stretch from the isthmus of the Red sea (or else from the very sources of the Nile) to its end in the region of Cadiz. Most people make Egypt part of Africa, but many make it part of Asia. (Similarly, some people think that islands are to be thought of as part of the lands they are near, while others think they ought to be considered in a category of their own.)

But that is enough about the sea.

ATMOSPHERE

Exhalations moist and dry

8. Conditions on earth are like this. Scientists tell us that there are two sorts of 'exhalation', [both of which are] thin and ubiquitous; that these are barely visible as they rise upwards from the lap of the earth, [but] that bodies of mist are formed when the vapour is from streams and springs – and this is denser in the mornings. One of these [types of exhalation], the type that is

aforementioned Pillars of Heracles. Outside these points, the Ocean flows around the [whole] earth.

The two largest islands are out here, known as the British Isles, Albion, and Ierne: these are larger than those recounted above, and lie beyond the [land of the] Celts. No smaller than these is Taprobane [= Sri Lanka], which lies beyond India [15], slanting with respect to the inhabited region; and also †Phebol, which is situated in the Arabian gulf. There are also a lot of small islands around the British Isles and Iberia, and they crown this inhabited realm which we have said is [itself] an island, and whose breadth, at the widest part of the continent, is a little less than [20] 40,000 stades, as the best geometers say; its length is as much as around 70,000 stades. It is divided into Europe, Asia and Libya. Europe is bounded in a circle by the Pillars of Heracles and the inner parts of the Pontic and Hyrcanian seas. From the latter, a very narrow isthmus goes to the Pontic (though some have said that [Europe's border] is not this isthmus but the river Tanais). Asia stretches from this isthmus of the Pontus and the Hyrcanian sea as far as another isthmus, which lies between the Gulf of Arabia and the inner sea, surrounded [30] by this and the encircling Ocean. (But some say that the border of Asia goes from Tanais to the outlets of the Nile.) Libya goes from the Arabian isthmus to the Pillars of Hercules (but some think that it goes there from the Nile). [394a1] Some people attach Egypt, bounded by the outlets of the Nile, to Asia, some to Libya. And some people accord islands their own status, but others always make them part of the lands they are near.

This is what we have discovered about the nature and position of the earth and sea which make up what we know as the inhabited world.

Now let us discuss the most noteworthy things within and around [the world], with a summary of the essentials. There are two types of exhalation which constantly rise [10] from it into the air above us: they are fine and completely invisible, except that sometimes at dawn they can be observed rising from rivers and springs. One type is dry and like smoke, and comes from the earth;

emitted by the earth itself, is dry, rather like smoke. The other is humid and warm: the nature of the upper vapour draws it up to itself from streams [of water]. It gives rise to mist, dew, frost, cloud – and showers, snow and hail. The first type, the one we said was dry, gives rise to the winds and air-currents, to flames and lightning and all the many types of fiery bolts.

Mist is constituted either from the beginnings of a small cloud or from its remains. It is vaporised exhalation which has lost its humidity, thicker than air but thinner than cloud; it is dispelled by clear air (which is 'clear' simply when it has been purged of darkness and is obviously pure). Dew is nocturnal moisture, which is gently dispersed by clear air. 9. Ice, we claim, is moisture which has been compacted by clear air when it is cold: frost is similar, and happens when the soft morning dew becomes white as it freezes. Air, then, which has been driven into a cloud thickens the cloud – and where it is dense it is 'pregnant' with water. A shower is squeezed out when cloud-masses press against one another other. There are as many different types of rainfall as there are ways in which the air is channelled by the state of the cloud. When a cloud is thin it disperses mere drops; but more violently compacted [clouds] pour out larger amounts of water, and what we call 'showers'. 'Storms' differ, in that a shower is steady rain; a storm is as violent as it is sudden, its downpour as brief as it is unexpected. Snow is made up of fragments from denser clouds: before the [clouds] can turn into liquid water, they get broken up and spilt apart; their agitation produces a foam, and soon the congealed moisture gets white as it stiffens with cold. As the clouds are destroyed, this falls thicker and faster to earth, and we call it a snow-storm. We say that it is hailing when water crashes out of a cloud with the weight and speed of a stone: its force makes it move quickly and the gentle, fluid air gives way, so that it plummets down and with violent fury pummels the earth. 10. This will do for what concerns the humid and watery elements.

But there are other effects [of the exhalations]: winds, which are generated by a movement of cold air. In fact a wind is nothing other than a huge and powerful flow of air that has been channelled together. We call this an 'air-current' (although that [Lat. *spiritus*] is also a term we use for the 'breath', drawn in from outside, whose vital and nourishing force gives life to every animal). Dry gusts higher up in the cosmos we call 'winds', but damp air-currents 'breezes'. There are two species of wind. Those constituted from vapour [arising] from the earth are called 'earth-born' winds; those which

the other is moist and vaporous, and exhaled from moisture. [15] Mists come from this, and dews and different types of frost, as well as clouds and rain and snow and hail, while from the dry type [come] winds and the different air-currents, and thunder and coruscations and presters and lightning and everything else of the sort.

Mist is [20] a sterile, vaporous exhalation from water, thicker than air, thinner than cloud. It arises as a cloud is forming, or when it is dissolving. Its converse is said to be (and is) cold air, which is just air with no cloud or mist in it. Dew is moisture from cold air, which is carried by it because of it is so fine in constitution. [25] Ice is water which is gathered from the cold air and compressed. Frost is compressed dew, and hoar-frost half-compressed dew. A cloud is a gathering of thick vapor, capable of producing water. Rain occurs when an especially dense cloud gets weighed down. There are as many types of rain as there are degrees of pressure on the cloud. [30] When a cloud is calm, it scatters soft drops, but when violently compressed, thicker ones: this we call a shower, which is heavier than rain, and sends persistent precipitation down to the earth. Snow comes about through the breaking up of thickened clouds, which get chopped up before the change into water: the chopping makes it foamy and white, and the compaction of the water inside (before it has been poured out or been rarefied) causes the coldness. [394b1] When it is carried down thickly and in quantity it is called a snowstorm. Hail comes about when a snowstorm is compressed and the compaction gives it weight so that it falls faster. Because of the size of the pieces torn off, their mass and speed increase. These are the derivatives from moist exhalations.

Wind comes about from the dry exhalations when the cold strikes it so that it starts to move. Wind (also called air-current) is just a lot of air massed together. (Air-current in another sense [sc. as 'breath'] is what is in plants and animals and pervades all things as an animate and generative substance, but not something we need to talk about now.) Air-currents which blow in the air we call winds; gusts from moist exhalations are breezes. Winds include 'terrestrial' winds, which arise from damp earth; and 'bay-winds' [*enkolpiai*], which rush out of bays (and there are some which come from

issue from bays are what in Greek are called *enkolpiai*. Winds which emanate from rivers and lakes should be considered similar to these, as should those which emanate from still or ruptured storm-clouds when the heavens open, or whose mass is formed within in the dense kind of cloud, or which [arise] when a shower rouses up gusts of air. These are what in Attic [Greek] are called *exudrai*.

rivers and lakes which have something in common with them). Winds that arise when clouds break apart, and cause their masses to be dispersed are called 'nebular'. 'Hydrated' winds [*exudriai*] come with water when they break open their mass.

11. Now let us go through the names of the winds and their regions. A wind from the east is a 'eurus', one the north a 'boreas', one from the west a 'zephyr', and one from the south an 'austrus'. Between these four there are many other winds. For any wind from the east is a 'eurus', but it is called <Kaikias>, when it comes from where the sun rises in summer [= ENE]; it is called Apeliotes when it is generated [where the sun rises] at either equinox [= due E]; and it is Eurus when it arises and issue forth from the gates of [sunrise during] winter [= ESE]. When a zephyr (known in the Roman language as a *favonius*) arises from the region of the summer setting [= WNW], it tends to be called by the name Iapygis; it is when it is comes from nearer an equinoctial [point of setting] [= due W] <that it is properly called Zephyr. It is Lips when it comes from the region of the winter sunset>. Aquilo comes from the region of the seven stars [= NNE]. Here, it is has as a neighbour Aparctias, <which blows directly> towards the south [i.e from due N]. Thrascias and Argestes are winds from the same sort of region [sc. NNW]. The following are the different names observed for austri: the one that gusts directly from the Antarctic [= due S] is Notus; Euronotus arises between Notus and Eurus [= SSE]; on the other side [= SSW] Libonotus combines two [names/winds] in one.

A wind which arises regularly in the east has been named a eurus; one from the north a boreas; zephyrys come from the west, and noti from the south. Euri include the wind which blows from where the sun rises in the summer [ENE], which is called Kaikias; Apeliotes comes from the region where it rises at the equinoxes [due E]; and Eurus come from from the region where the sun rises in winter [ESE]. Zephyrs are opposite them: Argestes, which some people used to call Olympias and others Iapyx, comes from the where the sun sets in summer [WNW], Zephyr from [where the sun sets at] the equinox [due W], Lips from [where it sets during] the winter [WSW]. The boreal winds includes Boreas which is in the specific sense the one neighbouring Kaikias [NNE]; Aparktias is the next, coming from the [North] in a southerly direction; then Thraskias (some call this Kirkias), next to Argestes [NNW]. Of the noti, the one which comes from the hidden pole [S] is called Anti-Aparktias; Euronotos is between Notus and Euros [SSE]; on the other side, between Lips and Notus is what some call Libonotus, others Libophoenix.

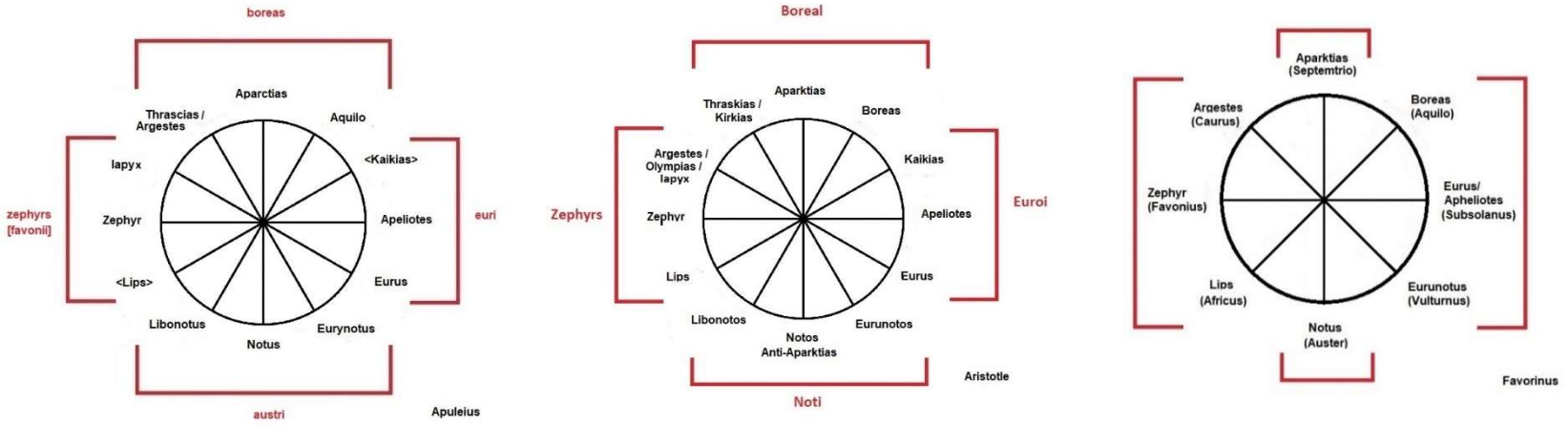
12. Winds that blow directly are held to be 'skirmishers'; Caecias is supposed to be one whose direction changes back and forth. Some winds, such as the noti, are associated with winter; etesian winds are more common in summer, when a northerly current mixes with a zephyr. Spring winds are called *ornithiae*: on the basis of the air from which they arise, they form a class of aquilos; but their currents have less strength and are not so persistent. A tempestuous gust of wind is called a whirlwind: we can think of it as a bit of wind which has become separated off and come down from the upper part of the heaven; it shakes things down below with its sudden battering. A so-called 'tornado' is a sudden gust of wind which brings confusion to everything. In cases where dry earth is picked up and carried from the bottom

Some winds are called direct, blowing straight ahead; others turn back on themselves, [395a1] for example the one called Kaikia. Some are more common in the winter, like the noti, others in summer, like the so-called etesian winds, which are a mixture of those that come from the north and the zephyrs. Some are known as 'ornithiae': these are winds that arise in the spring, but belong to the class of boreases. [5] Violent air-currents include the hurricane, an air-current which blasts upwards suddenly. A whirlwind is a violent current of air which arises unexpectedly; the tornado or cyclone is an air current which twists from below reaching upwards; the 'upward blast' [*anaphysema*] is an air current which erupts upwards from the earth where a gorge or fissure opens up. [10] When it gets tightly twisted, it is a terrestrial

of the tornado to the top, its top is referred to as a 'pinea'. *Anaphysemata* are what the Greeks call winds which explode from ravines or from gaps in the earth and menace the upper regions. When these are even more violently twisted, you get a terrestrial whirlwind – which is given the name *prester* by the Greeks. But when a twister begins to move and drives dense and humid clouds before it, they pile up and it collides with them and there is a noise which makes the heavens resound – just as when the sea, stirred up by winds, makes an almighty racket by smashing its waves on the shore.

13. But Favorinus, not an insignificant scholar, has the following to say about the winds. The world's four sources for wind [he says] do not all give rise to the same numbers of winds, because where the sun rises and sets changes three times [during the year] depending on its proximity, whereas south and north are always in the same place. We mark the places where it rises at [each] equinox and at <the summer and> winter solstice, and the places where it sets in corresponding terms. Eurus, then, is the eastern wind that comes from where the sun rises at the equinox [= E]. (Its name has a pleasing derivation: it is ἀπὸ τῆς ἑῴας ῥέων ['flowing from the dawn'].) This wind is also called Apheliotes by the Greeks, and Subsolanus by us. The wind that comes from the point of sunrise at the summer solstice [= NE] is named Boreas in Greek, Aquilo in Latin. Homer says that this wind is αἰθρηγενέτης ['aether-born'], or 'calm' as one might put it. (Boreas is so-called from ἀπὸ τῆς βοῆς ['shouting'], because the noise it generally makes is not quiet.) A third wind, which comes from the place of sunrise during the winter [= SE], the Greeks call Eurynotus. There are, likewise, three winds which come from the west: Caurus, which is called Argestes in Greek, and answers to Aquilo [i.e. is NW]; Favonius, or Zephyr, is opposite Eurus [i.e. is due W]; the third wind, Africus, Lips, answers Vulturnus [i.e. is SW]. Midday, on the other hand, is always in the same place [= S] and has one wind, Auster, i.e. Notus. <Opposite this, from the north, is the wind> which has the name Septemtrio – although this is called Aparktias in Greek. 14. Many of these winds have different names based on places or their resemblance to something or other. The Gauls call one wind 'Circius' from its twist at the top; the Apulians talk about the 'Iapyga' which comes from the bay of Iapygia, i.e. from [Mount] Garganus itself. It is clear that this is Caurus, because it comes from the west. (Vergil mentions it: 'Growing pale with her impending death among the corpses, the Fire-master had her carried off on the waves by Iapygus.') Caecias is a wind which Aristotle says draws 'prester'. When an air current finds its way into a dense and dark cloud, and then is expelled through it, violently rupturing the compaction of the cloud, it causes a mighty crack and rumbling, which is called thunder (it is just like when there is a impulsion of air within water).

the clouds to itself, and that there is a saying about it: ἕλκων ἐφ' αὑτὸν ὥστε καικίας νέφος ['he brings it on himself like Kaikias draws the clouds']. There are etesian winds, and 'forerunners', which blow from all directions at the time during summer when the Dog Star [= Sirius] appears. Cato in his *Origins* does not say 'Circius' but 'Cercius': this wind, Cercius, fills it cheeks to speak, and can repel an armed man or a loaded cart.



Lightning &c.

15. I will return now to tricks played by the clouds. When a small cloud is broken up and exposes the sky, escaping exhalations are ignited and a bright light flashes out: this is called a 'coruscation'. The order ought to be that there is thunder first and then coruscation, because it is after one cloud strikes another that it emits light – like stone fire-starters when they are rubbed together. But the brightness reaches our sight more quickly; sounds are only sensed later when they make their way to our ears. So people think that the heavens first coruscate and shortly afterwards thunder; but only because fire moves at scorching speed and stimulates the senses more quickly than speech; sound, which is reverberating air, is an indirect way of sensing. A flame which is emitted from friction between clouds, when it is [15] When a cloud breaks up in fire, the air current and light is called coruscation – which we perceive before the thunder, although it arises later, since hearing tends to be beaten by sight, even when the object of sight is further away, and the other is closer to hearing. This is especially true when [the object of sight] is the fastest of things, namely something fiery; while sound is less fast, being of the air, and reaching hearing by [the air's being] struck. Flame, ignited and violently racing to earth, is called lightning; if it is less fiery, but still violent and fast, it is a prester; and if it is entirely without fire, it is a typhoon. Each of these, as something rushing down to earth, is called a 'bolt'. [395a25] Some forms of lightning are said to be sooty and

intense and has enough impetus to reach the earth, has the name and intimidating force of 'lightning'. When there is less fire, we call it a 'prester'. If the bolt is not ignited at all, it is called a 'typhoon'. *Sceptus* ['bolt'] is the general name for anything which falls from the clouds.

Other lights

16. I will briefly summarise everything that falls into the class of things which perform tricks for human eyes. Some of these produce only the appearance that there is something there to be seen, but others are not lying at all about what they show. Deceptive phenomena include rainbows and arcs and such things; comets, lights and the many things like them are real object of vision. A 'rainbow', commonly [known as] an 'arc', is, they say, when an image of the sun or an image of the moon colours a dense cloud which is humid and concave like a hemi-spherical mirror. A *rhabdos* ['rod'] is similar, but the coloured cloud is extended like a rigid rod. A halo is a sort of chain of clear light which turns back on itself and intersects the course of the sun. Here is the difference between this and a rainbow: a rainbow is multi-coloured and semi-circular in shape, and lies far away from the sun and moon; but a chain is clearer, and encircles the stars in an unbroken circle, like a crown of just one colour. The Greeks call it *selas* when air is ignited: in many cases, you would think [the light] had been thrown, in others that it is falling, and in others that it is stable. [It seems] thrown, when the fire arises and then falls at speed which is imparted to it by the movement and impulse of the air; its course is very rapid. A stable light, which they call a *sterigmon*, is a long strip of light which does not move. A light which glides along, like a star with ignited fluid spreading out behind it, is called a 'comet'. Often these lights arise suddenly and are extinguished immediately; but others remain for a while to show themselves off. There are many phenomena of this kind: the Greeks call them 'torches' [Gr. *lampades*], *docideae* ['planks'], and *pithoi* ['jars'] and *bothynoi* ['trenches'], naming them after what they look like. Some are more common in the west <some in the east>. You will very rarely see them in the north or south – although none of them reliably arises at one place or time rather than another. 17. That is all I have to say about the air.

EARTH

The earth not only contains the sources of water, it is also swollen with vapour and fire. For there are vapours hidden underground which blow

smoky; some, which dart quickly, are bright. Forked lightning moves in thin lines. Anything that crashes down to earth is a 'bolt'.

To speak in general, some atmospheric phenomena are mere apparitions, but some are real. Apparitions include rainbows and rods and the like; streaking light, comets and so on are real. A rainbow is when part of the sun or moon appears in a dark and curved cloud, and seems to be continuous, as if seen around the edge of a circular mirror. [35] A rod is a rainbow that looks straight. A halo is a bright apparition coming from the light of a star: [395b1] it differs from a rainbow, because a rainbow appears opposite the sun or moon, but a halo makes a circles around the whole star. A light is the ignition of a mass of fire in the air. Some forms of it dart, some are fixed. A dart is fire sparked from friction as it is carried quickly in the air, giving the appearance of length because of its speed. A fixed light is extended but unmoving, or moves as a star does. A flatter version of this is called a comet. Some forms of lightning last longer [10], but some are extinguished immediately. There are many other types phenomena: 'torches' and 'planks' and 'jars' and 'trenches' – named for their similarity to these things. Some of them arise in the west, some in the east, some can be seen in both regions; but they are rare in the north and south. However, they are all unpredictable: there is nothing you can say about them that always holds true. So much for the atmosphere, then.

[395b18] The earth contains many things within itself: for example, sources of water, but of air current and fire too. Some of these are below the earth

exhalations of fire out of the earth where they are present. This happens for example at Lipari, or Aetna, and even our own Vesuvius. As to the fires which remain contained within the hidden places of the earth, these heat up any water they encounter. You can tell that the flames are some way off when the result is tepid water: when they are nearby, the water is scalding because of the fire set under it – as is the case with the river Phlegethon, which the poets mention in their stories about the underworld. The vapours themselves deserve our admiration: anyone would acknowledge this, observing how they send people into a religious ecstasy in which they do not need food or drink and can intimate the future. This is what happens in the case of the Delphic oracle and others. At Hierapolis in Phrygia, I myself saw a hole, surrounded by a small, thin ridge, open up on the side of a not very steep mountain. The poets would like [such things] to be called the 'vents of Dis'; reason tells us that they are source of lethal exhalations; either way, their poisonous and contagious vapour is dangerous to all animals, creeping or flying, and kills them, their head twisting back [as they die]. The hermaphrodites who look after them, if they dare to draw near, always keep their mouths turned upwards. They know what this evil is capable of: the poisonous air is denser and thicker lower down and so finds and afflicts lower creature more readily.

and unseen; but often they are expelled and blasted upwards – as at Lipari and Aetna and in the Aeolian islands. Sometimes fiery masses are thrown up which actually flow like a river; or they remain below the earth and heat things up near sources of water, resulting in springs that are warm, or very hot, or temperate. Similarly in the case of the air-currents: there are openings for them in many places on earth. Some of them cause anyone who comes near to be possessed, or, in other cases, to waste away; and some make them deliver oracles, as those in Delphi and Lebadeia do; and some altogether destroy them, as the one in Phrygia.

Quakes

18. The vapours produced in the earth drift through its hollow parts, but it often happens that they come up against solid earth. Quite often the vapours get into confined spaces where they are unable to find a way out, and as they grow in force they move the earth. Of these movements there are as many different names as there are different <kinds>. Oblique lateral movements at sharp vertical angles hurl everything nearby around: these are called *epiclintae* in Greek; those where the earth leaps upwards, shaking off everything on it, and then recovers on the perpendicular are called *brastae*. Those which seem to thrust things away are called *hizematiae*; those whose force tears the earth open are called *rhectae*. In some places, these [movements] are accompanied by an escape of gas; or else rocks or mud are spewed out. Some cause springs to appear in new places, and carve out channels for their waters to travel through. *Ostae* are movements in which one is merely shaken; *palmatiae* is the name for cases of trembling where the things that are shaken lean, but are not put in danger of falling, because they are moved straight upwards and remain steady. *Mycetia* is what it is

[395b30] Often a temperate air-current which belongs in the earth finds itself displaced from its home territory in pockets within the earth, and causes agitation in many parts. And often, it is compressed within these pockets and then breaks out with violence that [35] shakes the earth's foundations; and in finding its escape, it causes what we can an earthquake. Some earthquakes [396a1], called *epiklintai*, shake sideways at acute angles; *brastai* heave the earth up and down on the perpendicular; *hizmatiai* cause the earth to collapse into sinkholes; the ones that open up chasms and churn up the earth are called *rhektai*. [5] Some emit a current of air too, some throw up rocks, or mud; others reveal springs that were not there before. Some shift once and topple everything: they call these *ostae*. Others, called *palmatiai*, rebound and set what they have shaken straight again, as they are made to lean one way and then back again in the opposite direction – the effect they create is a sort of shiver. Then there are 'moaning' earthquakes, which roar as they shake the earth. Often there is a rumbling within the earth but no earthquake – this happens when the current of air is not powerful enough to shake the earth,

called when a foul odour is dislodged from the earth. When the vapours are not strong enough to move the earth, but emerge through openings in the ground where a way through can be found, they emit groans within the earth, and a moaning sound can be heard.

but coils up inside it and strikes it with resounding force. [15] The air currents within are also amalgamated by hidden bodies of water contained within the earth.

19. There are marine equivalents of all these things: seashores are battered by the mass of surging waves when they come in, and the bays violently carved out as they recede. What is more, the relationship between heaven and sea is evident in the fact that the swell and tides of the sea follow the monthly courses of the moon.

[396a17] There are analogous phenomena in the sea too, which cause the water to be sucked down and rise back up; or surging waves, sometimes after an initial recoil, but sometimes just moving forwards, as is said of Helike and Boura. Often there are spurts of fire in the sea, and water-spouts comparable to springs or newly germinating plants; and rivers and eddies analogous to those found in winds too, some occuring in the open sea, [25] others only in straits and channels. And the sea is said to ebb and flow at fixed times which follow the moon.

One from many

As far as I can, I will now explain briefly what I think about the cosmos as a whole. The elements of the air, the sea, and the land are in such harmonious relationship with each other that it is no surprise to find that the very same things which [variously] obstruct and prosper activity [in those domains] by being responsible for the growth and destruction of individual things at the same time ensures that the cosmos as a whole remains intact from top to bottom. Some people find it amazing that cosmic nature is produced by elements which are not only different but also inimical to each other – hard and fluid, icy and fiery – and that this diversity among them does not undo its life. Here is the simile for them: a city is formed of people who are different from each other and opposites; it is a multitude of inequalities brought together in harmony. There are rich as well as poor, young people mix with the elderly, cowards with the courageous, the worst jostling with the best. Yet it is exactly the balanced mixture of civil society that is so admirable: that from many is made one. The whole has its own integrity although the parts are dissimilar and it embraces types of people with diverse tendencies, different ends and different journeys. Nature likewise includes oppositions within itself, and from their dissonance comes a single unified harmony. 20. So it is when male and female join together: they are different from each other, but make from their dissimilarity a similar animal. And the arts themselves, imitating nature, make like things from unlike materials. From clashing pigments, black and white, yellow and red, mixed in appropriate measure, a painting produces images which are like what they

To speak generally, the elements are mixed together in air and eath and sea in a way that makes it only reasonable that they constitute the similarities [that there are] in the way things fall out; they bring about local instances of destruction and generation, but ensure the preservation of the whole, which is neither destroyed nor generated. And yet someone might wonder how the cosmos could ever be constituted from opposed principles – I mean from dry and wet [35], cold and warm – and not have been destroyed and lost long ago. [396b1] But this is like wondering how a city could persist although made up of extreme opposites among people – I mean poor and rich, young and old, weak and strong, bad and good. You do not realise that this is the triumphant achievement of political concord, I mean that one [city] can be effected from many people – and a consistent disposition from different dispositions, embracing every kind and subject to every chance. And perhaps nature actually aims for opposites, and effects its harmony out of these rather than out of things similar to each other: for example, it leads the male to the female, rather [10] than each to its own kind, and it establishes this primal concord in things that are opposite not similar. You can see that art too imitates nature in doing this. Painting mixes up the colours, whites and blacks, ochres and reds, and makes images harmonious with what it depicts. And music brings high together with low, long and short notes, mixing the sounds in different voices to effect a single harmony. Grammar too mixes voiced and unvoiced letters, and builds its whole art out of them. This is exactly what Heraclitus the obscure meant when he said: ‘Taken together

represent. Music itself, which is made up of sounds that are long and short, high and low, yields harmonious consonance from these differing and dissonant sounds. Consider the arts of the grammarians, if you will: they gather together different letters, some consonant, some semi-consonant, some vowels, and by their mutual assistance produce syllables; from syllables come utterances. This is how Heraclitus put it in the misty [obscurity] of his deliverances: Συλλάψιες ὅλα καὶ οὐχ ὅλα, συμφερόμενον διαφερόμενον, συνᾷδον διᾷδον· ἐκ πάντων ἓν, καὶ ἐξ ἑνὸς πάντα ['Taken together they are whole and not whole, combined divided, consonant dissonant; from all things one and from one all things']. 21. So the substance of the whole world is a mixture made by nature, which blends together unequal principles into a consonance which is polyphonous without being discordant, just as if it were music. It blends dry with wet, flame with ice, slow with swift, oblique with direct, and from all things it made one, and from one it made all, as Heraclitus has it. It adorned the earth and sea and heaven with the sphere of the sun and the globe of the moon, and the torches of the other stars as they rise and set. [The whole] is infused with a single power pervading everything while remaining itself pure and distinct from the substance of the elements – fire, water, air and earth – from which the [whole] sphere, confected from the different qualities of nature, was brought to manifest harmony, and engineered for preservation by means of that [harmony]. So consonance between the elements gave rise to harmony within [the cosmos], and the balanced distribution of their various qualities ensured that the mutual friendship between the elements would be permanent, since nowhere is one overwhelmed by another, either by its disposition or by its effects. There is a global balance in the differences among things: the heaviest against the lightest, the hottest against the coldest. Natural reason teaches that balance brings <harmony> even to things that are different, and harmony produces the beauty and eternity of this world which is father to all.

Complexity and order

22. For what is greater than the world? Praise any species you can think of: it is a part of the world you are praising; admire any mixture, arrangement, design you want: whatever it is, you will find yourself praising the world when you praise it. I ask you, what can appear ornate and well-ordered that does not imitate the world in its proportions? This is why it has the appellation *kosmos* in Greek. The sun, the moon and the other stars never

they are whole and not whole, combined divided, consonant dissonant; from all things one and from one all things.' In this way a single harmony directs the organisation of all things – by which I mean heaven and earth and the whole cosmos – by mixing principles which are extreme opposites [25]: dry is mixed with wet, warm with cold, light with heavy, and straight with curved. One power coursing through all things has organised all the earth and sea and aether and sun and moon and the whole heaven, crafting the whole cosmos from distinct elements (air, earth, fire and water), enclosing the spheres within a single surface, forcing agreement between things with kinds that are extreme opposites to one another inside it, and engineering out of them a way of preserving the whole. The cause of this is agreement between the elements, and the fact that each has an equal part in the agreement so that one of them [397a1] is never more powerful than another. Heavy and light are equally matched, as are warm and its opposite. Nature thus teaches us through these greater matters that equality can preserve concord – even concord within the cosmos, which is the most beautiful thing, and father of all things. [5] Indeed, what kind of thing could be greater than this? Whatever you mention is a part of it, and anything that has beauty and structure is named after it: it is said to be 'ordered' [*kekosmēsthai*] after the 'cosmos'.

And how could any part match the order of the heavens and the movement of stars and sun and moon, [10] which move in the most precise measures from one age to the next? What could aspire to such predictability as is observed by the beautiful and fertile seasons of the universe, which bring sumer and winter in order, and days and nights to complete a month and a year? It is [15] superlative in size, most swift in its movement, most radiant

change their course; time-periods give way to each other according to a guaranteed pattern which is never disturbed by the introduction of a single error; they are administered through, and then begin again, and the beautiful and fertile seasons are produced: now the vapours of summer come around, now the frosts of winter. The circuit of days and nights create months; the months weave themselves into years; the years forge a sequences of ages. Our world is immense in magnitude, swift in its movements, splendidly bright, in strong estate and youthful age. It has separated out different animal kinds – aquatic and terrestrial, and all those with wings. It distinguished the species and fixed laws for living and dying and gives animals their vital breath. It is responsible for those seasonal events which typically arouse wonder, when winds are whipped up in battle against each other, or the clouds are rent and there is lightning in the sky, and wintery tempests blow at each other and clear the sky, fires flash, storms break out – or again, when everything becomes calm, and lovely joy is sown again in the world.

in its splendour, unwearying and imperishable in power. It determined the different natures of sea, land and air creatures, and measured out their lives by its own movements. Thanks to it all animals breathe and have life. Thanks to it too all amazing phenomena are accomplished in due order – the winds of all kinds being dashed together, lightning falling from the sky, and extreme storms breaking. By means of these phenomena – which include the compression of moisture and the expulsion of fire – the whole is brought into agreement and fixed.

23. You can see the earth covered with locks of green hair, and dripping with bubbling springs, and pregnant with bodies of water; giving birth and nurturing, never getting tired in the evening, never aging through time. It is always being pummelled, slowly or quickly, by matter from eruptions; it often gets submerged under flowing waters; parts of it are consumed by voracious fires. But what seems damaging viewed locally works for the preservation of the whole, and helps to restore it. When it is disturbed, it immediately exhales those gases which were trapped [within] and were disturbing it [themselves] while seeking to escape; drenched by storms, the earth is not only fattened for the offspring it nurtures, but is also washed clean of disease-bearing contagion; breezes blow and heavier and less pure currents of air are separated off and purged by their blasts; warm [currents of air] soften the glacial cold; and the hardness of autumn helps loosen the bowels of the earth. Some things are being born, others achieving maturity, the rest are dying, all in their turn; and the lot of the new-born comes to fruition in place of the dead, and the number of those dying opens room for those that are born.

Earth bristles with plants of all sorts, has springs bubbling up everywhere, and is covered in animals: it gives birth to everything in due season, and nourishes and cherishes them, giving rise to thousands of forms and qualities, and unwearyingly keeps nature the same. Yet it is also shaken by quakes, inundated by floods, and burned by local conflagrations. [30] But all of these things can be seen arising within it for the good, and serve its preservation over time. When the earth is shaken, the fissures give vents for the subterannean exhalations which are thereby expelled, as was said above; showers wash away everything diseased; the breezes that gust around the earth purify both what is above and below ground. [397b1] Flames soften what is frosty, and frosts cures the flames. At an individual level things are variously born, mature and die; but the births make good the deaths, and the deaths give space for the births. [5] There is a reciprocal displacement by which all things work to the preservation of the whole: by dominating and being dominated in turn, each thing keeps the whole imperishable over time.

GOD

24. The most important point of this lecture still remains, which is to say something about the ruler of the cosmos. The thought behind the speech will

It remains to speak in summary terms about the cause that makes the universe cohere [10], as in other cases: it would be a mistake to leave out the most

seem wanting unless, in discussing the cosmos, we say whatever we can <about him>, even if we cannot investigate him so closely. When it comes to the ruler of all, indeed, it is not, as the man says, 'better to be silent, or to say little'.

important part of the cosmos, even in an account of the cosmos that does not go into detail but aims to teach in outline.

The ancient view, which is embedded in the thoughts of all men, holds that god is the author of its origin and that god is himself the preservation and continuation of those things which he made. There is nothing so superlatively powerful that its own nature is enough for it, in the absence of his assistance. Following this view, poets have been inspired to the daring claim that everything is full of Jupiter, and that his presence can be grasped not only by thought but by eyes and ears and sensible substance. But the present speech has been composed with due regard to god's power. For he is the preserver and progenitor of everything which has been born or made for the sake of completing the cosmos as a whole. He did not, however, construct this sphere with his hands as if employed as a manual labourer, but he joined together everything in is place by his unwearying providence while he remained aloof; from a vast distance he wove its separate parts together.

There is an ancient account common to the ancestors of all men that everything comes from god and is constituted through god, [15] and nothing of any kind is self-sufficient without him to preserve it. For this reason, some of the ancients have suggested that all these things, which are apparent to our eyes and hearing and every other sense, are 'full of gods'. This is a rejection of the explanation which gives proper regard to god's power, [20] even if it acknowledges his substance. For god truly is the preserver and progenitor of everything at all that happens in this cosmos – but not because he undertakes the burden of a hard labourer's life: rather, he employs an unwearying power by which he controls things which seem far off.

25. There is no doubt that he holds the preeminent position and highest place. His name, and the fact that his throne is consecrated in the lofty heights, is invoked in the praises of poets and in the proclamations of consuls and kings. Things draw from his power according to their distance from him: the celestial bodies which border on him get so much the more from god; much less those that are second out from them. Benefits reach down as far as us here on earth, but in proportion to our distance from his ministration. We believe that god permeates everything, even down to us; but the power of his divinity confers more or less benefit on things as he is closer or further from them. The better and fairer way to think of it is this: the supreme power, consecrated in the inner sanctuaries of the heavens, carries on the work of preservation both for those who are farthest separated from him, and for those that are closest, with one and the same power; he does this himself, but also by means of others; he does not touch or approach each individual thing, and he does not do everything by hand, which would be unseemly. To debase himself to such humble work is all the less worthy of his sublime office, as it is not even suitable for any human with the slightest sense of dignity. Military officers and curia chiefs and rulers over cities and homes are, I say, never expected to do basic tasks with their own hands, or the things that

[25] He occupies the highest and first place, and is called the Most High because of this; he is enthroned, in the words of the poet, at the 'crown and summit' of the whole heaven. The body closest to him benefits most from his power, and then the one next to that, and so on until the regions where we are. [30] This is probably why the earth and the things on earth, which are at the furthest remove from god's aid, are weak and poorly constructed and full of confusion. Nevertheless, the divine is such as to extend to everything, as far as possible, and reaches the things around us in the same way that it reaches the things above us: but each participates more or less in his aid according as they are nearer or further from god. [398a1] So the better way to conceive things, the way that is fitting and most appropriate for god, is (to sum up) that his power is located in the heavens, benefits what is closest most, and is the cause of preservation for everything – all the more because it does *not* pervade everything and proceed everywhere and manufacture those things on earth that are neither beautiful nor well formed. It is not even appropriate for human leaders – I mean, for example, the ruler of an army or the head of a household – to take care of every task whatsoever, e.g. bagging up the bedclothes, or doing some even lowlier job which any slave could do. It is as it is related of the Great King. Cambyses, Xerxes and Darius were

slaves can do no less readily at the command of their masters. Let me give an example of how this can be. **26**. Cambyses, Xerxes and Darius were very powerful kings. Their supreme power was underpinned by their wealth, and they were able to use it to fashion a higher form of living. Whether at Susa or Ecbatana, they were like holy statues enclosed in a shrine, which do not speak to just anyone: enclosed in wondrous palaces, whose rooves shone snow-white with ivory, and which coruscated with silver, and were ablaze with gold and electrum. There were thresholds upon thresholds, as they were protected by inner doors and outer doors – then iron gates, and walls of adamantine strength. In front of the doors stood sturdy men and royal body-guards, who took it in turns (chosen by lot) to ensure a permanent vigil. There were men with different duties: there were armed guards in the royal company, and, outside, guards for particular places, door-keepers, hall-attendants. Some of them were known as the 'royal ears' and the 'eyes of the emperor': it was thanks to these classes of official that everyone came to believe that the king was a god, because everything which was done anywhere he found out about through the reports of his spies. He had people to dispense money, tax collectors, financial officers; other people, and others again, he gave different duties. Some looked after the hunts, some were prefects of houses and cities, and others took constant and painstaking care to oversee other particular things. The Hellespont bounded the Asian kingdom to the west; the people of India were its neighbours to the east. There were governors and satraps and royal slaves stationed everywhere. Among them were scouts, who operated day and night, explorers and heralds and people constantly on hand to light the beacons. These formed a series of torches set on all the high places of the kingdom, and signalled to the emperor in the space of a single day what he needed to know.

screened off from the world in a way appropriate for their solemnity and supreme elevation. The Great King, as we are told, had his seat in Susa or Ecbatana, where he was not seen by anyone. He had an amazing royal palace, enclosed by a wall which coruscated with gold, electrum and ivory. There was a long series of gateways and many porches, stades from each other, fortified by bronze doors and huge walls. Outside these walls were arrayed the men of the first rank and honour, [20] some of them armed guards and attendants of the king himself, others guards of the various walls, known as gate-keepers and listeners, who enabled the king himself, named lord and god, to see everything and hear everything. In addition to these, other men were appointed as treasurers and army generals and hunt-masters and receivers of gifts – and others given care of the other tasks that needed to be done. And the whole empire of Asia, bounded by the Hellespont to the west, and by India to the east, was divided according to tribe among generals and satraps and kings, all slaves of the Great King; and there were scouts and lookouts and message-carriers and people to take care of the beacons. And things were so arranged, especially in the matter of the beacons, which could be lit in succession from the edges of the empire to Susa and Ecbatana, that the king could know all the news in Asia on the very day it happened.

27. That kingdom should be compared with the halls of heaven as the supreme and most exalted of gods stands in comparison with an ignorant and worthless man. And if it is indecorous for a man, or for any king, to take care of everything by himself, so much more will it be unsuitable for god. God should be reckoned to retain his <dignity> and majesty by residing in an elevated place, while dispersing his powers through all the parts of the cosmos and the sphere which is enclosed by the sun and moon and the heaven as a whole which take care of the preservation of all lands. He does not need to do much to preserve mankind, although their low estate means that they have many needs. Can inventors not make things which cleverly

[398b1] You should consider that the Great King, when compared the god who maintains the cosmos, is no more exalted than the basest and weakest animal, so, if it would be impious to think of Xerxes doing everything for himself, and carrying out his own wishes and taking care of achieving his own aims every time, it would be all the more unfitting to think this of god. It is more pious and fitting for him to be seated at the highest place, while his power pervades the whole cosmos and moves the sun and moon and drives the whole heaven around and is the cause of the preservation of things on earth. [10] He is not even in need of the skills and services of others, in the way that rulers among us need a great deal of help because of their own

accomplish a great variety of ends by the turn of single wheel? Look! Even people who work with wooden puppets, when they pull the string of the limb which they want to move, the neck turns, the head nods, the eyes swivel, the hands will be ready to help, and the whole has the appearance of graceful life. Just so, the celestial power, when it uses its knowledge to set in train preservative works, communicates the power of his majesty from his outer limit to the second sphere, and thence to the next – and all the way to the end, with each moving the next through an unbroken series: one is moved, and its movement is passed on as the origin of the movement of another. Their harmony with the cosmos as a whole comes about not through some single event, but through the diverse, and even contrary, movements of many things. **28**. After the first impulse, the simple and incomplete first principle of movement, the series of impulses described above follows so that everything moves – but in the way that a sphere and cube and cylinder and other figures, if someone were to throw them all downhill, would all alike be set in motion, but they would not all move in the same way. Here is another, similar example: if someone were to release a number of animals from their lap at the same time, birds, fish and land-animals: well, all of them would follow their nature and hurry off to their own places. Some would seek out water; those with something of the tame as well as the wild in them would gather together under their own laws and customs; those to which nature gave the power would trace swift paths through the air. Yet each had the same power of release from the human lap. **29.** The nature of the cosmos is like this. The heaven as a whole revolves in a simple, circular motion, but it is divided into night and day, and distinguished by various regular measures. Within a single sphere that encloses everything, the moon reduces its light by increments of its globe and signifies measurements of time; the sun illuminates the space of the heaven by a course which it completes in a year, along with its companions, the lovely Lucifer and his friend Cyllenius. And Pyrois, the star of Mars, completes its circuit in two years; that of Jupiter, bright and coruscating, takes six times as long for its circuit, and Saturn, still higher up, takes a course of 30 years' length. But from them all comes the one cosmic cycle, one complete turn of the sphere; a single harmony and a single chorus of stars is made from the diversity of their rising and setting. The jewellery-like beauty of this the Greek language quite rightly refers to as *cosmos*. Just as in a chorus, when the leader announces the hymn, the fellowship of male and female singers, of high- and low-pitched voices, blends and gives out a single harmony: so the divine mind effaces the variety of the terrestrial realm by creating the appearance of a weakness. This in fact is the most divine thing, to achieve a diversity of sructures through one easy and simple movement – just as, perhaps, inventors do with machines in which a single trigger results in different operations. Or, similarly, puppeteers, who pull on one string and make not only the animal's neck move, but its shoulder and eye, and sometimes all of its limbs, with a certain grace. So likewise [20] a simple initial movement from the divine transmits power from the first thing to those things that are next to it, and from those again all the way to the most distant, until [the power] extends right the way through everything. One thing is moved by another, and it in turn moves something else along with the cosmos. And everything acts in a way approprate to its own arrangement, [25] and there is no single path for all, but they follow different, heterogenous, and even sometimes contrary, paths – although there was a single first impulse. It is as if one should throw a sphere, a cube, a cone and a cylinder from from a jar at the same time: each of them will be set in motion according to its own shape. [30] Or again, it is as if someone should release aquatic, terretstrial and winged animals from his lap where he had been holding them: obviously, the swimmer would leap into its own habitat and swim away, the terrestrial animal will creep off according to its own character and customs, and the creature of the air will ascend heavenward from the earth on its wings: [35] but a single cause gave each its own opportunity. So it is in the case of the cosmos too. [399a1] A single revolution of the whole heaven defined a day and a night; all the other various orbits, although enclosed by the one sphere, then come about, some faster, some more leisurely, all according to the distance between them and their individual constitutions. The moon completes its cycle, waxing and waning and wasting away, in a month; the sun, accompanied on its course by Phosphorus, also known as Hermes, takes a year; Pyroeis takes twice as long, Zeus six times that, and finally the [star] known as that of Kronos taken two-and-a-half times as long as the sphere underneath it. They all sing and dance together in harmony, according to unifying arrangement of the cosmos which produced a single thing – 'order' [*kosmos*] being the name true to the whole, rather than disorder. [15] And just as in a chorus the chorus-master starts off and the whole chorus responds – men and sometimes women too – making one meoldious harmony from a mixture of different voices, higher and lower, so too in the case of god conducting the universe. The key-note and lead is given by the well-named leader; the stars and the whole heaven move unceasingly; the all-illuminating sun follows its double path, rising and setting to define day and night, but at the same time advancing south or recding north to mark out the four seasons of the year. Storms and winds

single harmony. The fixed heaven follows the unwavering course taken by the vaporous and radiant stars, and those stars rise together with complementary paths. The sun oversees everything: it reveals the day when it rises, and brings back night when it sets; and it changes the four seasons as it is removed or brought nearer [to the earth] through cosmic forces. This is the cause of winter tempests and exhalations – which are not infertile – and the nourishing dew, and all other things which god wishes for these central parts of the cosmos. On the other hand, there are torrential floods and swollen waves, the growth of forests, the ripening of fruits, animals becoming pregnant – each thing nurtured, and each thing dying.

30. The king and father of all things, visible only to the eyes of reason in the mind, gives orders to the whole complex, eternally bounded in its revolution by its own laws, bright, and gleaming with stars; and [he also gives order to] the uncountable constellations, sometimes visible, often hidden, but moved by a single principle, as I have said. Think of it as like what happens in war. When the bugle announces the battle, soldiers rise up at the sound: one puts on his sword, another takes his shield; one puts on his cuirass, another puts his helmet on his head or greaves on his legs and steers his horse with a bridle, and pairs one to work in harmony with another. Everyone immediately attends to the duty assigned to him. Skirmishers make sallies, captains move about the ranks, the cavalry stands in front of the wings, others busy themsleves with the duties they have been given. But this whole operation takes place in obedience to a single commander, who is in charge and for whom everyone works. Just so, we can see that divine and human affairs are governed: there is one pilot, and everything else defers to the importance of his work; this hidden force cares for all things, but no eye can see him, unless it is the 'eyes' by which the mind directs the focus of its light. **31**. But this is no obstacle – either to his action, or to our understanding. Let us consider examples from an admittedly inferior point of comparison. A man's mind cannot be seen, but everyone agrees that everything worthwhile that happens through human agency must be due to the mind. The mind has no quality or shape that the eye encounters, but when it causes things to happen, it is possible to understand its nature and extent. Indeed, everything required to sustain human life is due to its genius: cultivating fields, harvesting fruits; artistic ability and what the arts can produce; the necessities of human life. What about the laws, which were invented to domesticate human beings? Those civil institutions and customs which now arise in due season, [25] as does dew and everything else that happens in our environment thanks to the first and originating cause. These in turn lead rivers to flow, seas to swell, trees to burst forth, fruits to ripen, animals to give birth, and their offspring to be reared, to mature, and to die, each according to its constitution, as I said.

So when the leader and father of all things, invisible to everything except reason, gives the signal to the realm between heaven and earth, everything moves continuously in circles and within its own boundaries. Sometimes we cannot see them, but sometimes we can: they appear and are occluded in many different ways from their single starting-point. [399b1] And it is all exactly like what happens in periods of war when the trumpet gives the signal to the army: immediately, on hearing the sound, one person picks up his spear, another puts on his breastplate, another dons greaves or helmet or belt; one puts the bridle on the horse, another mounts a pair, another entrusts the password; the captain goes straight off to his platoon, the squadron-leader to his squadron, the cavalryman to the wing; the light infantryman runs to his own place. Everything is driven by one signal given at the order of the commanding officer. So one must think about the whole: from one impulse everything is stirred into action and everything that is needed arises, while the origin is unseen and out of view. There is nothing to prevent this impulse from acting, or us from believing in it. The soul too, by which we live and have houses and cities, [15] cannot be seen, but is seen in its effects. The whole organisation of human life was discovered and is organised and held together by soul: irrigation of the land and agriculture, the inspiration of art, the use of law, constitutional order, civic affairs, foreign war, peace. God should be considered to be [20] in power the strongest, in beauty the most attractive, of immortal life and in virtue most powerful. He is unseen in the realm of mortal nature, but he is visible in his effects there. For everything that happens, in the air and on land and in the water, are, one might say, truly the works of that god who sustains the cosmos. From him, as the physicist Empedocles has it, comes:

facilitate business meetings, and mitigate the savagery of warfare, and make people gentler in peace? Could anyone be so prejudiced as to deny that all this comes from god? He can [in fact] see god's transcendent strengths, and exalted appearance, that he is immortal in age, the father of virtues, and virtue itself. It is no surprise if mortal eyes do not capture his appearance, when his traces appear so obviously and so manifestly in his divine works. **32.** What is more, we ought to think that god is the source of everything we notice happening in the heavens with our eyes, or taking place on land or in the water. Why not? To him belongs the safekeeping and care of this world. Empedocles wisely expressed his thoughts about him in these words:

πάνθ' ὅσα τ' ἦν, ὅσα τ' ἔσθ', ὅσα τ' ἔσται ὀπίσσω
δένδρεά τ' ἐβλάστησε καὶ ἀνέρες ἠδὲ γυναῖκες,
θῆρες τ' οἰωνοί τε, καὶ ὑδατοθρέμμονες ἰχθῦς.

['All that was, all that is, and all that will be hereafter, | trees that bloom and men and women, |and beasts and birds and water-raised fish.'] Phidias, the one famous as a sculptor, fixed the likeness of his own face in the shield of the Minerva which presides in the Athenian acropolis (a statue I myself have seen). [He did this] in such a way that, if anyone ever wanted to remove the artist's image, and broke the fitting, the integrity of the whole statue would be destroyed. God sees to the preservation of the world in a similar way: it is fitted together and bound tight by the power of his divinity. **33.** If we ask where he is: he is neither in direct contact with earth, nor in the middle regions of the turbid air. He is in the roof of the world, what the Greeks rightly call *ouranos* as something that is the 'upper limit'. And [Mount] Olympus is so called because of a train of thought which understand that it is a place free of all darkness and disturbance. It is beyond the darkness of the clouds, it is not afflicted with frost or snow, and it is not battered by winds or pummelled by showers. The Poet sang that none of these things could touch Olympus because of its extreme height. These are his words:

Οὔλυμπόνδ' ὅθι φασὶ θεῶν ἕδος ἀσφαλὲς αἰεὶ
ἔμμεναι· οὔτ' ἀνέμοισι τινάσσεται οὔτε ποτ' ὄμβρῳ
δεύεται οὔτε χιὼν ἐπιπίλναται, ἀλλὰ μάλ' αἴθρη
πέπταται ἀννέφελος, λευκὴ δ' ἐπιδέδρομεν αἴγλη

['To Olympus, which they say is always the unerring seat of the gods: neither is it shaken by winds, nor ever doused by storm nor approached by snows, all that was and all that is and that will be hereafter;
trees that bloom, and men and women,
and beasts and birds and water-bred fish.

To compare it with something smaller, he is really like those so-called 'keystones' which are set in the middle of vaults and by holding each part to the other preserve the whole structure of the vault in harmony and in order and unmoved. They say that the statue-maker Phidias, when he was making the Athena in the Acropolis, engraved his own face in the midde of her shield, and connected it [400a1] to the structure through some concealed artifice, so that if someone wanted to take it out, they would inevitably undo and ruin the whole statue. This is the position god holds in the cosmos: maintaining the harmony and preservation of everything. Only god is not in the middle, which is occupied by earth and this misty region; rather he resides above, himself pure in a pure place. We call it *ouranos* true to the fact that it is the 'boundary above' (*horon ano*), and *Olympus* as if 'the whole of it shines' (*holoampe*). It is far away from all that is dark and unordered in movement, as can be the case with with us because of the violent storms and winds. As the poet said:

Olympus, which they say is always the unerring seat of the gods:
neither is it shaken by winds, nor ever doused by storm
nor approached by snows, but the clear sky
is cloudless, and white brightness goes about.

[15] And the whole of life is witness to this, ascribing the upper regions to god. Indeed, all men stretch up their hands towards heaven when they pray. So this is not badly put: 'To Zeus fell the broad heaven in the aither and clouds.' [20] And the visible things we honour most occupy the same region – the stars and sun and moon. Because of this it is only celestial things that keep to the same pattern, and are never altered and changed in the way that things on earth are rather easily turned, and are subject to many alterations and affections. [25] Violent earthquakes have torn up parts of the earth; sudden rushing storms break things up; waves surging and withdrawing have often made seas of continents and continents of seas; violent air currents and typhoons have overturned whole cities; fiery flames in earlier times have come down from the heavens, they say, as in the case of Phaethon, who burned the eastern parts of the world; while others in the west have erupted and gushed forth from the earth, such as the craters torn open in Etna, and

but the clear sky is cloudless, and white brightness goes about.]. Universal custom and human observation have acquiesced in this view, and affirmed the ancient tradition about god. When people pray, we pray with our hands extended to the heavens. A Roman poet expressed the following sentiment: 'Regard this exalted brightness, which all invoke as Jupiter.' The celestial stars and the lights of the world, which everyone recognises as the most exalted beings, occupy those heady regions, where they are allowed to enjoy the order they deserve: the laws they observe mean they move through their courses with unvarying intervals and periods. **34.** On earth, everything undergoes change and reversion and finally perishes. The land shakes violently and the earth is broken up – and we have often been aware of cities destroyed along with their inhabitants. We have heard too of whole regions that have been devastated by sudden storms; and of areas which were formerly continents turned into islands by the action of unprecedented waves; and of others where the sea was forced back so that it could be crossed on foot. So! Are there not cities we no longer remember because they were destroyed by winds and whirlwinds – or perhaps when fires flashed down from the clouds? Did regions to the east not perish in conflagration (with the downfall of Phaethon, as some think)? On the western shores, have there not been [volcanic] eruptions and flows which have slaughtered as many? For example, torrents and rivers of flame once rushed headlong from craters spewing divine fire from the peak of [Mt.] Aetna. From the height of this peril, we learned of an act which shows the outstanding merit of piety. There were people who, although terrified at the initial eruption, nevertheless retained their sense of sympathy and pity, snatched their aged parents up and carried them away from the disaster; and those rivers of flame were divided in two [around them] by divine action, so as to become as it were two rivers flowing from one. The [rivers] surrounded them benignly, choosing to circumvent the ground where the virtuous pall-bearers were busy with their sacred coffins.

been carried along the earth like a torrent. In that case, the pious people showed high honour to what was sacred: they were surrounded by the rivers [of fire] because they were carrying their aged parents onto their shoulders to save them; but when the river of fire got close to them it divided, some of the fire turning one way some the other; so it kept the young men safe along with their parents.

35. Finally, what the pilot is in a ship, the driver in a chariot, the leader in a chorus, the law in a city, the general in an army, this god is in the world – except that, in these other cases taking the reins of office is itself a tiresome and complex business which brings innumerable cares, while for god the care he shows through his power is neither oppressive nor onerous. Immobile, he surrounds all and rules all, giving movement to the [things of different] kinds and shapes in the different regions. [He operates] like the

In general, what a helmsman is in a ship, a driver in a chariot, the chorus-leader in a chorus, the law is a city, the leader in an army, this is what god is in the cosmos, except that for them ruling is tiring, energetic and complex, while for him it is without grief or pain or threat to his health. Established in serene power he moves everything and leads it around where and how he wants, in all its diverse structures and kinds. It is, as, I suppose, as the law of a city which resides unmoving in the souls of those who use it, but organises

law of a city, which is promulgated once, and fixed fast by the constant understanding of its observers. It is itself immutable, but the judgements which flow from it move the minds of those who obey it so that they accede and are bent in submission. Due to its decrees magistrates crowd the benches and soldiers their headquarters; the property courts are constituted for judgement, and municipal senators, and others whose business it is to give sentence, publicly convene; one man comes to the Minucian [gate] to collect his stipend, while others learn the date of their trial; the defendant arrives under the necessity of clearing his name, his accuser comes determined to prosecute; here is a man about to die being led to the place of the scaffold, there is a reveller out in the evening to go drinking at a party. There are the paraphernalia of public dinners and holy feasts and festal days, diversions on the stage and diversions in the circus; the gods are sacrificed to, Genii are tended, a libation for the dead is poured out, one man profits from another – and all obey the order decreed by the laws and their common power. You can see the city redolent with the scent of incense and foul-smelling waste as well, resounding with hymns and songs and canticles, and at the same time with ululation and lamentation. **36.** This is how we think things are done in the cosmos too: think of god as the law which ensures systematic equality, without needing corrective adjustments. The whole cosmos is governed like this: its governor looks after everything while unchanging and at rest. The power that seeds have is distributed through things of every nature, through every species and every genus: it makes vines droop readily and palm-trees soar; the peach turns red, the apple swells, the fig sweetens – and even things we call 'unhappy' because they do not bear fruit are useful for another purpose. The shadow of plane trees, as the poet says, provides a service for drinkers; the sharpness of the pine and the smoothness of box, the scent of the laurel, the odour of cypress wood – and finally the natures of all animals, wild and tame, winged and footed and aquatic – all arise, are nourished, and are taken away in accordance with celestial decrees: πᾶν γὰρ ἑρπετὸν πληγῇ νέμεται ['For every creeping thing moves because it is struck'], as Heraclitus says.

everything in the city. It is in obedience to it that rulers move about in their spheres, the law-givers go to the lawcourts, counsellors and advisors to the appropriate benches; one person goes to the prytany to eat, another to the judges to defend himself, another to the prison to die. [20] And there are ordained feasts and annual vigils and sacrifices to the gods, the observance of hero cults, and libations for those laid to rest. Different things are done in different ways but according to a single order. What is truly active preserves the power of the law so that 'a city is at the one time full of incense and at the same time of paeans and lamentations'. So it should be understood to be for that great city, I mean the cosmos: for god is our equitable law, which allows neither correction nor change, yet greater, I think, and more secure than those written down in tablets. When he leads, without himself moving, the whole cosmic arrangement of heaven and earth is administered, parcelled out according to the various kinds: to plants and animals according to genus and species through their proper seeds; to [401a1] vines and palm-trees and persea-trees, 'and sweet figs and olives', as the poet says; to [plants] which do not bear fruit but have other uses, planes and pines and box-trees, 'black polar and sweet-smelling cypress'; [5] to those that bear sweet autumn fruit (albeit sometimes difficult to store). Animals too, the wild and tame, those that feed in air and on earth and in water, are born and mature and perish in obedience to the decrees of god: 'For every creeping thing moves because it is struck,' as Heraclitus says.

37. And while [god] is one, he is invoked by many names, and under a multitude of forms, whose diversity speaks of his multiform power. He is called Jupiter, from *iuvare* ['help'] – the Greeks quite rightly name him Zen, because he is author of our life (*zēn*). For Saturn the Greeks say 'Kronos', as if he is *chronos*: 'time' without beginning, unbounded to the end. He is

[God] is one, but he goes by many names, which are names for all the effects which he causes. We call him Zen and Dia, using these names as well [as 'Zeus'] , as if we were to say 'Through whom (*dia*) we live (*zēn*)'. He is called the son of Kronos, or 'time' (*chronos*), persisting from unshaken age to another age. He is called coruscating and thundering and sky-clearing, and

known as god of light, of thunder and lightning, and even of storms – and conversely of the calm; and many call him 'fruitful', many 'guardian of the city', others name him 'hospitable', 'friendly' – and call him by the names of all his offices. He is god of the army, of triumph and conquest, bearer of the trophy. And you will find a lot more of the same in the augurs and ancient Romans. Orpheus, when he wanted to express this power, sang about him in these words:

Ζεὺς πρῶτος γένετο, Ζεὺς ὕστερος, ἀρχικέραυνος·
Ζεὺς κεφαλή, Ζεὺς μέσσα· Διὸς δ' ἐκ πάντα τέτυκται.
Ζεὺς πυθμὴν γαίης τε καὶ οὐρανοῦ ἀστερόεντος.
Ζεὺς ἄρσην τρέφετο, Ζεὺς ἄμβροτος ἔπλετο νύμφη.
Ζεὺς πνοιὴ πάντων, Ζεὺς ἀκαμάτου πυρὸς ὁρμή.
Ζεὺς πόντου ῥίζα, Ζεὺς ἥλιος ἠδὲ σελήνη.
Ζεὺς βασιλεύς, Ζεὺς ἀρχὸς ἁπάντων, ἀρχικέραυνος·
Πάντας γὰρ κρύψας αὖθις φάος ἐς πολυγηθές
Ἐκ καθαρᾶς κραδίης ἀνενέγκατο μέρμερα ῥέζων.

['Zeus was first, Zeus last, lord of lightning | Zeus the head, Zeus the middle: everything was done by Zeus. | Zeus is the foundation of the earth and the starry heaven; | Zeus nourished man, Zeus goes as immortal nymph; | Zeus is the breath of all, Zeus the force of unwearing fire; | Zeus the root of the sea; Zeus is sun and moon; | Zeus is king, Zeus is the ruler of all, lord of lightning | For he hides everything and again into joyful light | from his pure heart he compelled them doing terrible deeds].

'aetherial lightning god' and 'rain god' – from rain and lightning and the rest. And he is named 'fruitful' from fruits, and 'protector of city' from cities [20], protector of birth, of the courtyard, of siblings, and of paternity his relationship with these things; of companions and friendship and hospitality and the army and trophy-bearing; of purification and of the murderer, and of suppliants and soothing, as the poets say. He is, to sum it up, truly the saviour and liberator of heaven and earth, and named for nature and chance, insofar as he is the cause of everything. The Orphic lines do not put it badly:

Zeus was first, Zeus last, lord of lightning
Zeus the head, Zeus the middle: everything was done by Zeus.
Zeus is the foundation of the earth and the starry heaven;
Zeus nourished man, Zeus goes as immortal nymph;
Zeus is the breath of all, Zeus the force of unwearying fire;
Zeus the root of the sea; Zeus is sun and moon;
Zeus is king, Zeus is the ruler of all, lord of lightning
For he hides everything and again into joyful light
from his pure heart he compelled them, doing terrible deeds.

38. The Greeks decided to refer to fate as εἱμαρμένη, because there is a chain of causes in which all are embraced; they call this same decree πεπρωμένη, because everything in this state of things is determined, and there is nothing in this world which is indeterminate; and they call the same thing μοῖρα, because it consists of parts (hence ἔννομος, because each has his own allocation). Ἀδράστεια, next, is the inescapable necessity of punishment. There are three Fates, a number which refers to time, if you consider that the capacity of each Fate relates to time: what has been spun and is finished is of a kind with past time; and what is [now] being turned by the fingers suggests the intervals of the present moment; and what has not yet been drawn from the fleece and brought under the control of the fingers, that seems to suggest things yet to come in the future and a later age. This is how

Necessity (*ananke*), I know, is so called as if to say 'the unmoved (*aniketos*) cause'; and Fate (*heimarmene*) because of 'stringing together' (*eirein*), and going unimpeded; and Pepromene because he has set bounds (*pepratosthai*) for everything (nothing among existing things is unbounded); Moira comes from his having appoitioned everything (*merizo*); Nemesis from distribution [*dianemesis*] to each; Adrasteia is the unavoidable (anapodrastos) cause in nature; Aisa 'always is' (*aiei ousa*). The attributes of the Moirai and the spindle nod in the same direction: for the Moirai are three, corresponding to the divisions of time. Some of the thread has already been spun by the spindle, some is about to be, some is now being spun. This is the pattern because one of the Moirai, Atropos, is what has been – and everything that is past is 'unalterable' (*atreptos*); Lachesis is assigned to the future, which

they are, and each has a name which fits their character: Atropos is the fate of past time, which not even god can undo; Lachesis is of future time, and named from the end, because even to those things which are in the future god has given their end. Clotho is concerned with the present time, as her very actions make clear – so that nothing lacks expert oversight.

nature is yet to determine; and Clotho to the present, accomplishing and spinning the appropriate things for each. And the myth expresses all this in proper order.

God is supposed, not erroneously, 'to pervade all the lands and sea-tracts and the depth of heaven'. Listen to these words of Plato: 'god,' he says, 'as the ancient account has it, pervades the beginning and end and middle of all things, and illuminates them and is carried above them in a swift chariot; the avenger Necessity accompanies this same god always and everywhere, the future punisher of those who split from sacred law; he makes it a mitigation honoured by anyone who immediately understands it from their very infancy, and opens and gives himself whole to it.'

But all these things are nothing else but god, as the noble Plato says: 'God, as the ancient account [says], holds the beginning and end and middle of all the things that are, and goes straight, travelling according to nature; justice always follows along with him, the punisher of those who abandon divine law', '[justice] in which he who will be blessed and happy should at once from the beginning partcipate.'

Toronto. Revision of 1st October, 2021

Our ‘Great Island’