

Chapter 11

Anaxagoras (and Archelaos)

1. Life and Book

Anaxagoras brought philosophy to Athens; and it was the Ionian tradition that came with him. Perhaps Xenophanes was in Athens for a while before Anaxagoras came; probably Empedokles (and a little later Zeno too) visited Athens while Anaxagoras was there, and before his book had made him universally famous.ⁱ But Anaxagoras lived in Athens for some thirty years; he wrote and published his book there; and he had influential friends (notably Perikles) and philosophical Athenian followers whose names we know.

He was born in Clazomenae — a small city near Smyrna — about 500 BCE; and he was probably a few years older than Empedokles.ⁱⁱ But his philosophical essay was a work of his maturity. The influence of Zeno on his thought is as plain as that of Parmenides; and it is fairly certain that he knew the poem(s?) of Empedokles when he wrote. He may also have known the book of Philolaos.

It seems safe to say that he came to mainland Greece with the army of Xerxes in 480 BCE; and that he settled in Athens as soon as Xerxes was forced to retreat. He was then about twenty; and he was already a student of natural philosophy. But he did not write his book — or at least he did

not publish it — for at least another twenty years. The book appeared some time after the fall of a great meteorite at Aegospotami in 467 BCE.ⁱⁱⁱ

When the book was published — and perhaps even before that — Anaxagoras became notorious as a philosophical atheist. The political enemies of Perikles attacked Anaxagoras (both for this, and for “Medizing” — i.e., being pro-Persian in politics) as a way of embarrassing the great leader of the democracy. It is not clear when Anaxagoras was banished; and this may possibly be because he was banished *twice* (about 450, and again about 432). If we adopt this hypothesis it becomes easier to understand why the young Sokrates was dependent on the *book*.^{iv} (After 450 Anaxagoras himself would simply not have been there to talk to.)

Probably Anaxagoras wrote only the one book;^v and he was a very passive kind of “Medizer.” He had left a wealthy family behind in Clazomenae, and he cared nothing for political influence. Perhaps he said that it wouldn’t have mattered if the Great King had conquered the Greeks, because what mattered was to “study the heavens and the whole order of the world” (A 1).^{vi}

Plato’s Sokrates believes that it was this theoretical concern that drew Perikles to him; but that Perikles “drew from it what was useful for the art of speaking” (A 15 — *Phaedrus* 269e-270a). Certainly Anaxagoras loved arguing and disputing; he left the saving of souls to the Italians. Euripides enjoyed both his book and his company.^{vii} In Lampsakos during his last years,

Anaxagoras is supposed to have said that the Athenians missed him more than he missed them (A 1).

He died in 428 BCE, much honored by the Lampsakenes. His disciple Archelaos — who certainly had a study-group in Athens at some time during the absence of Anaxagoras — then became the leader of his former teacher’s study-group in Lampsakos (A 7).

2. The impact of Zeno

Simplicios (writing in the sixth century) still had a copy of Anaxagoras’ book; and he quoted it in his commentaries on Aristotle. Almost all of our extended fragments come from this source. The book began: “Together were all things, infinite both in multitude and in smallness, for the small

too was infinite. And when all things were together, nothing was clearly knowable because of its smallness; for air and aether covered all things, being both infinite. For in the all [together] these are greatest both in multitude and in size” (B 1).^{viii}

What is evident at once is the influence of Zeno.^{ix} Parmenides had established that “out of nothing, nothing comes.” So everything that reveals itself in experience, has to be a moment or aspect of eternal being.^x But then Zeno claims to have shown that motion and change are not intelligible, because of the infinite divisibility of intelligible space and time. Anaxagoras recognizes the possibility of integrating Being with Seeming, through the acceptance of Zeno’s conceptual assumptions. It is also evident that he rejects Zeno’s *conclusions* as sophistical; that there *is* motion and change is a given fact to be explained as well as possible.

Being and Becoming (motion, change) can only be united in a *cyclic* conception. Becoming must go round in a circle from a “beginning” or first moment, that is *logical*, rather than temporal. In time, the first moment must eventually return, and everything must “begin” again. (Empedokles had understood this essentially Pythagorean view; and we may fairly suppose that Anaxagoras played with cyclic theories of the “opposites” before he encountered the paradoxes of Zeno.)^{xi}

After meditating on Zeno, Anaxagoras posited an original condition of the cosmos in which “everything was together” homogeneously. The “seeming” aspect of Being at this (*logically* first) moment was an enormous fiery cloud. This appearance was the qualitative aspect that results from a ratio of perfect quantitative *balance* in “things” (*chremata*). This material balance is changed by the activity of “Mind” (*Nous*), the unique moving cause — conceived at this first moment as *still*, and at all times *as separate* from any quantitative balance of “things.” (Thus “matter” is a valid abstract name for the “all things together” of Anaxagoras.)^{xii}

The “all things” that are present in this fiery cloud, are all of the substantial physical things that we can identify and name in experience. We cannot say that Anaxagoras has made a clear distinction between a “thing” and an “event.” He would have agreed probably that the Herakleitean

lightning-flash was a “thing”; and the identity of the cold meteorite at Aegospotami with the flaming meteor that flashed across the sky, caused him to say that the Sun was a very large fiery rock. But he has set the free conceptual search for “substance” in motion; and when he asks “How can hair come out of not-hair, and flesh out of not-flesh?” it is the primitive shape of Plato’s theory of Forms that is being born (B 10).^{xiii}

3. The concept of Mind

We might argue that Anaxagoras’ concept of Mind is more than half born in the activity of the Empedoklean Love. Love operates “for the best” just as Sokrates wanted “Mind” to do. But Sokrates was unhappy because the Mind of Anaxagoras operates more in the manner of Empedoklean Strife. It sets up a whirling motion, which causes the originally homogeneous cloud to “separate” into different “things.”

Anaxagoras writes about the “infinite” cosmic *Nous* in highly eulogistic terms that pleased Plato and Aristotle; but upon closer acquaintance they were disappointed. The infinite Mind is “the most subtle of all things and the purest, and it has all judgment [*gnōme*] about everything, and the greatest strength; and it controls all things, both what has soul, and the greater, and the less. And Mind controlled the whole revolution, so as to make it revolve in the beginning” (B 12).^{xiv} But this “control” is of the type that an unconscious organism exhibits. The cosmic *Nous* is a world-soul whose *gnōme* is of a quite instinctive — almost mechanical — kind.

The domain of Mind *grows* like an organism. The motion begins as a small whirlpool-formation, and it gradually spreads. Initially Mind creates dense things and rare ones, hot centers, and cold ones, bright objects and dark, solid dry matters and liquid wet ones. But whatever changes it produces, “all things are <still present> in all things,” just as everything possible was present but hidden in the original fiery cloud.

The most consistent way to understand this paradox, is to begin from the homogeneous and materially continuous One of Melissos, while granting the existence of motion, and the completely independent existence of a motion-producing agent.^{xv} The homogeneous One is the moment of unmoved material balance at the center of a great continuum of all possible sensible qualities.^{xvi} The motion caused by Mind changes this perfect balance in one place, and necessarily creates a compensatory imbalance in another place. The change of quantitative ratios is expressed most simply by the terms “dense” and “rare” (as Anaximenes saw in his meditation on Anaximander’s Boundless, which was the first formulation of the “all-together that has no determinate quality”). But any change of ratio shows up as an indefinitely large *array* of sensibly apparent qualities. Thus what motion makes “rare” is (let us say) *hot*; and the “dense” patch created somewhere else will be *cold*. But what is dense can still be rarefied again — and so made *hot*, or perhaps this time colder than ever; and what is rare can be condensed (without necessarily becoming cold). Every part of the continuum is capable of every degree of density, and of temperature; and this does not just apply to density and temperature. It is true for every nameable *quality*. So in this sense “all things [i.e., all sensible qualities] are always in all things”; and cosmic Mind, by changing the qualitative ratios of some sundered piece of the spatial continuum, can turn anything into anything else, or get some amount of anything out of any other thing. Once we grant the postulate of infinite divisibility, this truth will hold no matter what quantity of the spatial manifold we are considering.

It is not true, however, that in the world as we know it, anything at all can turn into anything else whatever. So Anaxagoras has to qualify his doctrine of the omnipotence of the cosmic Mind somewhat. *Nous* is omnipotent in relation to the logically primitive “all together.” But its actual procedure has been to withdraw from that position with respect to what we know as the *inorganic* world: “After Mind initiated motion, it separated itself from all that was moved, and as much as mind moved [separately], all this was dissociated; being moved and dissociated, the revolution made these [separated things] dissociate far more” (B 13).^{xvii}

Mind is actually present only in the *organic* elements of the physical world. The main structure of the world is *mechanical*. In this inorganic sphere, divisions can be made with a hatchet;

and nothing new ever emerges from hatchet-division. Thus, we can hammer gold into a leaf so thin that it is almost transparent. But it is still gold; and the leaf can be melted back into a bar. The hot and the cold, however, have not been “cut off by an axe” (B 8);^{xviii} and where *Nous* is still present, division with a hatchet only causes death (the separation and withdrawal of Mind); after that the material thing continues to dissociate itself gradually in a process of putrefaction. The body becomes “earth and water” (as Xenophanes said); and the *Nous* becomes part of the general fertility of the Earth.

It is clear that Anaxagoras tried to conceive the body of the cosmos as mechanically (inorganically) as he could. But the accusation of “impiety” was probably unjust with respect to his view of the Sun. He used the meteorite as evidence that the Sun was a mass of molten rock or metal. But there is an evident difference between the Sun which keeps on burning, and the meteor which (being “dissociated” from its divine source in the heaven) has *died*, like us mortals, and is now a lump of inorganic matter. *Nous* is still divinely present in the Sun; and it is even present in the Moon — but only in the same way as it is present in Mother Earth.^{xix}

Where *Nous* is fully and properly active, it does not divide things mechanically into “like parts” but organically into “seeds” (the “parts” of *other* things on the rational continuum).^{xx} Anaxagoras’ concept of Mind’s non-mechanical separative power was probably based on the paradigm offered by animal nutrition and growth. We consume vegetables and animal flesh; and somehow, our hair grows, and our own quite different flesh increases. The *Nous* in us changes the ratios, so that the “parts” of human flesh, hair (and so on) emerge from what we eat — and the material substances with the remaining complementary ratios are excreted (B 10).^{xxi} Whenever the “seeds” of something are collected from something else, there will always be a residue of matter that must have whatever qualities are determined by this logically complementary (“left-over”) character. That is why Anaxagoras said that the “all things together” contained “the wet and the dry, the hot and the cold, the bright and the dark, *and much earth* present in it, and seeds” (B).^{xxii} (He thought of the inevitable *residues* of any *transformative* change, as being generally solid — or “earthy” — like our faeces.)

Thus in our world “A share of everything is present in all things, save only Mind, and there are some things in which Mind is present too” (B 11).^{xxiii} *Nous* is present wherever there is life; but it is only fully developed (or “purified”) in those who recognize the *kosmos* as their true fatherland (A 1: 7). *Nous* is strictly homogeneous; but “nothing else is like anything, but these things are and were most evidently each thing of which there are most in it” (B 12, end).^{xxiv}

4. The *kosmos*

We start, therefore, from a homogeneous, but unimaginable, mass — the harmonized Sphere of Empedokles (conceived Ionically), or the One of Melissos conceived as a mass of contradictory potentials, because it is at the midpoint of every imaginable qualitative continuum. Mind separates out the “seeds” of different perceptible and nameable things — beginning with Aither and Air, the hot and bright on one side, and the cold and dark on the other. But also Water and Earth, the wet and the dry, emerge at the beginning (B 4).^{xxv}

Any separation must have at least two complementary products. “Mental” separation is produced by a whirling motion that is unimaginably fast (B 9). The cold, wet and dark stuff that it produces, settles towards the center; while the hot, dry and rare stuff flies out to the periphery. But when Mind lets mechanism take over, some solids are hurled outwards to the periphery also (B 16).^{xxvi} (That is how the “fiery rock” of the Sun gets to be where it is; but there are other “earthy bodies” in outer space too — A 42.)

Much of Anaxagoras’ theory of the heaven, seems to have been taken over directly from Anaximenes. There is a solid sky-dome (slightly tilted), with fiery fragments embedded in it. Anaxagoras knew that the Moon shines by the reflected light of the Sun (B 18; A 42). But it seems probable that he learned this first from Empedokles (or even from Parmenides).^{xxvii}

He also knew that solar eclipses are caused by the Moon. But there seem to be *two* theories of the lunar eclipse (and of the Moon's phases) in our reports. At one time, Anaxagoras taught (like Anaximenes) that earthy bodies between the Earth and the Moon (or the Sun) obscured it; and at another time, he grasped the true explanation of eclipses in terms of the Moon's (or the Earth's) shadow (A 42).^{xxviii} (The Earth's shadow also accounted for the Milky Way. The Earth prevents the Sun beneath it, from shining on that part of the sky — so that a mass of stars shows up, which would not be visible to us if the Sun's light could reach them, as well as it reaches the rest of the night sky — A 80.)^{xxix}

He speculated that the Moon was another life-populated Earth just like our own. But he seems not to have believed this consistently, since there is another report, according to which the Moon was a “burning stone” like the Sun (A 42, A 77).^{xxx}

The most natural hypothesis, to explain these alternative theories, is to assume that Anaxagoras began as an “Ionian” thinker in the tradition of Anaximenes, and changed his mind when he encountered the thought of Parmenides, Empedokles, and Zeno. In the theory of the Moon as life-populated we can clearly recognize the impact of Philolaos upon his earlier Ionian view. The actual publication of his book was a response to the Italian influences. But the “school” — and especial Archelaos — preserved, and remained faithful to, his older (more Ionian) views.

In the year of the meteorite (467 BCE) Anaxagoras saw a comet. His theory for that was that it was a mass of small planets. He thought that shooting stars were a kind of sparking in the sky — he did not connect them with the great meteor (A 1: 9, A 11, A 42: 10, A 82-83).

His theory of the Earth (as reported to us) came directly from Anaximenes: it has a flat surface, and it rides on a cushion of air. It cannot fall, because the Air is so powerful, and there is no void.^{xxxi} The Earth is also full of cavities, and there is Aether inside it, which is the cause of earthquakes (A 89).^{xxxii} There is a conflict of air and fire involved here — as also in several storm-phenomena (A 84).^{xxxiii} For the rainbow we have his own words: “We call ‘Iris’ the reflection of the

Sun in the clouds. It is a sign of storm, because the water flowing round the cloud makes wind or pours down rain” (B 19).

It seems clear that Anaxagoras believed the present state of the *kosmos* to be completely stable. The world order will not decay, or break up, and be succeeded by another one. The doxographers (depending ultimately on Theophrastus) put him firmly in the “one world” camp (A 63, A 64). But there is a curious interlude in fragment 4 where he discusses another *human* world that exists somewhere. The passage seems (most naturally) to refer to the formation of another *kosmos* elsewhere in the infinity of space (no space being void, and Mind being everywhere). Or it may refer to the other side of our Earth. It reads as follows:

And men have been compacted, and the other animals that have soul.
And there are inhabited cities and manufactured works for the men,
just as with us, and there is a sun for them and a moon and so on, just
as with us; and the earth grows many things of all kinds, of which
they gather the most useful into their dwellings and use them. This is
my account of the separating, that it must have taken place not only
with us, but elsewhere too.^{xxxiv}

I conclude that Theophrastos only meant to deny that Anaxagoras believed in the dissolution and rebirth of our *kosmos* in time. But Anaxagoras *also* thought that what Mind has done here, it can do anywhere; and he agreed with Melissos that there was an infinity of extended material being in which other world-systems could be created.^{xxxv}

5. Finite life and mind

Thales had said (probably) that life originated in the water; Anaximenes proposed the air as the vital element; Xenophanes insisted on earth and water together. Herakleitos (and the Italians)

focussed attention on fire. Anaxagoras applied his theory of the “seeds of all things in all things” to the theory of Anaximenes. Theophrastos tells us that he said “the Air contains seeds of all things, and these brought down together with the water generate plants.” The Christian bishop Irenaeos adds that animals were generated “by seeds falling from heaven to earth.” The cosmic *Nous* duplicates itself through an interaction of the elements — using the Air as a starting agent. Our soul is in our breath. Even plants breathe (A 117, A 113, A 115).^{xxxvi}

All living things — even plants — also have some pleasure/pain sensations (A 116, A 117).^{xxxvii} *Nous* is completely homogeneous, so all differences of living capacity have to be explained in terms of bodily structure. The important difference between humans and other animals is that we have hands; but it is also true that some of us do not use all the wit that we have (A 102).^{xxxviii} Sleep is necessary for the body (not for Mind); and death is the end of the soul’s existence, as well as the body’s (A 103).^{xxxix}

Anaxagoras had some distinctly “Pythagorean” prejudices about sexual *conception* — derived almost certainly from the “Opinion” of Parmenides. The seed comes from the male, with the sex of the offspring determined in it; males are born from the right-hand testicle, and carried on the right side of the womb (A 107).^{xl}

Like Alkmaeon, he realized that perception and consciousness were centered in the head; and he had observed (or read) that the head forms first in the development of the embryo. He understood the nutritive function of the umbilical cord (A 108, A 110).^{xli} He insisted that the sensation of touch depended on contrast; so knowledge here was by opposites, not by “like to like” (as Empedokles thought). For this reason, too, all sensation is slightly painful (A 92).^{xlii}

Anaxagoras was interested in mathematics; and his appreciation of Zeno’s arguments caused him to conclude that we grasp reality quite inadequately with our senses. We cannot detect a very slight change of color, which we know to be real (B 21). But the cosmic Mind is like the God of Xenophanes: it knows everything; and our finite minds can know more than our senses tell us. Thus,

we know that “out of nothing, nothing comes”; and consequently that “all things are in all things,” and that “the sight of the non-evident is what appears.” Unless we grasp this, and consequently embrace the policy of scientific research and observation that it imposes, Parmenides, Zeno and Melissos will have landed us in the Protagorean world where everyone has only the best interpretation they can make of their own sense-impressions (B 21a).^{xliii}

6. Archelaos

Among “those round Anaxagoras” it appears that the most important was the native Athenian, Archelaos. He is remembered principally as the teacher of Sokrates. During the period when Plato would have us believe that the young Sokrates was expounding the nascent theory of Forms to Parmenides, he was more probably reading the book of Anaxagoras and listening to Archelaos.^{xliv}

Archelaos did, apparently, also write a book (60 A 2);^{xlv} and he was (perhaps) more interested in ethics and politics than Anaxagoras. We have nothing but sparse secondary reports of his doctrine; and the reports are not impressive. But the fact that Archelaos went with Anaxagoras to Lampsakos, and carried on the study-group there after the master’s death, persuades me that he was probably a much better thinker than most of his reporters. In dealing with views that derive from the subtleties of Anaxagoras, it is the reporters who are confused.

Archelaos accepted the logical foundations established by Anaxagoras. There are an indefinite number of forms of matter that are primitively *real* in the Parmenidean sense (i.e., unchanging). But Archelaos disagreed with Anaxagoras about the separate “purity” of Mind. *Nous* itself, he said, is the result of a “mixture.” The formation of the *kosmos* was with the separation of hot and cold: the hot is in motion, the cold at rest. So it seems that Archelaos believed in a mixed fire-breath soul — both for the *kosmos*, and for us.^{xlvi}

Mind, in Archelaos, does not create a permanent *kosmos*. The *kosmos* is set up mechanically. It is essentially mortal; it will break down, and another will become established. We cannot quite say that this will happen “by chance”; but we do have to say that the operation of Mind is rather “chancy.”

Archelaos was less impressed than Anaxagoras by the *a priori* rationalism of the Italians. He remained more faithful to the proto-mechanical theory of Anaximenes. Neither in the world, nor in human affairs is there an *a priori* principle of order. Archelaos was a near contemporary of Protagoras; and he was obviously more influenced by him than by Zeno (who probably helped to convince Archelaos that Protagoras was right). “Right and wrong are not by nature but by convention” (A 1), he taught; and “Chance” was the foundation of the *kosmos*, just as it is of our lives.

No account *can* be given, presumably, of how the original “mixture” of cosmic *Nous* (which sets off orderly motion) occurs. It is bound to happen (“statistically,” as we say, or “by chance” in the ancient vocabulary). But Archelaos was much concerned about the origin of finite mind (or in plainer terms, of *life*). Here the prior formation of the Earth was essential, since life began when the Earth was a watery swamp.^{xlvii} The swamp itself was nourishing, and when it was warmed, all of the forms of life arose (A 1, A 4).^{xlviii} *Nous* is present, everywhere that life arises (just as Anaxagoras taught). It is a pity that none of our sources tells us more about Archelaos’ theory of how *Nous* operates at the human level.

Far from being a weak thinker, Archelaos gives us a glimpse of what the Ionian tradition at the point of its highest development, became in the age of the Sophists. The view that he was “a second rate thinker motivated by the desire [to include] as many as possible of the doctrines of his most eminent predecessors”^{xlix} is quite mistaken.

Notes

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- i. I have suggested (Chapter 10, note 10) that Empedokles came in 456 BCE; if we accept Plato's fantasy for Zeno at least, we can say that he came in 452 BCE. The book of Anaxagoras (and his first exile?) was written and published soon after that.
 - ii. As far as birth and death are concerned, the sources can be persuasively reconciled for the dates 500 BCE to 428. The banishment of Anaxagoras, and his removal to Lampsakos, is more difficult to date. One plausible view is that he was exiled twice — once upon the motion of Thucydides, son of Melesias, around 450 BCE, and again about 432, upon the motion of Cleon. (Perikles could have secured his return after the ostracism of Thucydides in 443 — and this second stay in Athens may have been additional to the “thirty year residence” of the tradition.) For the evidence, see 59 A 1; and for a judicious summing up, see Guthrie, 1965, II, 322-323.
 - iii. For the meteorite see 59 A 11. Stesimbrotos reported that Themistokles studied with Anaxagoras (30 A 3). This could not have been later than 470 BCE when Themistokles was ostracized. The book was certainly not published as early as that, but Themistokles is a possible channel through whom Melissos could have become acquainted with the theories of Anaxagoras. (See Chapter 9, note 26.)
 - iv. Sokrates may have become interested in natural philosophy during the *first* exile of Anaxagoras (if that occurred shortly before 450 BCE). Otherwise, Plato's story that he took to it because he heard someone reading Anaxagoras' book is hard to credit (*Phaedo* 97b). Archelaos would have been the leader of the “school” in Athens at this time (and Sokrates

certainly worked with him). If Perikles secured Anaxagoras' return, only to see him banished again within a few years — together with Archelaos, who then succeeded him as head of the school in Lampsakos in 428 — the difficulties in our sources can be overcome. (But it is all guesswork! and it would certainly be dangerous to put too much trust in Plato's account.)

- v. See A 37 (Diogenes Laertios I, 16). But a study of the squaring of the circle is also mentioned (A 38 — Plutarch). The essay on perspective in painting is more probable as an actual publication (A 39 — Vitruvius). (Anaxagoras' essay on Nature was the first philosophy book to contain diagrams — A 1, 10 — unless perhaps Anaximander wrote his treatise round his map of the world.)
- vi. Diogenes Laertios, II, 10; also A 30 (Aristotle, *Eudemian Ethics*, I, 5, 1216a, 11).
- vii. The biographers said Euripides was his "pupil." I have expressed this more sensibly. For the evidence of influence, see Guthrie, 1965, II, 323-325.
- viii. Barnes (1987, 227-234) has printed the fragments in the continuing context of Simplicios' commentary.
- ix. P. Curd (1998, 174) says that "It is generally assumed" that Empedokles and Anaxagoras were the targets of Zeno. This is natural enough if one accepts Plato's dates for Parmenides and Zeno. But the earlier date in our records produces a much more plausible relationship between Anaxagoras and Zeno. (As far as I can see, there is no important relation between Empedokles and Zeno on either chronology.)

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- x. Compare 59 B 21a: “The sight of the not-evident is the apparent.”
- xi. It would have been natural for him to begin by seeking to mend Anaximenes’ theory in the light of Parmenidean logic. He was certainly more sympathetic with the calm observational materialism of Anaximenes than with the “cosmic ethics” of Anaximander and Herakleitos — cf. 59 A 41. (That he *studied* with Anaximenes — A 7 — is chronologically impossible. But we shall see reasons for distinguishing the doctrines of his book, from the earlier teachings of his “school.”)
- xii. Anaxagoras made a clear conceptual distinction between Mind and Matter — although he had no general name for Matter yet. This was why Plato and Aristotle both esteemed him above all his predecessors. (But Plato makes Sokrates complain that he still does not have a properly *teleological* concept of Mind — A 47, *Phaedo* 97b-99c. He did not ask what Mind’s *purpose* was in the organization of Matter. *That* concern was what distinguished the Italians quite generally.)
- xiii. Notice that Anaxagoras is here siding decisively with Parmenides against Herakleitos. Aristotle was so impressed with Anaxagoras’ insistence upon the *essential* substantial identity of every nameable “thing” — with the fact that everything consists of “like parts” even when it is divided *ad infinitum* — that he created a pseudo-problem in the whole secondary tradition, and made the interpretation of the far more important doctrine that everything contains “seeds” of everything else appear impossibly difficult. I am assuming that the seeds *have* “like parts” as Aristotle claims (A 43, *On the Heaven*, 302a 29); but *the seeds are not* “like parts” of the things they are in, because Mind itself is present in them. It is the distinction between two kinds of division — the cleaving of the hatchet, and the “separation” by Mind — that is crucial for the understanding of what Anaxagoras meant.

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- xiv. Anaxagoras is certainly straining towards the conception of an *immaterial* substance in his concept of *Nous* — cf. Guthrie, II, 276-8, or McKirahan, 1994, 219-20.
- xv. In suggesting that Themistokles conveyed something of Anaxagoras' views to Melissos, I am setting up a feed-back relation between them. But it does not matter at this point if this is only an imaginative fiction of mine. The "It is" of Parmenides or Love's perfect Sphere in Empedokles provide an adequate starting-point for Anaxagoras' theory. He describes his "fiery cloud" of the "all things together" in a rather more Herakleitean way, because the immediate presence of a pair of opposites (two pairs in fact — the hot and cold, and the light and dark) is required. The description only seeks to characterize the basic continua of physical change. We cannot really imagine (or picture) the "all-together" because any picture must either err toward one of the poles, or simply place the two poles side by side. Thus Anaxagoras speaks of "Air and Aether"; but he also says explicitly "when all things were together not even any color was evident" (B 4).
- xvi. Something very like my interpretation of Anaxagoras was first advanced by G. Vlastos (1950, in Furley and Allen, 1975). I worked most of it out for myself before I knew that. Before Vlastos, all accounts of Anaxagoras — and especially that of F.M. Cornford (1930, in Furley and Allen, 1975) had to ascribe a basic inconsistency to him.
- xvii. W.A. Heidel was the first to read this fragment correctly — see Guthrie, 1965, II, 274 n2. The prevailing consensus, which takes *apekrineto* impersonally as "there was sundering of," is strained; and it makes what follows repetitive. It is precisely here that Mind begins to act in the mechanical way that Plato and Aristotle objected to. Anaxagoras uses *apokrinein* for the Mind-process of "separating" one type of matter *out of* another type; and *diakrinein* for the mechanical moving of one thing *away from* another — "dissociation" in my rendering.

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- xviii. The great mass of secondary reports — beginning with Aristotle — that Anaxagoras accepted infinite divisibility into “like parts” or *homoeomers* — should certainly be accepted. I agree with G. Vlastos (1975, 349 note 66) that *homoiomereia* was probably original in Anaxagoras. This is not the majority view. Most students think that the word is Aristotle’s (see for instance, Guthrie, II, 325 or McKirahan, 1994, 207-8). But (in any case) Anaxagoras’ view about the Millet Seed, for example, was that the thousandth part *does* make an impact, but one that we cannot hear (compare B 21 where the example is actually that of color change). But *Nous* divides things in a different way — still mathematically, but not mechanically.
- xix. Thus in the view of Anaxagoras even the mechanical inorganic world-frame is divine: “Mind which is forever, now assuredly is where everything else is — in the mass that surrounds [us], in the [things] that are associated, and in those that have been separated” (B 14 — the opening is corrupt; the emendation of Diels has been accepted here). *Nous* is a very subtle extended “stuff”; it is everywhere, even where it moves divisible things mechanically. For Sun and Moon see A 1: 8. Anaxagoras would have agreed with the retort of Voltaire, when the King told him that Laplace did not need the “hypothesis” of God: “*That, sire, is a hypothesis.*”
- xx. G. Vlastos (1950 in 1975, 323-8) gives a good account of how “seeds” were conceived in the scientific theories of the time.
- xxi. This may not be a *precise* verbal quotation. But we should be grateful for the insight that it gives us into the way that Anaxagoras’ mind worked. Compare B 22 (which shows how *general* his interest in nutrition was) — and A 46 (Aristotle, *Generation and Corruption*, 314a 18).

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- xxii. The necessity of a qualitatively unpredictable (and generally solid or “earthy”) residue in any transformational emergence of new “seeds” is the probable reason why Aristotle says that “*almost all* the things that are homogeneous, are generated and destroyed . . . only by aggregation and segregation” (A 43 — *Metaphysics* 984 a 11 ff). As the general category of solid residues, “Earth” is a kind of exception to the rule.
- xxiii. These “shares” (*moirai*) are the “seeds” (*spermata*) of B 4. It is true that *our* Mind can only get the “shares” or “seeds” that it needs for nourishment and growth out of *some* other non-dissociated (i.e. organic) things. But *in principle* the cosmic *Nous* could get anything out of anything. (If I am right, Anaxagoras anticipated the “Big Bang”; and even the periodic table of the elements.)
- xxiv. Anaxagoras repeatedly says that large and small things have *the same number* of “parts” (B 3, B 5, B 6); so in B 12 he is speaking of *proportions* in a different kind of division. His expression is *clumsy*; but I suggest that what he is trying to say *can* be consistently understood. (If Zeno had been continually present in the flesh to torment him, Anaxagoras might eventually have found a way to say what he meant clearly.)
- xxv. Anaxagoras is not concerned to distinguish between “substances” (fire, air, earth, water) and opposite qualities (hot, cold, wet, dry). That is why the last sentence of B 12 is so clumsy and unclear. (If note 22 above is on the right track, then “earth” is not really homoiomerous; and it does not matter to Anaxagoras if human flesh is not homoiomerous either. He does not have to know precisely what things there are that can be cleft by a hatchet.)
- xxvi. See also A 71 (Aetios) and A 12 (Plutarch).

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- xxvii. Compare Empedokles fragment 43 which comes from the same context as 59 B 18 in Plutarch. (Anaxagoras' *earlier* view was probably that the Moon was a "burning stone" — see below at note 30.)
- xxviii. *Both* explanations are given in this report. It seems likely that Anaxagoras taught the theory of Anaximenes for years orally, and then published the right answer in his book, after he read Parmenides and/or Empedokles. Compare the next two notes.
- xxix. This is from Aristotle, *Meteorology*, 345a 25 ff. Aristotle ascribes this curious theory to "those round Anaxagoras" (i.e. to his "school"). This shows that there was an oral tradition about the "school doctrine." (The evidence seems in general to support the view that Anaxagoras' own book contained later and sounder theories, learned from Italian sources.)
- xxx. Guthrie thinks that the inhabited Moon fantasy may have arisen from a doxographic misunderstanding of the passage in B 4 that refers to another *kosmos* like ours (see below). But again it seems far more likely that there was a discrepancy between earlier oral teaching, and the later book. (Philolaos believed in an inhabited Moon — 44 A 20.)
- xxxi. Compare 13 A 20 and 59 A 88 (both in Aristotle, *On the Heaven*, 294b 13 - 295b 25); also 59 A 42(3).
- xxxii. Probably Anaxagoras made the connection between earthquakes and volcanoes.
- xxxiii. Anaxagoras sometimes agrees with Anaximenes, and sometimes not — but it is clear that he is always starting from what he found in Anaximenes.

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- xxxiv. B 4 is probably not a continuous unity at all. Another *kosmos* elsewhere in space certainly seems to be the most natural interpretation. (Even for a human population on the other side of the world, the Sun and Moon would be “our Sun and Moon,” not “a Sun and Moon.”) However, Plato makes Sokrates (in the *Phaedo*, 109b) suggest that our world-map shows only one of many “hollows in the Earth.” “Many other men,” he says, “dwell elsewhere in many similar places.” The view of a large group of scholars is that Anaxagoras was the original inventor of *this* fantasy.
- xxxv. The *book* certainly shows signs of the influence of Melissos. (The doctrine of a single stable world system may have been part of the earlier school-tradition of “those round Anaxagoras” — and known as such to Aristotle and Theophrastos. The existence of an oral tradition distinct from — and earlier than — the book is the best explanation of the conflict in our reports.)
- xxxvi. For the primacy of Air see A 1, 9 and A 93. A 42, 12 mentions Water as the natal medium — but Anaxagoras studied and understood the function of the fish’s gills.
- xxxvii. Was it this theory of Anaxagoras, that caused Melissos to *deny* that the true Being suffers pain? If *he* heard about the *early* views of Anaxagoras, this need not conflict with note 44 as far as his influence upon Anaxagoras’ *book* is concerned.
- xxxviii. From Aristotle, *Parts of Animals*, 687a 7; Aristotle thinks that Anaxagoras has things backwards: Nature gave us hands because she had already given us the wit to use them. See also A 101a.

xxxix. *Nous* itself never “dies.”

xl. From Aristotle, *Generation of Animals*, 763b 30.

xli. Empedokles thought that the heart formed first, but he also understood the umbilicus — 31 A 83, A 84. Since there was a conflict in the books, it seems probable that Anaxagoras made his own observations in this field.

xlii. The eye-pupil is dark so as to be light-sensitive; and the ear is so constructed that sound actually reaches the brain.

xliii. The looming influence of Protagoras is evident in A 28 — Aristotle, *Metaphysics*, 1009b 25.

xliv. Everything is vague in the middle history of Anaxagoras and the early history of Sokrates. But the historical fantasy of the *Phaedo* fits the rest of the evidence (unreliable as it is) better than that of the *Parmenides*. So I am assuming that Archelaos was born between 490 and 485 BCE; and that Anaxagoras was banished (for the first time) between 455 and 450 BCE — perhaps as a direct result of the publication of his book. (This is only a historical fantasy of my own.)

xlv. The source of this report is late (Suda). But the fact that Hippolytos can summarize the views of Archelaos, testifies to its truth indirectly; and some of what Aristotle ascribes to “those round Anaxagoras” may actually have come from the book of Archelaos.

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- xlvi. My own hypothesis is that Archelaos remained faithful to Anaximenes (and resisted the Italian influence) as far as possible. Thus his book reflects the *earlier* views of Anaxagoras. Aetios gives a confused account of Archelaos' views about *Nous*. In one place he reports that "Air and *Nous* are God, but *Nous* is not *kosmos*-creator" (60 A 12) and in another that the *kosmos* is maintained by "the hot and ensouled" (A 14). But since Hippolytos tells us that *Nous* is a *mixture* (A 4), the reconciliation of the record is not difficult. (Whatever is not otherwise ascribed in my account is based on A 4 — see Barnes, 240-241 for translation.)
- xlvii. It was Archelaos' theory of the origin of finite *Nous* that led Epiphanius (A 9) to say that "everything has come to be from Earth, for Earth is the *arche* of the wholes." (If we attend to the plural form of "whole," this is not misleading or mistaken.)
- xlviii. See Barnes, 240-241. Evolutionary development is impossible, because "all things" are permanent; and the primal swamp also comes from Anaxagoras — 59 A 42, 5.
- xlix. This is the verdict of J.E. Raven (in KR 398-9, repeated in KRS 389). But Guthrie says more or less the same. I am confident that Sokrates would not have agreed; and nobody doubts *his* critical acumen.