

12-1975

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Recommended Citation

Reesor, Margaret, "Anaxagoras and Epicurus" (1975). *The Society for Ancient Greek Philosophy Newsletter*. 237.
<https://orb.binghamton.edu/sagp/237>

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Anaxagoras and Epicurus

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December, 1975

"Of the ancients Epicurus received most favorably Anaxagoras, although he opposed him on certain points, and Archelaus, the teacher of Socrates." This astonishing statement made by Diogenes Laertius deserves serious consideration (D.L. 10.12). It is, of course, impossible to prove that Anaxagoras' philosophy directly influenced Epicurus. The most that I can hope to show is that Epicurus in his interpretation of particular philosophic problems departed from Democritus and adopted a point of view similar to that of Anaxagoras.

For Anaxagoras' methodology perhaps the most interesting fragments are those which deal with the color of snow. Sextus Empiricus writes: "We compare that which is perceived by the mind with the phenomena, just as Anaxagoras compared the proposition: 'Snow is congealed water, water is black, and, therefore, snow is black' with 'Snow is white'" (59A97). According to Cicero, Anaxagoras said that snow did not even seem white to him because he knew that the water from which it was congealed was black (59A97). This interpretation, however, is doubtful, since a scholiast states specifically that Anaxagoras said that the black was in the white and the white in the black (59B10). Anaxagoras contrasted the evidence from sense perception with contradictory evidence from deduction. The evidence from deduction was what Epicurus called "evidence to the contrary."

If Anaxagoras intended to demonstrate that snow was both black and white, he could have done so by using the following arguments:

- (1) Snow is congealed water,
Water is black,
Therefore, snow is black.

- (2) If snow is black, sight is false,
 But sight is not false,
 Therefore, snow is not black.
- (3) If snow is either black or white, either sight or logos is false,
 Neither sight nor logos is false,
 Therefore, snow is not either black or white.
- (4) If snow is both black and white, both sight and logos are true,
 Both sight and logos are true,
 Therefore, snow is both black and white.

Anaxagoras' use of an argument of the first type is attested by the passage in Sextus Empiricus quoted above. An argument of the second type is found in fragment B 5 of Anaxagoras: "If all things are more, there would be more than all; It is not possible that there should be more than all; Therefore, all things are always equal (i.e. not more)." The third argument is a modified form of the type used by Zeno and by Gorgias in his Concerning Non-being. Zeno's scheme reads as follows: "If S exists, it must be either P or Not-P, but if it can be neither P nor Not-P, S does not exist."¹

If Anaxagoras had started with the postulate, "Snow is both black and white," he would have been faced with the necessity of providing confirmatory evidence or at least of showing that the postulate is not inconceivable. By pouring white and black drop by drop from one into the other, he could have shown that both black and white were in the mixture and that that which is present in a mixture is not always distinguishable by the senses. We know that Anaxagoras actually performed this experiment. Sextus Empiricus writes as follows: "'Because of our feebleness,' he (Anaxagoras) says, 'we cannot discern the true,' and he uses as proof of their unreliability the gradual change of colors. For if we should take two colors, black and white, and then we should pour them drop by drop from one to the other, sight would not be able to

distinguish the gradual alterations, although they subsist naturally" (59B21). That which we cannot discern is in the mixture; but also that which we can discern is in the mixture. We may, I believe, go one step farther, and assume that that which is present in the sense perception is in the mixture.

The experiment itself might be the basis of an inference in an entirely different context. From an experiment similar to the one I have described, Anaxagoras drew the conclusion that prior to the separation, when all things were together, there was no color visible at all "for the mixture of all things prevented it" (59B4).

When Anaxagoras said that we cannot discern the true, he meant that we cannot discern something which is a part or portion of the mixture. We cannot discern the black or the white in a mixture of black and white. It would seem to follow, therefore, that we can discern visible objects and that these are true. This assumption is supported by a fragment from Melissus which may, in fact, be an attack on Anaxagoras.² The passage reads as follows: "For if there are many, it is necessary for them to be such as I say the one is. For if there are earth and water and air and fire and iron and gold, and the living and the dead, and black and white, and the other things which people say are true, if, indeed, this is the case, and we rightly see and hear, it is necessary for each thing to be such as seemed good to me at first" (30B8). The word alêthes (true) in this passage seems to mean real or actual.³

What kind of evidence led Anaxagoras to postulate the nous? Anaxagoras describes the nous as follows: "Other things have a portion of everything, but nous is infinite and self-ruled, and is mixed with nothing, but it is alone by itself. For if it were not by itself, but were mixed with anything else, it would have a share of all things, if it were mixed with anything. --- It has all judgment (gnômê) about everything and the greatest strength. All those

things which have life both the greater and the less nous controls (kratei). And the whole revolution nous controls (ekratēse) so that it revolved in the beginning. --- And all those things which were mingled together and separated off and separated out nous knows (ἐγνώ). And whatever was going to be and whatever was, whatever is not now, and whatever is now and whatever will be, all these nous organizes (diekosmēse), and this revolution in which are now revolving the stars, the sun, the moon, the air and the fire that are being separated off. And the revolution itself caused this separating off. And the dense is separated off from the rare, the hot from the cold, the bright from the dark, and the dry from the moist" (59B12).⁴ To support his statement "Nous was mixed with nothing" Anaxagoras argued: "But if nous were mixed with anything else, it would be mixed with all things; but nous is not mixed with all things; therefore, nous is not mixed with anything else." If Anaxagoras held that the regularity in the movements of the heavenly bodies was a proof (tekmerion) of the existence of nous, his argument might have read: "If there is order, there is nous; there is order; therefore, there is nous." The orderly movement of the stars was a phenomenon which provided a vision of the non-evident. From the nature of the phenomenon we can draw conclusions about the nature of the non-evident. This is the meaning of Anaxagoras' famous statement: ὄψις γὰρ τῶν ἀδήλων τὰ φαινόμενα (59B21a).⁵ Anaxagoras undoubtedly made use of analogy. The nous of man knows, organizes and controls; accordingly, the nous of the cosmos knows, organizes and controls. In man the reasoning process is separate from the physical act. So too in the cosmos the nous organizes the revolution, but the revolution itself brings about the separation of the physical components.

In the area of human activity, nous, material causes, and an indeterminate number of other causes were used by Anaxagoras to explain the sequence of events. The evidence suggests that he did not recognize a system of antecedent causes

which determined an activity or event. There was, of course, no material cause to explain the existence of nous itself. We have to bear in mind the very limited function which Anaxagoras attributed to nous when we read the comments of Plato, Aristotle and Simplicius. Plato: "I saw that he did not use the nous at all --- but he assigned as causes air, fire and water and many other absurd things." Aristotle: "Anaxagoras uses nous as a device for the formation of the cosmos, and when he is at a loss as to why something is of necessity, then he drags it in, but in other respects he uses everything as a cause of those things which are happening rather than nous." Simplicius: "Anaxagoras, leaving nous on one side, as Eudemus says, and introducing spontaneity (automatizôn), proves many things" (59A47). We know also that Anaxagoras argued that none of the things that happen happened according to fate and that fate was an empty word (59A66). A scholiast reports that according to Anaxagoras all human affairs are directed by tyché (59A66).

In Anaxagoras' philosophy, however, a man's sophia was based not only on his ability to discern the non-evident through the phenomena, but on his understanding of logic and mathematics. This is made abundantly clear by the following passages: "It is not possible for Being not to be" (59B3); "It is not possible that there should be more than all" (59B5); "Since the portions of the large and of the small are equal in number, in this way all things would be in all" (59B6); and "Since it is not possible that there should be a smallest, it could not be separated" (59B6). Complementing man's powers of reasoning was his ability to make conjectures. Anaxagoras assumes that if "a mixture of all things" similar to that which existed prior to the formation of our cosmos existed elsewhere, it would be followed by a separating off similar to that in our cosmos, and the emergence of a world which would have the same physical structure as our world and the same type of society that we have now (59B4). Anaxagoras introduces this passage with the words: "It is necessary to suppose

that" (χρῆ δόξειν). A doxa, if we base our interpretation on this passage, is not confirmed and is not contradicted by evidence to the contrary. In a passage in the Metaphysics in which he argued that Democritus, Empedocles, Parmenides and Anaxagoras identified perception and knowledge, regarded perception as alteration, and consequently said that the phenomena which is according to perception is true, Aristotle attributes to Anaxagoras the saying, "The things that are (ta onta) will be such as men assume them to be" (1009b25-8=59A28). The saying attributed to Anaxagoras may very well be, as Cherniss suggested, of a moralistic nature with no significance for Anaxagoras' theory of sense perception at all.⁶

In his interpretation of many particular points Epicurus seems to have parted company with Democritus and adopted a point of view similar to that of Anaxagoras. The most common type of argument used by Epicurus has the following pattern: If A, then B; Not B; Therefore, not A. This is the type used by Anaxagoras in B5.⁷ Epicurus' argument: "Nothing comes into being from that which is non-existent, for everything would come from everything and there would be no need of seeds" (Ep. 1.38) can be restated as follows: "If something should come into being from that which is non-existent, everything would come from everything, and there would be no need of seeds; everything does not come from everything, and there is need of seeds; therefore, nothing comes into being from that which is non-existent." Similarly, the argument, "If there were no place, which we call void and space and intangible nature, bodies would have nowhere to be and nothing through which to move" (Ep. 1.40) may be expressed as: "If there were no void, bodies would have nowhere to be and nothing through which to move; bodies have somewhere to be and something through which to move; therefore, there is void."⁸

In my discussion of Anaxagoras I pointed out that in the experiment in which he poured white and black drop by drop from one into the other he was

demonstrating that it was not inconceivable that black and white were in the mixture although they were not distinguishable by the senses. Epicurus argued that it was not impossible that there were emanations, and Lucretius that it was not inconceivable that bodies which cannot be seen exist. Epicurus wrote: "What is more, there are impressions similar in shape to the solids, surpassing the phenomena by far in their fineness. For it is not impossible that such emanations should arise in that which surrounds them" (Ep. 1.46). Lucretius, trying to show that bodies which cannot be seen exist in things, uses the analogy of wet clothes spread out in the sun to dry. The moisture, which eyes cannot see at all, is broken up into small particles (1.266-7 and 305-10).⁹

In our consideration of Epicurus' sense perception we have to distinguish between Epicurus' concept of the true and his belief that the properties of the impression (phantasia) were the same as the properties of the solid body. Two crucial passages read as follows: (1) Since all that is observed or grasped by apprehension of the mind is true (Ep. 1.62); and (2) "Whatever impression of shape or of properties¹⁰ we get by apprehension of the mind or the senses, this is the shape of the solid object, if it comes about because of the successive repetition of the eidolon (κατὰ τὸ ἐξῆς πύκνωμα) or because of the remaining effect of the eidolon (ἐγκατάλειμμα τοῦ εἰδώλου Ep. 1.50).¹¹

When a man views a tower from a distance, his impression reveals the tower as small and round, but when he sees the same tower from a closer range, his impression reveals the tower as large and square. Both impressions are true. When the impression reveals the tower as small and round, the eidolon, that is, the film of atoms in the air which have broken away from the solid object, is small and round. The limits belonging to the eidola have been broken off by their movement through the air (fr. 247 (209)).¹² He does not assume, however, that the properties of the first impression, which shows the tower as small and round, are the properties of the solid object, because he does not experience a successive

repetition of the eidolon and his memory image (i.e. the remaining effect of the eidolon) contradicts the impression. His memory image, whether of the tower or of similar towers, tells him that a tower is large and probably square. He does not regard the impression of the small and round tower as accurately reproducing the properties of the tower, but he accepts the impression of the large and rectangular tower as doing so.

Falsehood and error are to be found in the doxa. Epicurus writes: "Falsehood and error always lie in the addition made by the doxa regarding what is waiting to be confirmed or not contradicted, and which is subsequently not confirmed or is contradicted"; and "If it is not confirmed or contradicted, falsehood arises; if it is confirmed or not contradicted, the true" (Ep. 1.50 and 51).¹³ Confirmatory evidence is defined and illustrated in the following passage in Sextus Empiricus: "Confirmatory evidence is apprehension through a clear view (enargeia) that that which is conjectured (to doxazomenon) is such as it was conjectured to be, as, for example, when Plato is approaching from a distance, I suppose and conjecture (doxazô) with reference to the distance that it is Plato, and when he has come nearer with the distance being reduced, there is further evidence that it is Plato, and this is confirmed by the clear view itself (enargeia, fr. 247 (212)).¹⁴ The clear view in this example meets the two conditions laid down by Epicurus for an impression whose properties were the properties of the object; it is based on a successive repetition of the eidolon, and consistent with the remaining effect of the eidolon. Contradictory evidence is also evidence from the phenomena. Epicurus writes in his first Epistle: "What is more, we must not believe that every magnitude exists in the atoms in order that the phenomena may not contradict us" (1.55).

Although in some cases the properties of the impression were similar to the properties of the eidolon rather than to those of the sense object, in all cases the property of the affection or feeling (pathos) is the same as the

property of that which produces the pathos. Sextus Empiricus writes: "For just as the primary affections (pathê), that is, pleasure and pain, come about from some things which produce them and according to those very things which produce them, as, for example, pleasure from those things which are pleasant, and pain from those things which are painful, and it is not possible that that which is productive of pleasure should not be pleasant or that that which is productive of pain should not be painful, but it is necessary for that which causes pleasure to be pleasant and that which causes pain to be painful in nature" (fr. 247 (203)).¹⁵

So far as I have been able to discover there is nothing in the fragments of Democritus which would indicate that he believed that the properties of the impression were the properties of the object. The evidence leads to a very different conclusion. According to Democritus the names of the sense impressions are according to common usage: "By customary usage color, by customary usage sweet, by customary usage bitter; in truth atoms and void" (68B125 cf.9). Democritus wrote also: "In reality we understand nothing exactly, but only as it changes according to the disposition of our body, and of those things that come in upon it and of those that resist" (68B9). On the other hand, the sense perceptions provide the evidence on the basis of which inferences can be drawn: "There are two forms of knowledge, one genuine, one obscure. To the obscure belong all these, sight, hearing, smell, taste and touch. But the genuine is separated from this --- When the obscure can no longer see more minutely or hear or smell or taste or perceive in touch, but <it is necessary to carry out our investigations> to something finer" (68B11).¹⁶

The term homoeomery does not appear in any of the fragments of Anaxagoras. Aristotle, however, referred to the elements of Anaxagoras as homoeomeries,¹⁷ and defined the term as meaning that the part was the same as the whole.¹⁸ The term homoeomery was probably applied to Anaxagoras' philosophy by Aristotle, if

indeed Anaxagoras did not use the term himself, because Anaxagoras argued that that from which an entity emerges has predominant parts which are the same as the predominant parts of the entity. Anaxagoras wrote: "For how could hair come from that which is not hair and flesh from that which is not flesh"? (59B10). Epicurus seems to have used the term homoeomery to indicate the likeness which exists between that which emerges and that from which it emerges. For instance, he argued that the current which moves away from that which is speaking or making a noise was broken up into homoeomerius particles (ὁμοιομερείς ὄγκους) which preserved an affinity with one another and a distinctive unity which stretched back to that which sent them forth (Ep. 1.52). These homoeomerous particles, we may assume, have the same characteristics as the whole from which they emerged. The essential similarity between the eidolon and the solid body is denoted by the term homoeomereity. A fragment from Epicurus' Concerning Nature has the lines: "Preserving the same homoeomereity with the solid object" (23.33.2-4).¹⁹ Arrighetti connects this fragment with an earlier fragment from Concerning Nature: "In the same position and order" (23.11.9I),²⁰ and with lines in Lucretius which read as follows: "Because the eidolon has an appearance and shape similar to the body from which it is said to have poured forth" (4.50-2). In his discussion of the shapes which Plato attributed to the four elements in the Timaeus (55D-56C), Epicurus wrote in Concerning Nature: "The shape which he (Plato) attributes to them are not (sc. incompatible) with the affections which arise because of these four elements, especially the first two (i.e. fire and earth, cf.27.22), or more precisely, that which has already acquired homoeomereity with the phenomena (i.e. fire)" (27.27.15II). Here the term homoeomereity denotes the correspondence between the shape and the affection.

Kerferd stated the grounds for believing that Epicurus recognized the existence of molecules - a group of atoms in an entity which are such that they can produce a particular attribute in the entity.²¹ For example, Plutarch refers

to heat-producing atoms in wine (fr. 60), and Diogenes Laertius to atoms which are productive of fire (D.L. 10.115). The four elements of the soul, fire, air, pneuma and a fourth nameless power were molecules capable of producing such qualities as anger, fear and composure (Luc. 3.287-306).²² These molecules were not merely anger-producing atoms or fear-producing atoms but they were complexes designated by such terms as fire and air. In his recent book Long wrote: "It is probable, though not certain, that Epicurus would have regarded a pool of water as a compound of smaller compounds - molecules of water."²³ Although the evidence should not be pushed too far, it would seem to indicate that Epicurus was concerned about the particular problem raised by Anaxagoras - the continuity which exists between that which emerges and that from which it has emerged. Epicurus does not seem to have been completely satisfied with Democritus' argument that sensible qualities could be explained by the non-sensible attributes of the atoms, such as size and shape, if the atoms productive of a certain quality were not themselves identifiable as a single group.

There is evidence that Epicurus used the phrase opsis tôn adêlôn ta phænomena. Plutarch refers to those who say that the phenomena hold evidence for the non-evident (adêla, fr. 263). A passage from Philodemus in what appears to be a quotation from Epicurus refers to men who are not able to observe the relationship which exists between the phenomena and the unseen (fr. 212). And finally, Diogenes Laertius writes: "The fact that we see and hear subsists just as feeling bodily pain subsists. Accordingly, it is necessary to infer from the phenomena about the non-evident (adêla, D.L. 10.32).

Epicurus diverged from the views of Democritus in his interpretation of chance and necessity as well. Democritus rejected chance (tyché) altogether, arguing that it was a cause non-evident to human reasoning (68A70 cf.A68). According to Aristotle, Democritus referred all those things which nature uses to necessity; Aetius states that Democritus termed the resistance, movement and

impact of matter (i.e. the atoms) necessity (68A66). Pseudo-Plutarch in his Stromateis attributes to Democritus the statement that the causes of those things which are coming into being now have no beginning, and that all that has come into being and is and will be, without qualification, is bound by necessity from infinite time in the past" (68A39). Here the term necessity may mean no more than the movement of the atoms. With these passages we might compare the statement of Diogenes of Oenoanda to the effect that Democritus said that there was no free movement for the atoms because of their collision, and that from this it appeared that all things were moved according to necessity (68A50). A passage from Diogenes Laertius tells us that the dinê (vortex) was necessity (68A1 (45)).²⁴ In these examples the term anagkê seems to indicate something which has come to pass as the result of causes which are not determined. It did not denote regularity or order. In the area of human activity, Democritus used a system of antecedent causes. Digging, for instance, was the cause of both finding the treasure and planting the olive tree (68A68).

Several passages indicate that Epicurus was critical of Democritus' use of anagkê. Epicurus wrote: "We must not suppose that the kosmoi have one shape according to necessity";²⁵ and again, "For it is not necessary for a gathering of atoms or a vortex to come into being --- as is supposed, by necessity" (Ep. 2.90). He does, however, offer as a possible explanation for the fact that some stars wander from their course but others do not the conjecture that the stars were so constrained by necessity that some moved along a regular orbit and others along one which was irregular (Ep. 2.113). A movement which Democritus would have attributed to necessity was usually explained by Epicurus in terms of the physical phenomena. For example, Epicurus offers several explanations which are in accordance with the physical phenomena for the rising and setting of the sun, moon and the other heavenly bodies (Ep. 2.92).

In an important passage in which he was discussing the nature of the

heavenly bodies Epicurus referred to that which cannot be otherwise. He wrote as follows: "We must realize that that which may happen in several ways and is capable of being otherwise does not belong here" (Ep. 1.78).²⁶ These lines and passages in Lucretius suggest that Epicurus attached considerable importance to the regularity of nature. In the first book of Lucretius we find such sentences as: "If things should come from nothing --- the same fruits would not be constant on the trees" (156 and 165); "But now because the several things are born from specific seeds" (169); "Whatever is born is revealed while favorable seasons are present and the life-giving earth sends forth safely her delicate offspring to the shores of light" (177-9). This pattern of regularity which Epicurus recognized in the heavens and in nature itself has strong affinities to the order established by Anaxagoras' nous.

Some early thinker, if not Democritus himself, seems to have argued that human volition was restricted by the agglomeration of atoms. To this Epicurus was strongly opposed. A passage from his writings reads as follows: "Since the cause is to be found in men themselves and not in the primeval agglomeration or in the necessity of that which surrounds us and comes in upon us in accordance with spontaneity" (Arrighetti, 31.27.1-9).²⁷ Epicurus distinguished between "that which is in our power" (τὸ παρ' ἡμῶς) and chance (tyché Ep. 3.133-4). Tyché is not a god or an unreal cause (Ep. 3.134).²⁸ It is that which makes possible opportunities for good or evil. As Epicurus wrote: "Opportunities for great good or evil are provided by this" (Ep. 3.134-5). We found earlier that Anaxagoras recognized the nous of the individual as a cause; Epicurus' "that which is in our power" denotes those particular events which are subject to man's decision.

Although we know that Anaxagoras used spontaneity (automaton) and tyché, there are not sufficient grounds for us to assume that Epicurus' tyché was influenced by Anaxagoras. It may have been drawn, in fact, from Democritus'

use of observed phenomena as the basis of inference. Cole has argued convincingly that five accounts of the origin of technology and society found in Diodorus Siculus, Vitruvius, Lucretius, the 90th Epistle of Seneca, and Tzetzes' Commentary on Hesiod have a common source in Democritus.²⁹ For instance, as Lucretius relates, when fire scorched the forests with heat, there flowed from the veins of earth a convergent stream of silver and gold. Then it occurred to men that these when liquefied by heat could flow into any shape and appearance that they might wish (5.1255-63). Democritus' use of the eventus fortuitus would seem to be substantiated by a passage in Aelian in which Democritus is said to have referred to the mating of a jackass and a mare by chance (kata tyche), and to have argued that men learned from this the custom of raising mules (68A151). The whole concept of eventus fortuitus seems to be inconsistent with Democritus' interpretation of tyche. The inconsistency, however, lies in the term eventus fortuitus itself. For Democritus the convergent stream of silver and gold was an observed phenomenon on the basis of which an inference could be drawn. Only in Epicurus' system was it a tyche or eventus fortuitus.³⁰

It is, I believe, clear that Epicurus adopted an interpretation of the impression which was alien to Democritus' atomic theory and closer to that of Anaxagoras. Anaxagoras may have believed that the qualities of the impression accurately reproduced the attributes of the objects; and he certainly regarded the objects of sense perception as true. He held that that from which an entity emerges had predominant parts which were the same as the predominant parts of the entity. Anaxagoras' experiments suggest that he was aware in some degree of the principle of confirmatory evidence and evidence to the contrary. His form of argumentation was similar to that of Epicurus. What is more, Anaxagoras used the term doxa to denote an opinion for which there is no confirmatory evidence or evidence to the contrary. Anaxagoras made extensive use of

material causes but attached particular significance to the regularity of the movement of the heavenly bodies. When Epicurus read the writings of Anaxagoras, he must have found himself in agreement with many of his basic assumptions.

- 1 W. Bröcker, "Gorgias Contra Parmenides," Hermes 86 (1958) 435-6, and H.J. Newiger, Untersuchungen zu Gorgias' Schrift über das Nichtseiende (Berlin, 1973) 109.
- 2 H. Diller, "Die philosophiegeschichtliche Stellung des Diogenes von Apollonia," Hermes 76 (1941) 363-4.
- 3 On the meaning of alêtheia see A.P.D. Mourelatos, The Route of Parmenides (Yale University Press, 1970) 63-7.
- 4 For a discussion of nous in Anaxagoras see J. Ferguson, "Dinos," Phronesis 16 (1971) 104-6.
- 5 See also H. Diller, "Opsis adelon ta phaenomena," Hermes 67 (1932) 14-42.
- 6 H. Cherniss, Aristotle's Criticism of Presocratic Philosophy (The Johns Hopkins University Press, 1935) 81 and note 333. Compare W.D. Ross, Aristotle's Metaphysics I (Oxford, 1924) 275, line 25.
- 7 The fragments of Epicurus were published by H. Usener, Epicurea (Stuttgart, 1887). Unless otherwise stated all references are to this edition.
- 8 Usener expressed doubt about the form of the apodeixis in fr. 272.
- 9 For a discussion of sensation and knowledge in Epicurus' philosophy see M.L. Bourgey, "La doctrine épicurienne sur le role de la sensation dans la connaissance et la tradition grecque," published in Association Guillaume Budé, Actes du VIII Congrès (Paris, 1969) 252-8.
- 10 The properties (sumbebêkota) of the solid body are described in the following passage of Epicurus: "But surely, in regard to the shapes, colors, sizes, weights and all other things which are predicated of body as properties --- we must suppose --- that the whole body generally has its own everlasting nature from all of these (Ep. 1.68-9 cf. Luc. 1.451-2). On this passage see also

G. Arrighetti, Epicuro (Turin, 1960) 471.

- 11 On this passage see D.J. Furley, Two Studies in the Greek Atomists (Princeton University Press, 1967) 200-2; D.J. Furley, "Knowledge of Atoms and Void in Epicureanism," published in Essays in Ancient Greek Philosophy (New York, 1971) 610; and G. Vlastos, "On the Pre-History of Diodorus," A.J.P. 67 (1946) 52, note 12.
- 12 Furley (above, note 11) 616 writes: "The point of the contrast is that when we experience a mental image, it always pictures accurately the eidolon or set of eidola which cause it. Error never arises because of a lack of correspondence between the mental picture and the atomic configuration which caused it." See also A.A. Long, "Aisthesis, Prolepsis and Linguistic Theory in Epicurus," Bulletin Institute of Classical Studies 18 (1971) 117; and J.M. Rist, Epicurus (Cambridge University Press, 1972) 17-25.
- 13 See also Long (above, note 12) 117-8.
- 14 Rist (above, note 12) 37 cf.33 translates enargeia as "self-evident truth"; Long (above, note 12) 22 as "clear and distinct impression."
- 15 For a discussion of the pathos in Epicurus' philosophy see F. Solmsen, "Aisthesis in Aristotelian and Epicurean Thought," Med. der Kon. Ned. Akad. von Wetenschappen, Afd. Letterkunde 24 (1961) 241-62.
- 16 The words which I have bracketed are based on the emendation of Diels. On these fragments of Democritus see G. Vlastos, "Ethics and Physics in Democritus," published in Studies in Presocratic Philosophy edited by R.E. Allen and D.J. Furley (London, 1975) 403-4, notes 60-3. For a discussion of Aristotle, De Anima 404a27 and Metaph. 1009b12, passages in which Aristotle states that Democritus found truth in appearance, see Cherniss (above, note 6) 79-83 and 313, note 87; and H. Weiss, "Democritus' Theory of Cognition," C.Q. 32 (1938) 47-56.

- 17 Phys. 203a20-1, De Caelo 302a28, De Gen et Corr. 314a19 and 27-8, Metaph. 984a14, 988a28.
- 18 Phys. 203a23-5 and De Gen. et Corr. 314a17-20. On the homoeomerics see G.B. Kerferd, "Anaxagoras and the Concept of Matter before Aristotle," Bulletin of the John Rylands Library 52 (1969) 129-43.
- 19 The fragments of Epicurus' Concerning Nature have been published by Arrighetti (above, note 10).
- 20 Arrighetti (above, note 10) 528.
- 21 G.B. Kerferd, "Epicurus' Doctrine of the Soul," Phronesis 16 (1971) 89-92.
- 22 Compare Epicurus, Ep. 1.63 in which Epicurus speaks of pneuma, heat and something finer than these. On this passage see Arrighetti (above, note 10) 469-70.
- 23 A.A. Long, Hellenistic Philosophy (London, 1974) 39.
- 24 On these passages see Furley (above, note 11) 175. For causation in Democritus see Cherniss (above, note 6) 246-9.
- 25 Ep. 1.74 cf. Usener, page 127, fr. 82.
- 26 Compare Aristotle Metaph. 1015b12-5.
- 27 On necessity and the swerve see Arrighetti (above, note 10) 495; and Furley (above, note 11) 169-95.
- 28 Arrighetti (above, note 10) 496 argued that ἀβέβαιος has the meaning "irreale, non esistente." It is unnecessary, I believe, to accept Bailey's emendation <πάντων> ἀβέβαιον αἰτίας. See C. Bailey, Epicurus (Oxford, 1926) 90 and 342. The point that Epicurus is making is that the Epicurean should not regard tyché as a cause at all.

- 29 Diodorus Siculus 1.13.3, Vitruvius, 33.16-23, Lucretius, 5.932, 937-8, 953-4, 1007-8, 1241-57. On these passages see T. Cole, Democritus and the Sources of Greek Anthropology (Western Reserve University, 1967). For the eventus fortuitus see Cole 47 and 119.
- 30 A.H. Armstrong, "The Gods in Plato, Plotinus and Epicurus," C.Q. 32 (1938) 191 writes that chance as a separate force in Epicurus is reminiscent of the "errant cause" in the Timaeus (47E-48A).