

the matter of things is four bodies. For he too is confronted by consequences some of which are the same as have been mentioned, while others are peculiar to him. For we see these bodies produced from one another, which implies that the same body does not always remain fire or earth (we have spoken about this in our works on nature); and regarding the moving cause and the question whether we must suppose one or two, he must be thought to have spoken neither correctly nor altogether plausibly. And in general those who speak in this way must do away with change of quality, for on their view cold will not come from hot nor hot from cold. For if it did there would be something that accepted those very contraries, and there would be some one entity that became fire and water, which Empedocles denies.

As regards Anaxagoras, if one were to suppose that he said there were two elements, the supposition would accord thoroughly with a view which Anaxagoras himself did not state articulately, but which he must have accepted if any one had developed his view. True, to say that in the beginning all things were mixed is absurd both on other grounds and because it follows that they must have existed before in an unmixed form, and because nature does not allow any chance thing to be mixed with any chance thing, and also because on this view modifications and accidents could be separated from substances (for the same things which are mixed can be separated); yet if one were to follow him up, piecing together what he means, he would perhaps be seen to be somewhat modern in his views. For when nothing was separated out, evidently nothing could be truly asserted of the substance that then existed. I mean, e.g. that it was neither white nor black, nor grey nor any other colour, but of necessity colourless; for if it had been coloured, it would have had one of these colours. And similarly, by this same argument, it was flavourless, nor had it any similar attribute; for it could not be either of any quality or of any size, nor could it be any definite kind of thing. For if it were, one of the particular forms would have belonged to it, and this is impossible, since all were mixed together; for the particular form would necessarily have been already separated out, but he says all were mixed except reason, and this alone was unmixed and pure. From this it follows, then, that he must say the principles are the One (for this is simple and unmixed) and the Other, which is of such a nature as we suppose the indefinite to be before it is defined and partakes of some form. Therefore, while expressing himself neither rightly nor clearly, he means something like what the later thinkers say and what is now more clearly seen to be the case.

But these thinkers are, after all, at home only in arguments about generation and destruction and movement; for it is practically only of this sort of substance that they seek the principles and the causes. But those who extend their vision to all things that exist, and of existing things suppose some to be perceptible and others not perceptible, evidently study both classes, which is all the more reason why one should devote some time to seeing what is good in their views and what bad from the stand-point of the inquiry we have now before us.

The 'Pythagoreans' use stranger principles and elements than the natural philosophers (the reason is that they got the principles from non-sensible things, for the objects of mathematics, except those of astronomy, are of the class of things without movement); yet their discussions and investigations are all about nature; for

they generate the heavens, and with regard to their parts and attributes and functions they observe the phenomena, and use up the principles and the causes in explaining these, which implies that they agree with the others, the natural philosophers, that what exists is just all that which is perceptible and contained by the so-called heavens. But the causes and the principles which they mention are, as we said, sufficient to act as steps even up to the higher realms of reality, and are more suited to these than to theories about nature. They do not tell us at all, however, how there can be movement if limit and unlimited and odd and even are the only things assumed, or how without process and change there can be generation and destruction, or how the bodies that move through the heavens can do what they do. Further, if we either granted them that spatial magnitude consists of these elements, or this were proved still how would some bodies be light and others have weight? To judge from what they assume and maintain, they speak no more of mathematical bodies than of perceptible; hence they have said nothing whatever about fire or earth or the other bodies of this sort, I suppose because they have nothing to say which applies *peculiarly* to perceptible things.

Further, how are we to combine the beliefs that the modifications of number, and number itself, are causes of what exists and happens in the heavens both from the beginning and now, and that there is no other number than this number out of which the world is composed? When in one particular region they place opinion and opportunity, and, a little above or below, injustice and sifting or mixture, and allege as proof of this that each one of these is a number, but when there happens to be already in each place a plurality of the extended bodies composed of numbers, because these modifications of number attach to the various groups of places,—this being so, is this number, which we must suppose each of these abstractions to be, the same number which is exhibited in the material universe, or is it another than this? Plato says it is different; yet even he thinks that both these bodies and their causes are numbers, but that the *intelligible* numbers are causes, while the others are *sensible*.

9. Let us leave the Pythagoreans for the present; for it is enough to have touched on them as much as we have done. But as for those who posit the Ideas as causes, firstly, in seeking to grasp the causes of the things around us, they introduced others equal in number to these, as if a man who wanted to count things thought he could not do it while they were few, but tried to count them when he had added to their number. For the Forms are practically equal to or not fewer than the things, in trying to explain which these thinkers proceeded from them to the Forms. For to each set of substances there answers a Form which has the same name and exists apart from the substances, and so also in the case of all other groups in which there is one character common to many things, whether the things are in this changeable world or are eternal.

Further, of the ways in which we prove that the Forms exist, none is convincing; for from some no inference necessarily follows, and from some it follows that there are Forms of things of which we think there are no Forms.

For according to the arguments from the existence of the sciences there will be

Forms of all things of which there are sciences, and according to the argument that there is one attribute common to many things there will be Forms even of negations, and according to the argument that there is an object for thought even when the thing has perished, there will be Forms of perishable things; for we can have an image of these.

Further, of the more accurate arguments, some lead to Ideas of relations, of which we say there is no independent class, and others involve the difficulty of the 'third man'.

And in general the arguments for the Forms destroy the things for whose existence we are more anxious than for the existence of the Ideas; for it follows that not the dyad but number is first, i.e. that the relative is prior to the absolute—besides all the other points on which certain people by following out the opinions held about the Ideas have come into conflict with the principles of the theory.

Further, according to the assumption on which our belief in the Ideas rests, there will be Forms not only of substances but also of many other things (for the concept is single not only in the case of substances but also in the other cases, and there are sciences not only of substance but also of other things, and a thousand other such conclusions also follow). But according to the necessities of the case and the opinions held about the Forms, if they can be shared there must be Ideas of substances only. For they are not shared incidentally, but a thing must share in its Form as in something not predicated of a subject (e.g. if a thing shares in double itself, it shares also in eternal, but incidentally; for eternal happens to be predicable of the double). Therefore the Forms will be substance; and the same terms indicate substance in this and in the ideal world (or what will be the meaning of saying that there is something apart from the particulars—the one over many?). And if the Ideas and the particulars that share them have the same Form, there will be something common to these; for why should 2 be one and the same in the perishable 2's or in those which are many but eternal, and not the same in the 2 itself as in the particular 2? But if they have not the same Form, they must have only the name in common, and it is as if one were to call both Callias and a wooden image a man, without observing any community between them.

Above all one might discuss the question what on earth the Forms contribute to sensible things, either to those that are eternal or to those that come into being and cease to be. For they cause neither movement nor any change in them. But again they help in no way towards the *knowledge* of the other things (for they are not even the substance of these, else they would have been in them), nor towards their being, if they are not *in* the particulars which share in them; though if they were, they might be thought to be causes, as white causes whiteness in that with which it is mixed. But this argument, which first Anaxagoras and later Eudoxus and certain others used, is too easily upset; for it is not difficult to collect many insuperable objections to such a view.

But further all other things cannot come from the Forms in any of the usual senses of 'from'. And to say that they are patterns and the other things share them is to use empty words and poetical metaphors. For what is it that works, looking to the Ideas? Anything can either be, or become, like another without being copied from

it, so that whether Socrates exists or not a man might come to be like Socrates; and evidently this might be so even if Socrates were eternal. And there will be several patterns of the same thing, and therefore several Forms, e.g. animal and two-footed and also man himself will be Forms of man. Again, the Forms are patterns not only of sensible things, but of themselves too, e.g. the Form of genus will be a genus of Forms; therefore the same thing will be pattern and copy.

Again it must be held to be impossible that the substance and that of which it is the substance should exist apart; how, therefore, can the Ideas, being the substances of things, exist apart?

In the *Phaedo* the case is stated in this way—that the Forms are causes both of being and of becoming; yet when the Forms exist, still the things that share in them do not come into being, unless there is some efficient cause; and many other things come into being (e.g. a house or a ring), of which we say there are no Forms. Clearly, therefore, even the other things can both be and come into being owing to such causes as produce the things just mentioned.

Again, if the forms are numbers, how can they be causes? Is it because existing things are other numbers, e.g. one number is man, another is Socrates, another Callias? Why then are the one set of numbers causes of the other set? It will not make any difference even if the former are eternal and the latter are not. But if it is because things in this sensible world (e.g. harmony) are ratios of numbers, evidently there is some one class of things of which they are ratios. If, then, this—the matter—is some definite thing, evidently the numbers themselves too will be ratios of something to something else. E.g. if Callias is a numerical ratio between fire and earth and water and air, his Idea also will be a number of certain other underlying things; and the Idea of man, whether it is a number in a sense or not, will still be a numerical ratio of certain things and not a number proper, nor will it be a number merely because it is a numerical ratio.

Again, from many numbers one number is produced, but how can one Form come from many Forms? And if the number comes not from the many numbers themselves but from the units in them, e.g. in 10,000, how is it with the units? If they are specifically alike, numerous absurdities will follow, and also if they are not alike (neither the units in the same number being like one another nor those in different numbers being all like to all); for in what will they differ, as they are without quality? This is not a plausible view, nor can it be consistently thought out. Further, they must set up a second kind of number (with which arithmetic deals), and all the objects which are called intermediate by some thinkers; and how do these exist or from what principles do they proceed? Or why must they be intermediate between the things in this sensible world and the things-in-themselves? Further, the units in 2 must each come from a prior 2; but this is impossible. Further, why is a number, when taken all together, one? Again, besides what has been said, if the units are *diverse* they should have spoken like those who say there are four, or two, elements; for each of these thinkers gives the name of element not to that which is common, e.g. to body, but to fire and earth, whether there is something common to them, viz. body, or not. But in fact they speak as if the One were *homogeneous* like fire or water; and if this is so, the numbers will not be

substances. Evidently, if there is a One-in-itself and this is a first principle, 'one' is being used in more than one sense; for otherwise the theory is impossible.

When we wish to refer substances to their principles, we state that lines come from the short and long (i.e. from a kind of small and great), and the plane from the broad and narrow, and the solid from the deep and shallow. Yet how then can the plane contain a line, or the solid a line or a plane? For the broad and narrow is a different class of things from the deep and shallow. Therefore, just as number is not present in these, because the many and few are different from these, evidently no other of the higher classes will be present in the lower. But again the broad is not a genus which includes the deep, for then the solid would have been a species of plane. Further, from what principle will the presence of the points in the line be derived? Plato even used to object to this class of things as being a geometrical fiction. He called the indivisible lines the principle of lines—and he used to lay this down often. Yet these must have a limit; therefore the argument from which the existence of the line follows proves also the existence of the point.

In general, though philosophy seeks the cause of perceptible things, we have given this up (for we say nothing of the cause from which change takes its start), but while we fancy we are stating the substance of perceptible things, we assert the existence of a second class of substances, while our account of the way in which they are the substances of perceptible things is empty talk; for sharing, as we said before, means nothing. Nor have the Forms any connexion with that which we see to be the cause in the case of the sciences, and for whose sake mind and nature produce all that they *do* produce,—with this cause we assert to be one of the first principles; but mathematics has come to be the whole of philosophy for modern thinkers, though they say that it should be studied for the sake of other things. Further, one might suppose that the substance which according to them underlies as matter is too mathematical, and is a predicate and differentia of the substance, i.e. of the matter, rather than the matter itself; i.e. the great and the small are like the rare and the dense which the natural philosophers speak of, calling these the primary differentiae of the substratum; for these are a kind of excess and defect. And regarding movement, if the great and the small are to *be* movement, evidently the Forms will be moved; but if they are not, whence did movement come? If we cannot answer this the whole study of nature has been annihilated.

And what is thought to be easy—to show that all things are one—is not done; for by 'exposition' all things do not come to be one but there comes to be a One-in-itself, if we grant all the assumptions. And not even this follows, if we do not grant that the universal is a class; and this in some cases it cannot be.

Nor can it be explained either how the lines and planes and solids that come after the numbers exist or can exist, or what meaning they have; for these can neither be Forms (for they are not numbers), nor the intermediates (for those are the objects of mathematics), nor the perishable things. This is evidently a distinct fourth class.

In general, if we search for the elements of existing things without distinguishing the many senses in which things are said to exist, we cannot succeed, especially if the search for the elements of which things are made is conducted in this manner.

For it is surely impossible to discover what acting or being acted on, or the straight, is made of, but if elements can be discovered at all, it is only the elements of substances; therefore to seek the elements of all existing things or to think one has them is incorrect. And how could we *learn* the elements of all things? Evidently we cannot start by knowing something before. For as he who is learning geometry, though he may know other things before, knows none of the things with which the science deals and about which he is to learn, so is it in all other cases. Therefore if there is a science of all things, as some maintain, he who is learning this will know nothing before. Yet all learning is by means of premises which are (either all or some of them) known before,—whether the learning be by demonstration or by definitions; for the elements of the definition must be known before and be familiar; and learning by induction proceeds similarly. But again, if the science is innate, it is wonderful that we are unaware of our possession of the greatest of sciences. Again, how is one to *know* what all things are made of, and how is this to be made *evident*? This also affords a difficulty; for there might be a conflict of opinion, as there is about certain syllables; some say *za* is made out of *s* and *d* and *a*, while others say it is a distinct sound and none of those that are familiar. Further, how could we know the objects of sense without having the sense in question? Yet we should, if the elements of which all things consist, as complex sounds consist of their proper elements, are the same.

10 . It is evident, then, even from what we have said before, that all men seem to seek the causes named in the *Physics*, and that we cannot name any beyond these; but they seek these vaguely; and though in a sense they have all been described before, in a sense they have not been described at all. For the earliest philosophy is, on all subjects, like one who lisps, since in its beginnings it is but a child. For even Empedocles says bone exists by virtue of the ratio in it. Now this is the essence and the substance of the thing. But it is similarly necessary that the ratio should be the substance of flesh and of everything else, or of none; there it is on account of this that flesh and bone and everything else will exist, and not on account of the matter, which *he* names,—fire and earth and water and air. But while he would necessarily have agreed if another had said this, he has not said it clearly.

On such questions our views have been expressed before; but let us return to enumerate the difficulties that might be raised on these same points; for perhaps we may get some help towards our later difficulties.

BOOK II (a)

1 . The investigation of the truth is in one way hard, in another easy. An indication of this is found in the fact that no one is able to attain the truth adequately, while, on the other hand, no one fails entirely, but every one says something true about the nature of things, and while individually they contribute little or nothing to the truth, by the union of all a considerable amount is amassed.