

# **Metaphysics** by Aristotle

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## Book XIII

### 1

WE have stated what is the substance of sensible things, dealing in the treatise on physics with matter, and later with the substance which has actual existence. Now since our inquiry is whether there is or is not besides the sensible substances any which is immovable and eternal, and, if there is, what it is, we must first consider what is said by others, so that, if there is anything which they say wrongly, we may not be liable to the same objections, while, if there is any opinion common to them and us, we shall have no private grievance against ourselves on that account; for one must be content to state some points better than one's predecessors, and others no worse.

Two opinions are held on this subject; it is said that the objects of mathematics—i.e. numbers and lines and the like—are substances, and again that the Ideas are substances. And (1) since some recognize these as two different classes—the Ideas and the mathematical numbers, and (2) some recognize both as having one nature, while (3) some others say that the mathematical substances are the only substances, we must consider first the objects of mathematics, not qualifying them by any other characteristic—not asking, for instance, whether they are in fact Ideas or not, or whether they are the principles and substances of existing things or not, but only whether as objects of mathematics they exist or not, and if they exist, how they exist. Then after this we must separately consider the Ideas themselves in a general way, and only as far as the accepted mode of treatment demands; for most of the points have been repeatedly made even by the discussions outside our school, and, further, the greater part of our account must finish by throwing light on that inquiry, viz. when we examine whether the substances and the principles of existing things are numbers and Ideas; for after the discussion of the Ideas this remains as a third inquiry.

If the objects of mathematics exist, they must exist either in sensible objects, as some say, or separate from sensible objects (and this also is said by some); or if they exist in neither of these ways, either they do not exist, or they exist only in some special sense. So that the subject of our discussion will be not whether they exist but how they exist.

That it is impossible for mathematical objects to exist in sensible things, and at the same time that the doctrine in question is an artificial one, has been said already in our discussion of difficulties we have pointed out that it is impossible for two solids to be in the same place, and also that according to the same argument the other powers and characteristics also should exist in sensible things and none of them separately. This we have said already. But, further, it is obvious that on this theory it is impossible for any body whatever to be divided; for it would have to be divided at a plane, and the plane at a line, and the line at a point, so that if the point cannot be divided, neither can the line, and if the line cannot, neither can the plane nor the solid. What difference, then, does it make whether sensible things are such indivisible entities, or, without being so themselves, have indivisible entities in them? The result will be the same; if the sensible entities are divided the others will be divided too, or else not even the sensible entities can be divided.

But, again, it is not possible that such entities should exist separately. For if besides the sensible solids there are to be other solids which are separate from them and prior to the sensible solids, it is plain that besides the planes also there must be other and separate planes and points and lines; for consistency requires this. But if these exist, again besides the planes and lines and points of the mathematical solid there must be others which are separate. (For incomposites are prior to compounds; and if there are, prior to the sensible bodies, bodies which are not sensible, by the same argument the planes which exist by themselves must be prior to those which are in the motionless solids. Therefore these will be planes and lines other than those that exist along with the mathematical solids to which these thinkers assign separate existence; for the latter exist along with the mathematical solids, while the others are prior to the mathematical solids.) Again, therefore, there will be, belonging to these planes, lines, and prior to them there will have to be, by the same argument, other lines and points; and prior to these points in the prior lines there will have to be other points, though there will be no others prior to these. Now (1) the accumulation becomes absurd; for we find ourselves with one set of solids apart from the sensible solids; three sets of planes apart from the sensible planes—those which exist apart from the sensible planes, and those in the mathematical solids, and those which exist apart from those in the mathematical solids; four sets of lines,

and five sets of points. With which of these, then, will the mathematical sciences deal? Certainly not with the planes and lines and points in the motionless solid; for science always deals with what is prior. And (the same account will apply also to numbers; for there will be a different set of units apart from each set of points, and also apart from each set of realities, from the objects of sense and again from those of thought; so that there will be various classes of mathematical numbers.

Again, how is it possible to solve the questions which we have already enumerated in our discussion of difficulties? For the objects of astronomy will exist apart from sensible things just as the objects of geometry will; but how is it possible that a heaven and its parts-or anything else which has movement-should exist apart? Similarly also the objects of optics and of harmonics will exist apart; for there will be both voice and sight besides the sensible or individual voices and sights. Therefore it is plain that the other senses as well, and the other objects of sense, will exist apart; for why should one set of them do so and another not? And if this is so, there will also be animals existing apart, since there will be senses.

Again, there are certain mathematical theorems that are universal, extending beyond these substances. Here then we shall have another intermediate substance separate both from the Ideas and from the intermediates,-a substance which is neither number nor points nor spatial magnitude nor time. And if this is impossible, plainly it is also impossible that the former entities should exist separate from sensible things.

And, in general, conclusion contrary alike to the truth and to the usual views follow, if one is to suppose the objects of mathematics to exist thus as separate entities. For because they exist thus they must be prior to sensible spatial magnitudes, but in truth they must be posterior; for the incomplete spatial magnitude is in the order of generation prior, but in the order of substance posterior, as the lifeless is to the living.

Again, by virtue of what, and when, will mathematical magnitudes be one? For things in our perceptible world are one in virtue of soul, or of a part of soul, or of something else that is reasonable enough; when these are not present, the thing is a plurality, and splits up into parts. But in the case of the subjects of mathematics, which are divisible and are quantities, what is the cause of their being one and holding together?

Again, the modes of generation of the objects of mathematics show that we are right. For the dimension first generated is length, then comes breadth, lastly depth, and the process is complete. If, then, that which is posterior in the order of generation is prior in the order of substantiality, the solid will be prior to the plane and the line. And in this way also it is both more complete and more whole, because it can become animate. How, on the other hand, could a line or a plane be animate? The supposition passes the power of our senses.

Again, the solid is a sort of substance; for it already has in a sense completeness. But how can lines be substances? Neither as a form or shape, as the soul perhaps is, nor as matter, like the solid; for we have no experience of anything that can be put together out of lines or planes or points, while if these had been a sort of material substance, we should have observed things which could be put together out of them.

Grant, then, that they are prior in definition. Still not all things that are prior in definition are also prior in substantiality. For those things are prior in substantiality which when separated from other things surpass them in the power of independent existence, but things are prior in definition to those whose definitions are compounded out of their definitions; and these two properties are not coextensive. For if attributes do not exist apart from the substances (e.g. a 'mobile' or a pale'), pale is prior to the pale man in definition, but not in substantiality. For it cannot exist separately, but is always along with the concrete thing; and by the concrete thing I mean the pale man. Therefore it is plain that neither is the result of abstraction prior nor that which is produced by adding determinants posterior; for it is by adding a determinant to pale that we speak of the pale man.

It has, then, been sufficiently pointed out that the objects of mathematics are not substances in a higher degree than bodies are, and that they are not prior to sensibles in being, but only in definition, and that they cannot exist somewhere apart. But since it was not possible for them to exist in sensibles either, it is plain that they either do not exist at all or exist in a special sense and therefore do not 'exist' without qualification. For 'exist' has many senses.

For just as the universal propositions of mathematics deal not with objects which exist separately, apart from extended magnitudes and from numbers, but with magnitudes and numbers, not however qua such as to have magnitude or to be divisible, clearly it is possible that there should also be both propositions and demonstrations about sensible magnitudes, not however qua sensible but qua possessed of certain definite qualities. For as there are many propositions about things merely considered as in motion, apart from what each such thing is and from their accidents, and as it is not therefore necessary that there should be either a mobile separate from sensibles, or a distinct mobile entity in the sensibles, so too in the case of mobiles there will be propositions and sciences, which treat them however not qua mobile but only qua bodies, or again only qua planes, or only qua lines, or qua divisibles, or qua indivisibles having position, or only qua indivisibles. Thus since it is true to say without qualification that not only things which are separable but also things which are inseparable exist (for instance, that mobiles exist), it is true also to say without qualification that the objects of mathematics exist, and with the character ascribed to them by mathematicians. And as it is true to say of the other sciences too, without qualification, that they deal with such and such a subject-not with what is accidental to it (e.g. not with the pale, if the healthy thing is pale, and the science has the healthy as its subject), but with that which is the subject of each science-with the healthy if it treats its object qua healthy, with man if qua man:-so too is it with geometry; if its subjects happen to be sensible, though it does not treat them qua sensible, the mathematical sciences will not for that reason be sciences of sensibles-nor, on the other hand, of other things separate from sensibles. Many properties attach to things in virtue of their own nature as possessed of each such character; e.g. there are attributes peculiar to the animal qua female or qua male (yet there is no 'female' nor 'male' separate from animals); so that there are also attributes which belong to things merely as lengths or as planes. And in proportion as we are dealing with things which are prior in definition and simpler, our knowledge has more accuracy, i.e. simplicity. Therefore a science which abstracts from spatial magnitude is more precise than one which takes it into account; and a science is most precise if it abstracts from movement, but if it takes account of movement, it is most precise if it deals with the primary movement, for this is the simplest; and of this again uniform movement is the simplest form.

The same account may be given of harmonics and optics; for neither considers its objects qua sight or qua voice, but qua lines and numbers; but the latter are attributes proper to the former. And mechanics too proceeds in the same way. Therefore if we suppose attributes separated from their fellow attributes and make any inquiry concerning them as such, we shall not for this reason be in error, any more than when one draws a line on the ground and calls it a foot long when it is not; for the error is not included in the premisses.

Each question will be best investigated in this way-by setting up by an act of separation what is not separate, as the arithmetician and the geometer do. For a man qua man is one indivisible thing; and the arithmetician supposed one indivisible thing, and then considered whether any attribute belongs to a man qua indivisible. But the geometer treats him neither qua man nor qua indivisible, but as a solid. For evidently the properties which would have belonged to him even if perchance he had not been indivisible, can belong to him even apart from these attributes. Thus, then, geometers speak correctly; they talk about existing things, and their subjects do exist; for being has two forms-it exists not only in complete reality but also materially.

Now since the good and the beautiful are different (for the former always implies conduct as its subject, while the beautiful is found also in motionless things), those who assert that the mathematical sciences say nothing of the beautiful or the good are in error. For these sciences say and prove a great deal about them; if they do not expressly mention them, but prove attributes which are their results or their definitions, it is not true to say that they tell us nothing about them. The chief forms of beauty are order and symmetry and definiteness, which the mathematical sciences demonstrate in a special degree. And since these (e.g. order and definiteness) are obviously causes of many things, evidently these sciences must treat this sort of causative principle also (i.e. the beautiful) as in some sense a cause. But we shall speak more plainly elsewhere about these matters.