THE LOEB CLASSICAL LIBRARY
FOUNDED BY JAMES LOEB, LL.D.

EDITED BY
E. H. WARMINGTON, M.A., F.R.HIST.SOC.

PREVIOUS EDITORS
† T. E. PAGE, C.H., LITT.D. † E. CAPPS, PH.D., LL.D.
† W. H. D. ROUSE, LITT.D. L. A. POST, L.H.D.

ARISTOTLE

XVIII

METAPHYSICS
BOOKS X–XIV
OECONOMICA
MAGNA MORALIA

287

ARISTOTLE

IN TWENTY-THREE VOLUMES

XVIII

METAPHYSICS

BOOKS X–XIV

WITH AN ENGLISH TRANSLATION BY

HUGH TREDENNICK, M.A.

LECTURER IN CLASSICS IN THE UNIVERSITY OF SHEFFIELD

OECONOMICA

AND

MAGNA MORALIA

WITH AN ENGLISH TRANSLATION BY

G. CYRIL ARMSTRONG, B.A.

LECTURER IN LATIN AND HEAD OF THE DEPARTMENT OF ARTS IN THE MUNICIPAL COLLEGE, PORTSMOUTH

LONDON
WILLIAM HEINEMANN LTD
CAMBRIDGE, MASSACHUSETTS
HARVARD UNIVERSITY PRESS
MCMLXIX

First printed 1935
Reprinted 1936, 1947, 1958, 1962, 1969

Printed in Great Britain

CONTENTS

CONTENTS

THE TRADITIONAL ORDER of the works of Aristotle as they appear since the edition of Immanuel Bekker (Berlin, 1831), and their division into volumes in this edition.

THE TRADITIONAL ORDER

ARISTOTLE
THE METAPHYSICS
BOOKS X—XIV

I

1052 a 15 I. Τὸ ἓν ὅτι μὲν λέγεται πολλαχῶς, ἐν τοῖς περὶ τοῦ ποσαχῶς διῃρημένοις εἴρηται πρότερον· πλεοναχῶς δὲ λεγομένου οἱ συγκεφαλαιούμενοι τρόποι εἰσὶ τέτταρες τῶν πρώτων καὶ καθ' αὑτὰ λεγομένων ἕν, ἀλλὰ μὴ κατὰ συμβεβηκός. Τό τε γὰρ 20 συνεχὲς ἢ ἁπλῶς ἢ μάλιστά γε τὸ φύσει καὶ μὴ ἁφῇ μηδὲ δεσμῷ· καὶ τούτων μᾶλλον ἓν καὶ πρότερον οὗ ἀδιαιρετωτέρα ἡ κίνησις καὶ μᾶλλον ἁπλῆ. Ἔτι τοιοῦτον καὶ μᾶλλον τὸ ὅλον καὶ ἔχον τινὰ μορφὴν καὶ εἶδος· μάλιστα δ' εἴ τι φύσει 25 τοιοῦτον καὶ μὴ βίᾳ, ὥσπερ ὅσα κόλλῃ ἢ γόμφῳ ἢ συνδέσμῳ, ἀλλὰ ἔχει ἐν αὑτῷ τὸ αἴτιον αὑτῷ τοῦ συνεχὲς εἶναι. τοιοῦτον δὲ τῷ μίαν τὴν κίνησιν εἶναι καὶ ἀδιαίρετον τόπῳ καὶ χρόνῳ, ὥστε φανερόν, εἴ τι φύσει κινήσεως ἀρχὴν ἔχει τῆς πρώτης τὴν πρώτην, οἷον λέγω φορᾶς κυκλοφορίαν, ὅτι τοῦτο πρῶτον μέγεθος ἕν. Τὰ μὲν δὴ οὕτως ἓν ᾗ[1] 30 συνεχὲς ἢ ὅλον, τὰ δὲ ὧν ἂν ὁ λόγος εἷς ᾖ. τοιαῦτα

[1] ᾗ Christ: ᾖ.

[a] V. vi.

[b] This description applies to the celestial spheres.

BOOK X

BOOK X. UNITY AND OTHER GENERAL ATTRIBUTES OF SUBSTANCE.

I. That "one" has several meanings has been already stated[a] in our distinction of the various meanings of terms. But although it has a number of senses, the things which are primarily and essentially called one, and not in an accidental sense, may be summarized under four heads:

"The one" means (1) the continuous,

(i.) That which is continuous, either absolutely or in particular that which is continuous by natural growth and not by contact or ligature; and of these things those are more strictly and in a prior sense one whose motion is more simple and indivisible.

2 (2) the whole,

(ii.) Of this kind in a still higher degree is that which is a whole and has a definite shape or form, particularly that which is such by nature and not by constraint (like things which are joined by glue or nails or by being tied together), but which contains in itself the cause of its continuity. A thing is of 3 this kind if its motion is one and indivisible in respect of place and time; so that clearly if a thing has as its principle of motion the primary kind of motion (*i.e.* locomotion) in its primary form (*i.e.* circular locomotion), it is in the primary sense *one* spatial magnitude.[b]

Some things, then, are one in this sense, *qua* continuous or whole; the other things which are one are those whose formula is one. Such are the 4

1052 a δὲ ὧν ἡ νόησις μία· τοιαῦτα δὲ ὧν ἀδιαίρετος· ἀδιαίρετος δὲ τοῦ ἀδιαιρέτου εἴδει ἢ ἀριθμῷ. ἀριθμῷ μὲν οὖν τὸ καθ' ἕκαστον ἀδιαίρετον, εἴδει δὲ τὸ τῷ γνωστῷ καὶ τῇ ἐπιστήμῃ, ὥσθ' ἓν ἂν εἴη πρῶτον τὸ ταῖς οὐσίαις αἴτιον τοῦ ἑνός. λέγεται μὲν οὖν τὸ ἓν τοσαυταχῶς, τό τε συνεχὲς φύσει καὶ τὸ ὅλον, καὶ τὸ καθ' ἕκαστον καὶ τὸ καθόλου.
1052 b πάντα δὲ ταῦτα ἓν τῷ ἀδιαίρετον εἶναι τῶν μὲν τὴν κίνησιν τῶν δὲ τὴν νόησιν ἢ τὸν λόγον. Δεῖ δὲ κατανοεῖν ὅτι οὐχ ὡσαύτως ληπτέον λέγεσθαι ποιά τε ἓν λέγεται, καὶ τί ἐστι τὸ ἑνὶ εἶναι, καὶ τίς αὐτοῦ λόγος. λέγεται μὲν γὰρ τὸ ἓν τοσαυταχῶς, καὶ ἕκαστον ἔσται ἓν τούτων, ᾧ ἂν ὑπάρχῃ τις τούτων τῶν τρόπων· τὸ δὲ ἑνὶ εἶναι ὁτὲ μὲν τούτων τινὶ ἔσται, ὁτὲ δὲ ἄλλῳ, ὃ καὶ μᾶλλον ἐγγὺς τῷ ὀνόματί ἐστι, τῇ δυνάμει δ' ἐκεῖνα, ὥσπερ καὶ περὶ στοιχείου καὶ αἰτίου εἰ δέοι λέγειν ἐπί τε τοῖς πράγμασι διορίζοντα καὶ τοῦ ὀνόματος ὅρον ἀποδιδόντα. ἔστι μὲν γὰρ ὡς στοιχεῖον τὸ πῦρ (ἔστι δ' ἴσως καθ' αὑτὸ καὶ τὸ ἄπειρον ἢ τι ἄλλο τοιοῦτον), ἔστι δ' ὡς οὔ· οὐ γὰρ τὸ αὐτὸ πυρὶ καὶ στοιχείῳ εἶναι, ἀλλ' ὡς μὲν πρᾶγμά τι καὶ φύσις τὸ πῦρ στοιχεῖον, τὸ δὲ ὄνομα σημαίνει τὸ τοδὶ συμβεβηκέναι αὐτῷ, ὅτι ἐστί τι ἐκ τούτου ὡς πρώτου ἐνυπάρχοντος. οὕτω καὶ ἐπὶ αἰτίου καὶ ἑνὸς καὶ τῶν τοιούτων ἁπάντων.

[a] The reference is doubtless to Anaximander. *Cf.* Vol. I. Introd. p. x.

things of which the concept is one, *i.e.* of which the concept is indivisible; and this is indivisible when the object is indivisible (iii.) in form or (iv.) in number. Now in number the individual is indivisible, and in form that which is indivisible in comprehension and knowledge; so that that which causes the unity of substances must be one in the primary sense. Such, then, in number are the meanings of "one": the naturally continuous, the whole, the individual, and the universal. All these are one because they are indivisible; some in motion, and others in concept or formula. (3) the individual, (4) the universal. 5

But we must recognize that the questions, "What sort of things are called one?" and "What is essential unity, and what is the formula?" must not be taken to be the same. "One" has these several meanings, 6 and each thing to which some one of these senses applies will be one; but essential unity will have now one of these senses and now something else, which is still nearer to the *term* one, whereas they are nearer to its *denotation*. This is also true of "element" and "cause," supposing that one had to explain them both by exhibiting concrete examples and by giving a definition of the term. There is a 7 sense in which fire is an element (and no doubt so too is "the indeterminate"[a] or some other similar thing, of its own nature), and there is a sense in which it is not; because "to be fire" and "to be an element" are not the same. It is as a concrete thing and as a stuff that fire is an element; but the term "element" denotes that it has this attribute: that something is made of it as a primary constituent. The same is true of "cause" or "one" and all other 8 such terms. None of these particular senses gives the connotation of unity.

1052 b

Διὸ καὶ τὸ ἑνὶ εἶναι τὸ ἀδιαιρέτῳ ἐστὶν εἶναι, ὅπερ τόδε[1] ὄντι καὶ ἰδίᾳ χωριστῷ[2] ἢ τόπῳ ἢ εἴδει ἢ διανοίᾳ, ἢ καὶ τὸ[3] ὅλῳ καὶ ἀδιαιρέτῳ, μάλιστα δὲ τὸ μέτρῳ[4] εἶναι πρώτῳ[5] ἑκάστου γένους καὶ κυριώτατα τοῦ ποσοῦ· ἐντεῦθεν γὰρ ἐπὶ τὰ ἄλλα ἐλήλυθεν. μέτρον γάρ ἐστιν ᾧ τὸ ποσὸν γιγνώσκεται· γιγνώσκεται δὲ ἢ ἑνὶ ἢ ἀριθμῷ τὸ ποσὸν ἢ ποσόν, ὁ δὲ ἀριθμὸς ἅπας ἑνί, ὥστε πᾶν τὸ ποσὸν γιγνώσκεται ἢ ποσὸν τῷ ἑνί, καὶ ᾧ πρώτῳ ποσὰ γιγνώσκεται τοῦτο αὐτὸ ἕν· διὸ τὸ ἓν ἀριθμοῦ ἀρχὴ ἢ ἀριθμός. ἐντεῦθεν δὲ καὶ ἐν τοῖς ἄλλοις λέγεται μέτρον τε ᾧ ἕκαστον πρώτῳ[6] γιγνώσκεται, καὶ τὸ μέτρον ἑκάστου ἓν ἐν μήκει, ἐν πλάτει, ἐν βάθει, ἐν βάρει, ἐν τάχει (τὸ γὰρ βάρος καὶ τάχος κοινὸν ἐν τοῖς ἐναντίοις· διττὸν γὰρ ἑκάτερον αὐτῶν, οἷον βάρος τό τε ὁποσηνοῦν ἔχον ῥοπὴν καὶ τὸ ἔχον ὑπεροχὴν ῥοπῆς, καὶ τάχος τό τε ὁποσηνοῦν κίνησιν ἔχον καὶ τὸ ὑπεροχὴν κινήσεως· ἔστι γάρ τι τάχος καὶ τοῦ βραδέος, καὶ βάρος τοῦ κουφοτέρου). Ἐν πᾶσι δὴ τούτοις μέτρον καὶ ἀρχὴ ἕν τι καὶ ἀδιαίρετον, ἐπεὶ καὶ ἐν ταῖς γραμμαῖς χρῶνται ὡς ἀτόμῳ τῇ ποδιαίᾳ. πανταχοῦ γὰρ τὸ μέτρον ἕν τι ζητοῦσι καὶ ἀδιαίρετον· τοῦτο δὲ τὸ ἁπλοῦν ἢ τῷ ποιῷ ἢ τῷ ποσῷ. ὅπου μὲν οὖν δοκεῖ μὴ εἶναι ἀφελεῖν ἢ προσθεῖναι, τοῦτο

1053 a ἀκριβὲς τὸ μέτρον· διὸ τὸ τοῦ ἀριθμοῦ ἀκριβέστατον· τὴν γὰρ μονάδα τιθέασι πάντῃ ἀδιαίρετον· ἐν δὲ τοῖς ἄλλοις μιμοῦνται τὸ τοιοῦτον· ἀπὸ γὰρ

[1] τῷδε A^b.
[2] ἰδίᾳ χωριστῷ A^b Alexander (?): ἀχωρίστῳ EJΓ.
[3] τὸ Bonitz: τῷ. [4] μέτρῳ Aldine: μέτρον.
[5] πρώτῳ Christ: πρῶτον.
[6] τε . . πρώτῳ] ᾧ πρώτῳ τε ἕκαστον EJΓ.

Hence "to be one" means "to be indivisible" (being essentially a particular thing, distinct and separate in place or form or thought), or "to be whole and indivisible"; but especially "to be the first measure of each kind," and above all of quantity; for it is from this that it has been extended to the other categories. Measure is that by which quantity 9
is known, and quantity *qua* quantity is known either by unity or by number, and all number is known by unity. Therefore all quantity *qua* quantity is known by unity, and that by which quantities are primarily known is absolute unity. Thus unity is the starting- 10
point of number *qua* number. Hence in other cases too "measure" means that by which each thing is primarily known, and the measure of each thing is a unit—in length, breadth, depth, weight and speed. (The terms "weight" and "speed" are common to 11
both contraries, for each of them has a double meaning; *e.g.*, "weight" applies to that which has the least amount of gravity and also to that which has an excess of it, and "speed" to that which has the least amount of motion and also to that which has excess of it; for even the slow has some speed, and the light some weight.)

"The one is essentially a measure."

In all these cases, then, the measure and starting- 12
point is some indivisible unit (since even in the case of lines we treat the "one-foot line" as indivisible). For everywhere we require as our measure an indivisible unit; *i.e.*, that which is simple either in quality or in quantity. Now where it seems im- 13
possible to take away or add, there the measure is exact. Hence the measure of number is most exact, for we posit the unit as in every way indivisible; and in all other cases we follow this

1053 a σταδίου καὶ ταλάντου καὶ ἀεὶ τοῦ μείζονος λάθοι
ἂν καὶ προστεθέν τι καὶ ἀφαιρεθὲν μᾶλλον ἢ ἀπὸ
5 ἐλάττονος. ὥστε ἀφ' οὗ πρώτου κατὰ τὴν αἴσθη-
σιν μὴ ἐνδέχεται, τοῦτο πάντες ποιοῦνται μέτρον
καὶ ὑγρῶν καὶ ξηρῶν καὶ βάρους καὶ μεγέθους·
καὶ τότ' οἴονται εἰδέναι τὸ ποσὸν ὅταν εἰδῶσι διὰ
τούτου τοῦ μέτρου. καὶ δὴ καὶ κίνησιν τῇ ἁπλῇ
κινήσει καὶ τῇ ταχίστῃ· ὀλιγιστόν γὰρ αὕτη ἔχει
10 χρόνον· διὸ ἐν τῇ ἀστρολογίᾳ τὸ τοιοῦτον ἐν ἀρχὴ
καὶ μέτρον· τὴν κίνησιν γὰρ ὁμαλὴν ὑποτίθενται
καὶ ταχίστην τὴν τοῦ οὐρανοῦ, πρὸς ἣν κρίνουσι
τὰς ἄλλας. καὶ ἐν μουσικῇ δίεσις, ὅτι ἐλάχιστον,
καὶ ἐν φωνῇ στοιχεῖον. καὶ ταῦτα πάντα ἕν τι
οὕτως, οὐχ ὡς κοινόν τι τὸ ἕν, ἀλλ' ὥσπερ εἴρηται.
15 οὐκ ἀεὶ δὲ τῷ ἀριθμῷ ἓν τὸ μέτρον, ἀλλ' ἐνίοτε
πλείω, οἷον αἱ διέσεις δύο, αἱ μὴ κατὰ τὴν ἀκοὴν
ἀλλ' ἐν τοῖς λόγοις, καὶ αἱ φωναὶ πλείους αἷς με-
τροῦμεν, καὶ ἡ διάμετρος δυσὶ μετρεῖται [καὶ ἡ
πλευρά],[1] καὶ τὰ ⟨τοιαῦτα⟩[2] μεγέθη πάντα. οὕτω δὴ
πάντων μέτρον τὸ ἕν, ὅτι γνωρίζομεν ἐξ ὧν ἐστὶν
20 ἡ οὐσία διαιροῦντες ἢ κατὰ τὸ ποσὸν ἢ κατὰ τὸ
εἶδος. διὰ[3] τοῦτο τὸ ἓν ἀδιαίρετον, ὅτι τὸ πρῶτον
ἑκάστων ἀδιαίρετον. οὐχ ὁμοίως δὲ πᾶν ἀδιαίρετον,

[1] Goebel. [2] τοιαῦτα addidi. [3] καὶ διὰ E²J.

[a] *i.e.*, the enharmonic (or quarter-tone proper) and the chromatic, which was ½ of a tone (Aristoxenus i. 21). There was also the *δίεσις ἡμιολία*, which was ⅔ of a tone (*id.* ii. 51).

[b] The meaning seems to be that the diameter consists of two parts, one equal to the side, and the other representing its

example, for with the furlong or talent or in general with the greater measure an addition or subtraction would be less obvious than with a smaller one. Therefore the first thing from which, according to our 14
perception, nothing can be subtracted is used by all men as their measure of wet and dry, weight and magnitude; and they think that they know the quantity only when they know it in terms of this measure. And they know motion too by simple motion and the most rapid, for this takes least time. Hence in astronomy a unit of this kind is the starting- 15
point and measure; for they assume that the motion of the heavens is uniform and the most rapid, and by it they judge the others. In music the measure is the quarter-tone, because it is the smallest interval; and in language the letter. All these are examples of units in this sense—not in the sense that unity is something common to them all, but in the sense which we have described. The measure is not 16
always numerically one, but sometimes more than one; *e.g.*, there are two quarter-tones, distinguished not by our hearing but by their theoretical ratios [a]; and the articulate sounds by which we measure speech are more than one; and the diagonal of a square is measured by two quantities,[b] and so are all magnitudes of this kind. Thus unity is the measure of all things, because we learn of what the substance is composed by dividing it, in respect of either quantity or form. Hence unity is indivisible, 17
because that which is primary in each class of things is indivisible. But not every unit is indivisible in

excess over the side; the two parts being incommensurate are measured by different units (Ross). *καὶ ἡ πλευρά* must, I think, be a gloss.

οἷον πους καὶ μονάς, ἀλλὰ τὸ μὲν πάντῃ, τὸ δ' εἰς ἀδιαίρετα πρὸς τὴν αἴσθησιν θετέον,[1] ὥσπερ εἴρηται ἤδη· ἴσως γὰρ πᾶν συνεχὲς διαιρετόν. Ἀεὶ δὲ συγγενὲς τὸ μέτρον· μεγεθῶν μὲν γὰρ μέγεθος, καὶ καθ' ἕκαστον μήκους μῆκος, πλάτους πλάτος, φωνῶν φωνή, βάρους βάρος, μονάδων μονάς. οὕτω γὰρ δεῖ λαμβάνειν, ἀλλ' οὐχ ὅτι ἀριθμῶν ἀριθμός· καίτοι ἔδει, εἰ ὁμοίως· ἀλλ' οὐχ ὁμοίως ἀξιοῖ, ἀλλ' ὥσπερ εἰ μονάδων μονάδας ἀξιώσειε μέτρον ἀλλὰ μὴ μονάδα· ὁ δ' ἀριθμὸς πλῆθος μονάδων. Καὶ τὴν ἐπιστήμην δὲ μέτρον τῶν πραγμάτων λέγομεν καὶ τὴν αἴσθησιν διὰ τὸ αὐτό, ὅτι γνωρίζομέν τι αὐταῖς,[2] ἐπεὶ μετροῦνται μᾶλλον ἢ μετροῦσιν. ἀλλὰ συμβαίνει ἡμῖν ὥσπερ ἂν εἴ ἄλλου ἡμᾶς μετροῦντος ἐγνωρίσαμεν πηλίκοι ἐσμὲν τῷ τὸν πῆχυν ἐπὶ τοσοῦτον ἡμῖν ἐπιβάλλειν. Πρωταγόρας δ' ἄνθρωπόν φησι πάντων εἶναι μέτρον, ὥσπερ ἂν εἰ τὸν ἐπιστήμονα εἰπὼν ἢ τὸν αἰσθανόμενον· τούτους δ' ὅτι ἔχουσιν ὁ μὲν αἴσθησιν ὁ δὲ ἐπιστήμην, ἃ φαμεν εἶναι μέτρα τῶν ὑποκειμένων. οὐθὲν δὴ λέγων περιττὸν φαίνεταί[3] τι λέγειν. Ὅτι μὲν οὖν τὸ ἑνὶ[4] εἶναι μάλιστά ἐστι κατὰ τὸ ὄνομα ἀφορίζοντι μέτρον τι, καὶ κυριώτατα τοῦ ποσοῦ, εἶτα

[1] *θετέον* Forster: *ἐθέλει*.
[2] *αὐτοῖς* Bekker.
[3] *λέγων . . . φαίνεται* Alexander et fecit E^a: *λέγοντες . . . φαίνονται*.
[4] *ἓν* A^b *γρ.* E Alexander.

[a] What Protagoras really meant was (apparently) that appearances are true relatively to the percipient. *Cf.* IV. iv. 27, and see Burnet, *Greek Philosophy* (Part I. Thales to Plato), § 92.

the same sense—*e.g.* the foot and the arithmetical unit; but the latter is absolutely indivisible, and the former must be classed as indivisible with respect to our power of perception, as we have already stated; since presumably everything which is continuous is divisible.

The measure is always akin to the thing measured. 18
The measure of magnitude is magnitude, and in particular the measure of length is a length; of breadth, a breadth; of sounds, a sound; of weight, a weight; of units, a unit; for this is the view that we must take, and not that the measure of numbers is a number. The latter, indeed, would necessarily be true, if the analogy held good; but the supposition is not analogous—it is as though one were to suppose that the measure of units is units, and not a unit; for number is a plurality of units.

We also speak of knowledge or sense-perception 19
as a measure of things for the same reason, because through them we come to know something; whereas really they are measured themselves rather than measure other things. But our experience is as though someone else measured us, and we learned our height by noticing to what extent he applied his foot-rule to us. Protagoras says that "man is 20
the measure of all things," meaning, as it were, the scholar or the man of perception; and these because they possess, the one knowledge, and the other perception, which we hold to be the measures of objects. Thus, while appearing to say something exceptional, he is really saying nothing.[a]

Obviously, then, unity in the strictest sense, if we 21
make our definition in accordance with the meaning of the term, is a measure; particularly of quantity,

1053 b τοῦ ποιοῦ, φανερόν. ἔσται δὲ τοιοῦτον τὸ μὲν ἂν ᾖ ἀδιαίρετον κατὰ τὸ ποσόν, τὸ δὲ ἂν κατὰ τὸ ποιόν· διόπερ ἀδιαίρετον τὸ ἓν ἢ ἁπλῶς ἢ ᾗ ἕν.

II. Κατὰ δὲ τὴν οὐσίαν καὶ τὴν φύσιν ζητητέον πότερως ἔχει, καθάπερ ἐν τοῖς διαπορήμασιν ἐπῆλθομεν, τί τὸ ἓν ἐστι καὶ πῶς δεῖ περὶ αὐτοῦ λαβεῖν, πότερον ὡς οὐσίας τινὸς οὔσης αὐτοῦ τοῦ ἑνός, καθάπερ οἵ τε Πυθαγόρειοί φασι πρότερον καὶ Πλάτων ὕστερον, ἢ μᾶλλον ὑπόκειταί τις φύσις, καί πως[1] δεῖ γνωριμωτέρως λεχθῆναι καὶ μᾶλλον ὥσπερ οἱ περὶ φύσεως· ἐκείνων γὰρ ὁ μέν τις φιλίαν εἶναί φησι τὸ ἕν, ὁ δ' ἀέρα, ὁ δὲ τὸ ἄπειρον.

Εἰ δὲ μηδὲν τῶν καθόλου δυνατὸν οὐσίαν εἶναι, καθάπερ ἐν τοῖς περὶ οὐσίας καὶ περὶ τοῦ ὄντος εἴρηται λόγοις, οὐδ' αὐτὸ τοῦτο οὐσίαν ὡς ἕν τι παρὰ τὰ πολλὰ δυνατὸν εἶναι (κοινὸν γάρ) ἀλλ' ἢ κατηγόρημα μόνον, δῆλον ὡς οὐδὲ τὸ ἕν· τὸ γὰρ ὂν καὶ τὸ ἓν καθόλου κατηγορεῖται μάλιστα πάντων. ὥστε οὔτε τὰ γένη φύσεις τινὲς καὶ οὐσίαι χωρισταὶ τῶν ἄλλων εἰσίν, οὔτε τὸ ἓν γένος ἐνδέχεται εἶναι διὰ τὰς αὐτὰς αἰτίας δι' ἅσπερ οὐδὲ τὸ ὂν οὐδὲ τὴν οὐσίαν. Ἔτι δ' ὁμοίως ἐπὶ πάντων ἀναγκαῖον ἔχειν· λέγεται δ' ἰσαχῶς τὸ ὂν καὶ τὸ ἕν· ὥστ' ἐπείπερ ἐν τοῖς ποιοῖς ἐστί τι τὸ ἓν καί τις φύσις, ὁμοίως δὲ καὶ ἐν τοῖς ποσοῖς, δῆλον ὅτι καὶ ὅλως ζητητέον τί τὸ ἕν, ὥσπερ καὶ τί τὸ ὄν,

[1] πως Schwegler: πῶς codd.: seclusit Christ.

[a] III. iv. 24-27.
[b] Empedocles.
[c] Anaximenes.
[d] Anaximander.
[e] VII. xiii.
[f] *Cf.* III. iii. 7.

and secondarily of quality. Some things will be of this kind if they are indivisible in quantity, and others if in quality. Therefore that which is one is indivisible, either absolutely or *qua* one.

Unity is not a substance, but a predicate coextensive with Being.

II. We must inquire, with regard to the substance and nature of unity, in which sense it exists. This is the same question which we approached in our discussion of difficulties[a]: *what* unity is, and what view we are to take of it; whether that unity itself is a kind of substance—as first the Pythagoreans, and later Plato, both maintain—or whether rather some nature underlies it, and we should give a more intelligible account of it, and more after the manner of the physicists; for of them one[b] holds that "the One" is Love, another[c] Air, and another[d] the Indeterminate.

Now if no universal can be a substance (as we have 2
stated in our discussion[e] of substance and being), and being itself cannot be a substance in the sense of one thing existing alongside the many (since it is common to them), but only as a predicate, then clearly neither can unity be a substance; because being and unity are the most universal of all predicates. Therefore (*a*) genera are not certain entities 3
and substances separate from other things; and (*b*) unity cannot be a genus, for the same reasons that being and substance cannot.[f]

Further, the nature of unity must be the same for all categories. Now being and unity have the same 4
number of meanings; so that since in the category of qualities unity is something definite, *i.e.* some definite entity, and similarly in the category of quantity, clearly we must also inquire in general what unity is, just as in the case of being; since it is

1053 b ὡς οὐχ ἱκανὸν ὅτι τοῦτο αὐτὸ ἡ φύσις αὐτοῦ. ἀλλὰ μὴν ἕν γε χρώμασίν ἐστι τὸ ἓν χρῶμα, οἷον
80 τὸ λευκόν, εἰ[1] τὰ ἄλλα ἐκ τούτου καὶ τοῦ μέλανος φαίνεται γιγνόμενα, τὸ δὲ μέλαν στέρησις λευκοῦ, ὥσπερ καὶ φωτὸς σκότος [τοῦτο δ' ἐστὶ στέρησις φωτός][2]· ὥστε εἰ τὰ ὄντα ἦν χρώματα, ἦν ἂν ἀριθμός τις τὰ ὄντα, ἀλλὰ τίνων; δῆλον δὴ ὅτι χρωμάτων· καὶ τὸ ἓν ἦν ἄν τι ἕν, οἷον τὸ λευκόν.
85 ὁμοίως δὲ καὶ εἰ μέλη τὰ ὄντα ἦν, ἀριθμὸς ἂν ἦν, διέσεων μέντοι, ἀλλ' οὐκ ἀριθμὸς ἡ οὐσία αὐτῶν·
1054 a καὶ τὸ ἓν ἦν ἄν τι οὗ ἡ οὐσία οὐ τὸ ἓν ἀλλὰ δίεσις. ὁμοίως δὲ καὶ ἐπὶ τῶν φθόγγων στοιχείων ἂν ἦν τὰ ὄντα ἀριθμός, καὶ τὸ ἓν στοιχεῖον φωνῆεν. καὶ εἰ σχήματα εὐθύγραμμα, σχημάτων ἂν ἦν ἀριθμός, καὶ τὸ ἓν τὸ τρίγωνον. ὁ δ' αὐτὸς λόγος
5 καὶ ἐπὶ τῶν ἄλλων γενῶν. ὥστ' εἴπερ καὶ ἐν τοῖς πάθεσι καὶ ἐν τοῖς ποιοῖς καὶ ἐν τοῖς ποσοῖς καὶ ἐν κινήσει ἀριθμῶν ὄντων καὶ ἑνός τινος ἐν ἅπασιν, ὅ τε ἀριθμὸς τινῶν καὶ τὸ ἓν τί ἕν, ἀλλ' οὐχὶ τοῦτο αὐτοῦ ἡ οὐσία, καὶ ἐπὶ τῶν οὐσιῶν ἀνάγκη ὡσαύτως ἔχειν· ὁμοίως γὰρ ἔχει ἐπὶ πάντων. Ὅτι μὲν οὖν
10 τὸ ἓν ἐν ἅπαντι[3] γένει ἐστί τις φύσις, καὶ οὐδενὸς τοῦτό γ' αὐτὸ ἡ φύσις τὸ ἕν, φανερόν· ἀλλ' ὥσπερ ἐν χρώμασι χρῶμα ἓν ζητητέον αὐτὸ τὸ ἕν, οὕτω καὶ ἐν οὐσίᾳ οὐσίαν μίαν αὐτό[4] τὸ ἕν· ὅτι δὲ ταὐτὸ σημαίνει πως τὸ ἓν καὶ τὸ ὄν, δῆλον τῷ τε παρακολουθεῖν ἰσαχῶς ταῖς κατηγορίαις καὶ μὴ
15 εἶναι ἐν μηδεμιᾷ (οἷον οὔτ' ἐν τῇ τί ἐστιν οὔτ' ἐν

[1] *εἰ* A^bE : *εἶτα*.
[2] Jaeger.
[3] *παντὶ* EJ.
[4] *αὐτό τε* A^b.

not enough to say that its nature is simply unity or being. But in the sphere of colours unity is a 5
colour, *e.g.* white ; that is if all the other colours are apparently derived from white and black, and black is a privation of white, as darkness is of light. Thus if all existing things were colours, all existing things would be a number ; but of what ? Clearly of 6
colours. And unity would be some one colour, *e.g.* white. Similarly if all existing things were tunes, there would be a number—of quarter-tones ; but their substance would not be a number ; and unity would be something whose substance is not unity but a quarter-tone. Similarly in the case of sounds, existing things would be a number of letters, and unity would be a vowel ; and if existing things were 7
right-lined figures, they would be a number of figures, and unity would be a triangle. And the same principle holds for all other genera. Therefore if in the categories of passivity and quality and quantity and motion there is in every category a number and a unity, and if the number is of particular things and the unity is a particular unity, and its substance is not unity, then the same must be true in the case of substances, because the same is true in all cases.

It is obvious, then, that in every genus " one " is 8
a definite entity, and that in no case is its nature merely unity ; but as in the sphere of colours the One-itself which we have to seek is one colour, so too in the sphere of substance the One-itself is one substance. And that in a sense unity means the same 9
as being is clear (*a*) from the fact that it has a meaning corresponding to each of the categories, and is contained in none of them—*e.g.*, it is contained

1054 a τῇ ποιόν, ἀλλ' ὁμοίως ἔχει ὥσπερ τὸ ὄν), καὶ τῷ μὴ προσκατηγορεῖσθαι ἕτερόν τι τὸ εἰς ἄνθρωπος τοῦ ἀνθρώπος (ὥσπερ οὐδὲ τὸ εἶναι παρὰ τό τι ἢ ποιὸν ἢ ποσόν) καὶ ⟨τῷ⟩[1] τὸ ἑνὶ εἶναι τὸ ἑκάστῳ εἶναι.

20 III. Ἀντίκειται δὲ τὸ ἓν καὶ τὰ πολλὰ κατὰ πλείους τρόπους, ὧν ἕνα τὸ ἓν καὶ τὸ πλῆθος ὡς ἀδιαίρετον καὶ διαιρετόν· τὸ μὲν γὰρ ἢ διῃρημένον ἢ διαιρετὸν πλῆθός τι λέγεται, τὸ δὲ ἀδιαίρετον ἢ μὴ διῃρημένον ἕν. ἐπεὶ οὖν αἱ ἀντιθέσεις τετραχῶς, 25 καὶ τούτων κατὰ στέρησιν λέγεται θάτερον, ἐναντία ἂν εἴη, καὶ οὔτε ὡς ἀντίφασις οὔτε ὡς τὰ πρός τι λεγόμενα. λέγεται δὲ ἐκ τοῦ ἐναντίου καὶ δηλοῦται τὸ ἕν, ἐκ τοῦ διαιρετοῦ τὸ ἀδιαίρετον, διὰ τὸ μᾶλλον αἰσθητὸν τὸ πλῆθος εἶναι καὶ τὸ διαιρετὸν ἢ τὸ ἀδιαίρετον, ὥστε τῷ λόγῳ πρότερον τὸ πλῆθος 30 τοῦ ἀδιαιρέτου διὰ τὴν αἴσθησιν. Ἔστι δὲ τοῦ μὲν ἑνός, ὥσπερ καὶ ἐν τῇ διαιρέσει τῶν ἐναντίων διεγράψαμεν, τὸ ταὐτὸ καὶ ὅμοιον καὶ ἴσον, τοῦ δὲ πλήθους τὸ ἕτερον καὶ ἀνόμοιον καὶ ἄνισον.

Λεγομένου δὲ τοῦ ταὐτοῦ πολλαχῶς, ἕνα μὲν τρόπον κατ' ἀριθμὸν λέγομεν ἐνίοτε αὐτό, τοῦτο δ' 35 ἐὰν καὶ λόγῳ καὶ ἀριθμῷ ἓν ᾖ, οἷον σὺ σαυτῷ καὶ 1054 b τῷ εἴδει καὶ τῇ ὕλῃ ἕν· ἔτι δ' ἐὰν ὁ λόγος ὁ τῆς πρώτης οὐσίας εἷς ᾖ, οἷον αἱ ἴσαι γραμμαὶ εὐθεῖαι αἱ αὐταί, καὶ τὰ ἴσα καὶ[2] ἰσογώνια τετράγωνα, καίτοι πλείω· ἀλλ' ἐν τούτοις ἡ ἰσότης ἑνότης.

Ὅμοια δὲ ἐὰν μὴ ταὐτὰ ἁπλῶς ὄντα, μηδὲ κατὰ

[1] τῷ Christ: τῷ εἶναι Ross. [2] καὶ τὰ EJ.

[a] *Cf.* IV. ii. 6-8. [b] *Cf.* IV. ii. 9.
[c] Or "the same." *Cf.* V. ix.
[d] Or "like." *Cf.* V. ix. 5.

neither in substance nor in quality, but is related to them exactly as being is; (*b*) from the fact that in "one man" nothing more is predicated than in "man"[a] (just as Being too does not exist apart from some thing or quality or quantity); and (*c*) because "to be one" is "to be a particular thing."

III. "One" and "Many" are opposed in several ways. Unity and Plurality are opposed as being indivisible and divisible; for that which is divided or divisible is called a plurality, and that which is indivisible or undivided is called one. Then since opposition is of four kinds, and one of the present pairs of opposites is used in a privative sense, they must be contraries, and neither contradictories nor relative terms. Unity is described and explained by its contrary—the indivisible by the divisible—because plurality, *i.e.* the divisible, is more easily perceptible than the indivisible; and so in formula plurality is prior to the indivisible, on account of our powers of perception. Unity and plurality. 2

To Unity belong (as we showed by tabulation in our distinction of the contraries[b]) Identity, Similarity and Equality; and to Plurality belong Otherness, Dissimilarity and Inequality.

"Identity"[c] has several meanings. (*a*) Sometimes we speak of it in respect of number. (*b*) We call a thing the same if it is one both in formula and in number, *e.g.*, you are one with yourself both in form and in matter; and again (*c*) if the formula of the primary substance is one, *e.g.*, equal straight lines are the same, and equal quadrilaterals with equal angles, and there are many more examples; but in these equality means unity. Identity. 3

Things are "similar"[d] (*a*) if, while not being the 4

1054 b
τὴν οὐσίαν ἀδιάφορα τὴν συγκειμένην, κατὰ τὸ εἶδος ταὐτὰ ᾖ, οἷον τὸ μεῖζον τετράγωνον τῷ μικρῷ ὅμοιον, καὶ αἱ ἄνισοι εὐθεῖαι· αὗται γὰρ ὅμοιαι μέν, αἱ αὐταὶ δὲ ἁπλῶς οὔ. τὰ δὲ ἐὰν τὸ αὐτὸ εἶδος ἔχοντα, ἐν οἷς τὸ μᾶλλον καὶ ἧττον ἐγγίγνεται, μήτε μᾶλλον ᾖ μήτε ἧττον. τὰ δὲ ἐὰν ᾖ τὸ αὐτὸ πάθος καὶ ἓν τῷ εἴδει, οἷον τὸ λευκόν, σφόδρα καὶ ἧττον, ὅμοιά φασιν εἶναι ὅτι ἓν τὸ εἶδος αὐτῶν. τὰ δὲ ἐὰν πλείω ἔχῃ ταὐτὰ ᾖ ἕτερα, ἢ ἁπλῶς ἢ τὰ πρόχειρα, οἷον καττίτερος ἀργύρῳ ᾗ λευκόν,[1] χρυσὸς δὲ πυρὶ ᾗ ξανθὸν καὶ πυρρόν. Ὥστε δῆλον ὅτι καὶ τὸ ἕτερον καὶ τὸ ἀνόμοιον πολλαχῶς λέγεται. καὶ τὸ μὲν ἄλλο ἀντικειμένως καὶ τὸ ταὐτό, διὸ ἅπαν[2] πρὸς ἅπαν ἢ ταὐτὸ ἢ ἄλλο· τὸ δ' ἐὰν μὴ καὶ ἡ ὕλη καὶ ὁ λόγος εἷς, διὸ σὺ καὶ ὁ πλησίον ἕτερος· τὸ δὲ τρίτον ὡς τὰ ἐν τοῖς μαθηματικοῖς. τὸ μὲν οὖν ἕτερον ἢ ταὐτὸ διὰ τοῦτο πᾶν πρὸς πᾶν λέγεται, ὅσα λέγεται ἓν καὶ ὄν· οὐ[3] γὰρ ἀντίφασίς ἐστι τοῦ ταὐτοῦ· διὸ οὐ λέγεται ἐπὶ τῶν μὴ ὄντων (τὸ δὲ μὴ ταὐτὸ λέγεται), ἐπὶ δὲ τῶν ὄντων πάντων· ἢ γὰρ ἓν ἢ οὐχ ἓν πέφυκε ὅσα[4] ὄν καὶ ἕν. Τὸ μὲν οὖν ἕτερον καὶ ταὐτὸν οὕτως ἀντίκειται, διαφορὰ δὲ καὶ ἑτερότης ἄλλο.

[1] ᾗ λευκόν ex Alexandro Ross: ᾗ λευκός Schwegler: ᾗ χρυσῷ codd.
[2] ἅπαν A^b Alexander: πᾶν EJ. [3] οὐδὲ A^b.
[4] πέφυκε ὅσα Apelt: πεφυχ' ὅσα Ross: πεφυκὸς A^b: πεφυκὸς καὶ EJ[1] Alexander.

[a] *Cf.* V. ix. 4.
[b] *sc.* as opposed to "same" in sense (*a*); § 3 above.

same absolutely or indistinguishable in respect of their concrete substance, they are identical in form; *e.g.*, the larger square is similar to the smaller, and unequal straight lines are similar. These are similar, but not absolutely the same. (*b*) If, having the same form, and being capable of difference in degree, they have no difference of degree. (*c*) If things have an attribute which is the same and one in form—*e.g.* white—in different degrees, we say that they are similar because their form is one. (*d*) If the respects in which they are the same are more than those in which they differ, either in general or as regards their more prominent qualities; *e.g.*, tin is similar to silver, as being white; and gold to fire, as being yellow or flame-coloured. Similarity. 5

Thus it is obvious that "Other" [a] and "Unlike" also have several meanings. (*a*) In one sense "other" is used in the sense opposite to "the same"; thus everything in relation to every other thing is either "the same" or "other." (*b*) In another sense things are "other" unless both their matter and their formula are one; thus you are "other" than your neighbour. (*c*) The third sense is that which is found in mathematics.[b] Therefore everything in relation to everything else is called either "other" or "the same"; that is, in the case of things of which unity and being are predicated; for "other" is not the contradictory of "the same," and so it is not predicated of non-existent things (they are called "not the same"), but it is predicated of all things which exist; for whatever is by nature existent and one is either one or not one with something else. Otherness and Dissimilarity. 6 7

"Other" and "same," then, are opposed in this way; but "difference" [a] is distinct from "other- Difference.

1054 b τὸ μὲν γὰρ ἕτερον καὶ οὐ ἕτερον οὐκ ἀνάγκη εἶναι τινὶ ἕτερον· πᾶν γὰρ ἢ ἕτερον ἢ ταὐτὸ ὅ τι ἂν ᾖ ὄν· τὸ δὲ διάφορον τινὸς τινὶ διάφορον, ὥστε ἀνάγκη ταὐτό τι εἶναι ᾧ διαφέρουσιν. τοῦτο δὲ τὸ αὐτὸ γένος ἢ εἶδος· πᾶν γὰρ τὸ διαφέρον διαφέρει ἢ γένει ἢ εἴδει, γένει μὲν ὧν μὴ ἐστι κοινὴ ἡ ὕλη μηδὲ γένεσις εἰς ἄλληλα, οἷον ὅσων ἄλλο σχῆμα τῆς κατηγορίας, εἴδει δὲ ὧν τὸ αὐτὸ γένος (λέγεται δὲ γένος ὃ ἅμφω τὸ αὐτὸ λέγονται κατὰ τὴν οὐσίαν τὰ διάφορα). Τὰ δ' ἐναντία διάφορα, καὶ ἡ ἐναντίωσις διαφορά τις. ὅτι δὲ καλῶς τοῦτο ὑποτιθέμεθα, δῆλον ἐκ τῆς ἐπαγωγῆς· πάντα γὰρ διαφέροντα[1] φαίνεται καὶ ταῦτα, οὐ μόνον ἕτερα ὄντα, ἀλλὰ τὰ μὲν τὸ γένος ἕτερα, τὰ δ' ἐν τῇ 1055 a αὐτῇ συστοιχίᾳ τῆς κατηγορίας, ὥστ' ἐν ταὐτῷ γένει καὶ ταὐτὰ τῷ γένει.[2] διώρισται δ' ἐν ἄλλοις ποῖα τῷ γένει ταὐτὰ ἢ ἕτερα.

IV. Ἐπεὶ δὲ διαφέρειν ἐνδέχεται ἀλλήλων τὰ διαφέροντα πλεῖον καὶ ἔλαττον, ἔστι τις καὶ μεγίστη 5 διαφορά, καὶ ταύτην λέγω ἐναντίωσιν. ὅτι δ' ἡ μεγίστη ἐστὶ διαφορά, δῆλον ἐκ τῆς ἐπαγωγῆς. τὰ μὲν γὰρ γένει διαφέροντα οὐκ ἔχει ὁδὸν εἰς ἄλληλα, ἀλλ' ἀπέχει πλέον καὶ ἀσύμβλητα· τοῖς δ' εἴδει διαφέρουσιν αἱ γενέσεις ἐκ τῶν ἐναντίων εἰσὶν ὡς ἐσχάτων. τὸ δὲ τῶν ἐσχάτων διάστημα μέγιστον,

[1] διαφέροντά τε EJ ; διαφέροντά τι Bonitz.
[2] εἴδει EJ.

[a] *Cf.* V. x. [b] V. xxviii. 4.

ness." For that which is "other" than something 8
else need not be other in a particular respect, since everything which is existent is either "other" or "the same." But that which is different from something is different in some particular respect, so that that in which they differ must be the same sort of thing; *i.e.* the same genus or species. For every- 9
thing which is different differs either in genus or in species—in genus, such things as have not common matter and cannot be generated into or out of each other, *e.g.* things which belong to different categories; and in species, such things as are of the same genus (genus meaning that which is predicated of both the different things alike in respect of their substance).

The contraries[a] are different, and contrariety is a 10
kind of difference. That this is rightly premissed is made clear by induction; for the contraries are obviously all different, since they are not merely "other," but some are other in genus, and others are in the same line of predication, and so are in the same genus and the same in genus. We have distinguished elsewhere[b] what sort of things are the same or other in genus. Contrariety

IV. Since things which differ can differ from one another in a greater or less degree, there is a certain maximum difference, and this I call contrariety. That it is the maximum difference is shown by induction. For whereas things which differ in genus have no means of passing into each other, and are more widely distant, and are not comparable, in the case of things which differ in species the contraries are the extremes from which generation takes place; and the greatest distance is that which is between 2
the extremes, and therefore also between the con- Contrariety is maximum difference.

1055 a
ὥστε καὶ τὸ τῶν ἐναντίων. ἀλλὰ μὴν τό γε μέγιστον ἐν ἑκάστῳ γένει τέλειον. μέγιστόν τε γὰρ οὗ μή ἐστιν ὑπερβολή, καὶ τέλειον οὗ μή ἐστιν ἔξω λαβεῖν τι δυνατόν· τέλος γὰρ ἔχει ἡ τελεία διαφορά, ὥσπερ καὶ τἆλλα τῷ τέλος ἔχειν λέγεται τέλεια. τοῦ δὲ τέλους οὐθὲν ἔξω· ἔσχατον γὰρ ἐν παντὶ καὶ περιέχει. διὸ οὐδὲν ἔξω τοῦ τέλους, οὐδὲ προσδεῖται οὐδενὸς τὸ τέλειον. Ὅτι μὲν οὖν ἡ ἐναντιότης ἐστὶ διαφορὰ τέλειος, ἐκ τούτων δῆλον· πολλαχῶς δὲ λεγομένων τῶν ἐναντίων, ἀκολουθήσει τὸ τελείως οὕτως ὡς ἂν καὶ τὸ ἐναντίοις εἶναι ὑπάρχῃ αὐτοῖς. Τούτων δὲ ὄντων φανερὸν ὅτι οὐκ ἐνδέχεται ἑνὶ πλείω ἐναντία εἶναι (οὔτε γὰρ τοῦ ἐσχάτου ἐσχατώτερον εἴη ἄν τι, οὔτε τοῦ ἑνὸς διαστήματος πλείω δυοῖν ἔσχατα), ὅλως τε εἰ ἔστιν ἡ ἐναντιότης διαφορά, ἡ δὲ διαφορὰ δυοῖν, ὥστε καὶ ἡ τέλειος.

Ἀνάγκη δὲ καὶ τοὺς ἄλλους ὅρους ἀληθεῖς εἶναι τῶν ἐναντίων. καὶ γὰρ πλεῖστον διαφέρει ἡ τέλειος διαφορά (τῶν τε γὰρ γένει διαφερόντων οὐκ ἔστιν ἐξωτέρω λαβεῖν καὶ τῶν εἴδει· δέδεικται γὰρ ὅτι πρὸς τὰ ἔξω τοῦ γένους οὐκ ἔστι διαφορά, τούτων δ' αὕτη μεγίστη), καὶ τὰ ἐν τῷ αὐτῷ γένει πλεῖστον διαφέροντα ἐναντία (μεγίστη γὰρ διαφορὰ τούτων ἡ τέλειος), καὶ τὰ ἐν τῷ αὐτῷ δεκτικῷ πλεῖστον διαφέροντα ἐναντία[1] (ἡ γὰρ ὕλη ἡ αὐτὴ τοῖς ἐναν-

[1] τάναντία E[1]J.

traries. But in every class the greatest thing is complete. For (*a*) that is greatest which cannot be exceeded, and (*b*) that is complete outside which nothing proper to it can be found. For complete difference implies an end, just as all other things are called complete because they imply an end. And 3
there is nothing beyond the end; for in everything the end is the last thing, and forms the boundary. Thus there is nothing beyond the end, and that which is complete lacks nothing.

From this argument, then, it is clear that contrariety is maximum difference; and since we speak of contraries in various senses, the sense of completeness will vary in accordance with the sense of contrariety which applies to the contraries.

This being so, evidently one thing cannot have 4
more than one contrary (since there can be nothing more extreme than the extreme, nor can there be more than two extremes of one interval); and in general this is evident, if contrariety is difference, and difference (and therefore complete difference) is between two things.

One thing cannot have more than one contrary.

The other definitions of contraries must also be 5
true, for (i.) complete difference is the maximum difference; since (*a*) we can find nothing beyond it, whether things differ in genus or in species (for we have shown that difference in relation to things outside the genus is impossible; this is the maximum difference between them); and (*b*) the things which differ most in the same genus are contraries; for complete difference is the maximum difference between these. (ii.) The things which differ most 6
in the same receptive material are contraries; for contraries have the same matter. (iii.) The most

τίοις), καὶ τὰ ὑπὸ τὴν αὐτὴν δύναμιν πλεῖστον διαφέροντα· καὶ γὰρ ἡ ἐπιστήμη περὶ ἓν γένος ἡ μία, ἐν οἷς ἡ τελεία διαφορὰ μεγίστη. Πρώτη δὲ ἐναντίωσις ἕξις καὶ στέρησίς ἐστιν· οὐ πᾶσα δὲ στέρησις (πολλαχῶς γὰρ λέγεται ἡ στέρησις), ἀλλ' ἥτις ἂν τελεία ᾖ. τὰ δ' ἄλλα ἐναντία κατὰ ταῦτα λεχθήσεται, τὰ μὲν τῷ ἔχειν, τὰ δὲ τῷ ποιεῖν ἢ ποιητικὰ εἶναι, τὰ δὲ τῷ λήψεις εἶναι καὶ ἀποβολαὶ τούτων ἢ ἄλλων ἐναντίων. εἰ δὴ ἀντίκειται μὲν ἀντίφασις καὶ στέρησις καὶ ἐναντιότης καὶ τὰ πρός τι, τούτων δὲ πρῶτον ἀντίφασις, ἀντιφάσεως δὲ μηδέν ἐστι μεταξύ, τῶν δὲ ἐναντίων ἐνδέχεται, ὅτι μὲν οὐ ταὐτὸν ἀντίφασις καὶ τἀναντία δῆλον· ἡ δὲ στέρησις ἀντίφασίς τίς ἐστιν· ἢ γὰρ τὸ ἀδύνατον ὅλως ἔχειν, ἢ ὃ ἂν πεφυκὸς ἔχειν μὴ ἔχῃ, ἐστέρηται ἢ ὅλως ἢ πὼς ἀφορισθέν· πολλαχῶς γὰρ ἤδη τοῦτο λέγομεν, ὥσπερ διῄρηται ἡμῖν ἐν ἄλλοις. ὥστ' ἔστιν ἡ στέρησις ἀντίφασίς τις ἢ ἀδυναμία διορισθεῖσα ἢ συνειλημμένη τῷ δεκτικῷ. διὸ ἀντιφάσεως μὲν οὐκ ἔστι μεταξύ, στερήσεως δέ τινός ἐστιν· ἴσον μὲν γὰρ ἢ οὐκ ἴσον πᾶν, ἴσον δ' ἢ ἄνισον οὐ πᾶν, ἀλλ' εἴπερ, μόνον ἐν τῷ δεκτικῷ τοῦ ἴσου. εἰ δὴ αἱ γενέσεις τῇ ὕλῃ ἐκ τῶν ἐναντίων, γίγνονται δὲ ἢ ἐκ τοῦ εἴδους καὶ τῆς τοῦ εἴδους ἕξεως ἢ ἐκ στερήσεώς τινος τοῦ εἴδους καὶ τῆς

1055 a

1055 b

[a] This is not a proper example of privation. *Cf.* V. xxii.
[b] *Ibid.*

different things which come under the same faculty are contraries; for one science treats of one class of things, in which complete difference is the greatest.

"Positive state" and "privation" constitute primary contrariety—not every form of privation (for it has several senses), but any form which is complete. All other contraries must be so called with respect to these; some because they possess these, others because they produce them or are productive of them, and others because they are acquisitions or losses of these or other contraries. Now if the types of opposition are contradiction, privation, contrariety and relation, and of these the primary type is contradiction, and an intermediate is impossible in contradiction but possible between contraries, obviously contradiction is not the same as contrariety; and privation is a form of contradiction; for it is either that which is totally incapable of possessing some attribute,[a] or that which would naturally possess some attribute but does not, that suffers privation—either absolutely or in some specified way. Here we already have several meanings, which we have distinguished elsewhere.[b] Thus privation is a kind of contradiction or incapacity which is determinate or associated with the receptive material. This is why although there is no intermediate in contradiction, there is one in some kinds of privation. For everything is either equal or not equal, but not everything is either equal or unequal; if it is, it is only so in the case of a material which admits of equality. If, then, processes of material generation start from the contraries, and proceed either from the form and the possession of the form, or from some privation of the form or shape, clearly

7 Primary contrariety.

8 The forms of opposition.

Privation.

9

10

1055 b

μορφῆς, δῆλον ὅτι ἡ μὲν ἐναντίωσις στέρησις ἄν
15 τις εἴη πᾶσα, ἡ δὲ στέρησις ἴσως οὐ πᾶσα ἐναντιότης. αἴτιον δ' ὅτι πολλαχῶς ἐνδέχεται ἐστερῆσθαι τὸ ἐστερημένον· ἐξ ὧν γὰρ αἱ μεταβολαὶ ἐσχάτων, ἐναντία ταῦτα. Φανερὸν δὲ καὶ διὰ τῆς ἐπαγωγῆς. πᾶσα γὰρ ἐναντίωσις ἔχει στέρησιν θάτερον[1] τῶν ἐναντίων, ἀλλ' οὐχ ὁμοίως πάντα·
20 ἀνισότης μὲν γὰρ ἰσότητος, ἀνομοιότης δὲ ὁμοιότητος, κακία δὲ ἀρετῆς. διαφέρει δὲ ὥσπερ εἴρηται· τὸ μὲν γὰρ ἐὰν μόνον ᾖ ἐστερημένον, τὸ δ' ἐὰν ᾖ ποτὲ ἢ ἔν τινι, οἷον ἂν ἐν ἡλικίᾳ τινὶ ἢ τῷ κυρίῳ, ἢ πάντῃ. διὸ τῶν μὲν ἔστι μεταξύ, καὶ ἔστιν οὔτε ἀγαθὸς ἄνθρωπος οὔτε κακός, τῶν δὲ οὐκ ἔστιν,
25 ἀλλ' ἀνάγκη εἶναι ἢ περιττὸν ἢ ἄρτιον. ἔτι τὰ μὲν ἔχει τὸ ὑποκείμενον ὡρισμένον, τὰ δ' οὔ. ὥστε φανερὸν ὅτι ἀεὶ θάτερον τῶν ἐναντίων λέγεται κατὰ στέρησιν· ἀπόχρη δὲ κἂν τὰ πρῶτα καὶ τὰ γένη τῶν ἐναντίων, οἷον τὸ ἓν καὶ τὰ πολλά· τὰ γὰρ ἄλλα εἰς ταῦτα ἀνάγεται.

30 V. Ἐπεὶ δὲ ἓν ἑνὶ[2] ἐναντίον, ἀπορήσειεν ἄν τις πῶς ἀντίκειται τὸ ἓν καὶ τὰ πολλὰ καὶ τὸ ἴσον τῷ μεγάλῳ καὶ τῷ μικρῷ. εἰ γὰρ τὸ[3] πότερον ἀεὶ ἐν ἀντιθέσει λέγομεν, οἷον πότερον λευκὸν ἢ μέλαν, καὶ πότερον λευκὸν ἢ οὐ λευκόν (πότερον δὲ ἄνθρω-
35 πος ἢ λευκὸν οὐ λέγομεν, ἐὰν μὴ ἐξ ὑποθέσεως καὶ ζητοῦντες, οἷον πότερον ἦλθε Κλέων ἢ Σωκράτης· ἀλλ' οὐκ ἀνάγκη ἐν οὐδενὶ γένει τοῦτο, ἀλλὰ καὶ τοῦτο ἐκεῖθεν ἐλήλυθεν· τὰ γὰρ ἀντικείμενα μόνα

[1] θατέρου EJ. [2] ἑνὶ ἔστιν EJ.
[3] εἰ γὰρ τὸ A^b γρ. E Alexander (?): τὸ γὰρ EJ.

all contrariety must be a form of privation, although presumably not all privation is contrariety. This 11
is because that which suffers privation may suffer it in several senses; for it is only the extremes from which changes proceed that are contraries.

This can also be shown by induction. Every contrariety involves privation as one of its contraries, but not always in the same way: inequality involves the privation of equality, dissimilarity that of similarity, evil that of goodness. And the differences are 12
as we have stated: one case is, if a thing is merely deprived; another, if it is deprived at a certain time or in a certain part—*e.g.* at a certain age or in the important part—or entirely. Hence in some cases there is an intermediate (there are men who are neither good nor bad), and in others there is not—a thing must be either odd or even. Again, some have 13
a determinate subject, and others have not. Thus it is evident that one of a pair of contraries always has a privative sense; but it is enough if this is true of the primary or generic contraries, *e.g.* unity and plurality; for the others can be reduced to them.

Problems connected with opposition. The opposition of "equal" to "greater and "smaller.

V. Since one thing has one contrary, it might be asked in what sense unity is opposed to plurality, and the equal to the great and to the small. For if we always use the word "whether" in an antithesis —*e.g.*, "whether it is white or black," or "whether it is white or not" (but we do not ask "whether it is a man or white," unless we are proceeding upon some assumption, and asking, for instance, whether it was Cleon who came or Socrates. This is not a 2
necessary disjunction in any class of things, but is derived from the use in the case of opposites—for it is only opposites that cannot be true at the same

1055 b οὐκ ἐνδέχεται ἅμα ὑπάρχειν· ᾧ καὶ ἐνταῦθα χρῆται
1056 a ἐν τῷ πότερος ἦλθεν· εἰ γὰρ ἅμα ἐνεδέχετο, γελοῖον τὸ ἐρώτημα. εἰ δὲ καὶ οὕτως, ὁμοίως ἐμπίπτει εἰς ἀντίθεσιν, εἰς τὸ ἓν ἢ πολλά, οἷον πότερον ἀμφότεροι ἦλθον ἢ ἄτερος)—εἰ δὴ ἐν τοῖς ἀντικειμένοις ἀεὶ τοῦ ποτέρου ἡ ζήτησις, λέγεται δὲ πότερον
5 μεῖζον ἢ ἔλαττον, ἢ ἴσον, τίς ἐστιν ἡ ἀντίθεσις πρὸς ταῦτα τοῦ ἴσου; οὔτε γὰρ θατέρῳ μόνῳ ἐναντίον οὔτ' ἀμφοῖν· τί γὰρ μᾶλλον τῷ μείζονι ἢ τῷ ἐλάττονι; ἔτι τῷ ἀνίσῳ ἐναντίον τὸ ἴσον· ὥστε πλείοσιν ἔσται ἢ ἑνί. εἰ δὲ τὸ ἄνισον σημαίνει τὸ αὐτὸ
10 ἅμα ἀμφοῖν, εἴη μὲν ἂν ἀντικείμενον ἀμφοῖν· καὶ ἡ ἀπορία βοηθεῖ τοῖς φάσκουσι τὸ ἄνισον δυάδα εἶναι. ἀλλὰ συμβαίνει ἓν δυοῖν ἐναντίον· ὅπερ ἀδύνατον.

Ἔτι τὸ μὲν ἴσον μεταξὺ φαίνεται μεγάλου καὶ μικροῦ, ἐναντίωσις δὲ μεταξὺ οὐδεμία[1] οὔτε φαίνεται οὔτε ἐκ τοῦ ὁρισμοῦ δυνατόν· οὐ γὰρ ἂν εἴη τελεία μεταξύ τινος οὖσα, ἀλλὰ μᾶλλον
15 ἔχει ἀεὶ ἑαυτῆς τι μεταξύ. Λείπεται δὴ ἢ ὡς ἀπόφασιν ἀντικεῖσθαι ἢ ὡς στέρησιν. θατέρου μὲν δὴ οὐκ ἐνδέχεται· τί γὰρ μᾶλλον τοῦ μεγάλου ἢ μικροῦ; ἀμφοῖν ἄρα ἀπόφασις στερητική. διὸ καὶ πρὸς ἀμφότερα τὸ πότερον λέγεται, πρὸς δὲ θάτερον οὔ, οἷον πότερον μεῖζον ἢ ἴσον, ἢ πότερον

[1] om. EJ.

[a] Held by the Platonists. *Cf.* XIV. i. 4, 5.

time—and we have this same use here in the question "which of the two came?" for if both alternatives were possible, the question would be absurd; but even so the question falls into an antithesis: that of "one" or "many"—*i.e.*, "whether both came, or one")—if, then, the question "whether" is always 3
concerned with opposites, and we can ask "whether it is greater or smaller, or equal," what is the nature of the antithesis between "equal" and "greater or smaller"? It is contrary neither to one only, nor to both: for (*a*) it is no more contrary to the greater than to the smaller; (*b*) "equal" is contrary to "unequal," and thus it will be contrary to more than one thing; (*c*) if "unequal" means the same 4
as both "greater" and "smaller" at the same time, "equal" must still be opposed to them both. This difficulty supports the theory [a] that "the unequal" is a duality. But the result is that one thing is contrary to two; which is impossible.

Further, it is apparent that "equal" is inter- 5
mediate between "great" and "small," but it is not apparent that any contrariety is intermediate, nor can it be, by definition; for it could not be complete if it were the intermediate of something, but rather it always has something intermediate between itself and the other extreme.

It remains, then, that it is opposed either as negation or as privation. Now it cannot be so opposed to one of the two, for it is no more opposed to the great than to the small. Therefore it is a 6
privative negation of both. For this reason we say "whether" with reference to both, and not to one of the two—*e.g.*, "whether it is greater or equal," or "whether it is equal or smaller"; there are

1056 a
ἴσον ἢ ἔλαττον· ἀλλ' ἀεὶ τρία. οὐ στέρησις δὲ ἐξ ἀνάγκης· οὐ γὰρ πᾶν ἴσον ὃ μὴ μεῖζον ἢ ἔλαττον, ἀλλ' ἐν οἷς πέφυκεν ἐκεῖνα. Ἔστι δὴ τὸ ἴσον τὸ μήτε μέγα μήτε μικρόν, πεφυκὸς δὲ ἢ μέγα ἢ μικρὸν εἶναι· καὶ ἀντίκειται ἀμφοῖν ὡς ἀπόφασις στερητική, διὸ καὶ μεταξύ ἐστιν. καὶ τὸ μήτε ἀγαθὸν μήτε κακὸν ἀντίκειται ἀμφοῖν, ἀλλ' ἀνώνυμον· πολλαχῶς γὰρ λέγεται ἑκάτερον καὶ οὐκ ἔστιν ἓν τὸ δεκτικόν, ἀλλὰ μᾶλλον τὸ μήτε λευκὸν μήτε μέλαν. ἓν δὲ οὐδὲ τοῦτο λέγεται, ἀλλ' ὡρισμένα πως τὰ χρώματα ἐφ' ὧν λέγεται στερητικῶς ἡ ἀπόφασις αὕτη· ἀνάγκη γὰρ ἢ φαιὸν ἢ ὠχρὸν εἶναι ἢ τοιοῦτόν τι ἄλλο. Ὥστε οὐκ ὀρθῶς ἐπιτιμῶσιν οἱ νομίζοντες ὁμοίως λέγεσθαι πάντα, ὥστε ἔσεσθαι ὑποδήματος καὶ χειρὸς μεταξὺ τὸ μήτε ὑπόδημα μήτε χεῖρα, ἐπείπερ[1] καὶ τὸ μήτε ἀγαθὸν μήτε κακὸν τοῦ ἀγαθοῦ καὶ τοῦ κακοῦ, ὡς πάντων ἐσομένου τινὸς μεταξύ. οὐκ ἀνάγκη δὲ τοῦτο συμβαίνειν. ἡ μὲν γὰρ ἀντικειμένων συναπόφασίς ἐστιν ὧν ἔστι μεταξύ τι καὶ διάστημά τι
1056 b πέφυκεν εἶναι· τῶν δ' οὐκ ἔστι διαφορά· ἐν ἄλλῳ γὰρ γένει ὧν αἱ συναποφάσεις, ὥστ' οὐχ ἓν τὸ ὑποκείμενον.

VI. Ὁμοίως δὲ καὶ περὶ τοῦ ἑνὸς καὶ τῶν πολλῶν ἀπορήσειεν ἄν τις. εἰ γὰρ τὰ πολλὰ τῷ ἑνὶ ἁπλῶς ἀντίκειται, συμβαίνει ἕνια ἀδύνατα. τὸ γὰρ ἓν ὀλίγον ἢ ὀλίγα ἔσται· τὰ γὰρ πολλὰ καὶ τοῖς

[1] εἴπερ E.

[a] *Cf.* iii. 8.

always three alternatives. But it is not a necessary privation; for not everything is equal which is not greater or smaller, but only things which would naturally have these attributes.

The equal, then, is that which is neither great nor small, but would naturally be either great or small; and it is opposed to both as a privative negation, and therefore is intermediate between them. And that which is neither good nor bad is opposed to both, but it has no name (for each of these terms has several meanings, and there is no one material which is receptive of both); that which is neither white nor black is better entitled to a name, although even this has no single name, but the colours of which this negation is privatively predicated are to a certain extent limited; for it must be either grey or buff or something similar.

Therefore those persons are wrong in their criticism who imagine that all terms are used analogously, so that that which is neither a shoe nor a hand will be intermediate between "shoe" and "hand," because that which is neither good nor bad is intermediate between good and bad—as though there must be an intermediate in all cases; but this does not necessarily follow. For the one is a joint negation of opposites where there is an intermediate and a natural interval; but in the other case there is no question of difference, since the joint negation applies to things which are in different genera, and therefore the substrate is not one.[a]

VI. A similar question might be raised about "one" and "many." For if "many" is absolutely opposed to "one," certain impossibilities result. (1) One will be few; for "many" is also opposed to

The opposition of "one" to "many."

1056 b

ὀλίγοις ἀντίκειται. ἔτι τὰ δύο πολλά, εἴπερ τὸ διπλάσιον πολλαπλάσιον, λέγεται δὲ κατὰ[1] τὰ δύο[2]· ὥστε τὸ ἓν ὀλίγον· πρὸς τί γὰρ πολλὰ τὰ δύο εἰ μὴ πρὸς ἕν τε καὶ τὸ ὀλίγον; οὐθὲν γάρ ἐστιν ἔλαττον. ἔτι εἰ[3] ὡς ἐν μήκει τὸ μακρὸν καὶ βραχύ, οὕτως ἐν πλήθει τὸ πολὺ καὶ ὀλίγον, καὶ ὃ ἂν ᾖ πολὺ καὶ πολλά, καὶ τὰ πολλὰ πολύ (εἰ μή τι ἄρα διαφέρει ἐν συνεχεῖ εὐορίστῳ), τὸ ὀλίγον πλῆθός τι ἔσται. ὥστε τὸ ἓν πλῆθός τι, εἴπερ καὶ ὀλίγον· τοῦτο δὲ ἀνάγκη, εἰ τὰ δύο πολλά. ἀλλ' ἴσως τὰ πολλὰ λέγεται μέν πως καὶ [τὸ][4] πολύ, ἀλλ' ὡς διαφέρον, οἷον ὕδωρ πολύ, πολλὰ δ' οὔ. ἀλλ' ὅσα διαιρετά, ἐν τούτοις λέγεται, ἕνα μὲν τρόπον ἐὰν ᾖ πλῆθος ἔχον ὑπεροχὴν ἢ ἁπλῶς ἢ πρός τι (καὶ τὸ ὀλίγον ὡσαύτως πλῆθος ἔχον ἔλλειψιν), τὸ δὲ ὡς ἀριθμός, ὃ καὶ ἀντίκειται τῷ ἑνὶ μόνον. οὕτως γὰρ λέγομεν ἓν ἢ πολλά, ὥσπερ εἴ τις εἴποι ἓν καὶ ἕνα ἢ λευκὸν καὶ λευκά, καὶ τὰ μεμετρημένα πρὸς τὸ μέτρον [καὶ τὸ μετρητόν].[5] οὕτως καὶ τὰ πολλαπλάσια λέγεται· πολλὰ γὰρ ἕκαστος ὁ[6] ἀριθμὸς ὅτι ἕνα καὶ ὅτι μετρητὸς ἑνὶ ἕκαστος, καὶ ὡς τὸ ἀντικείμενον τῷ ἑνί, οὐ τῷ ὀλίγῳ. οὕτως μὲν οὖν ἐστὶ πολλὰ καὶ τὰ δύο, ὡς δὲ πλῆθος ἔχον ὑπεροχὴν ἢ πρός τι ἢ ἁπλῶς οὐκ ἔστιν, ἀλλὰ πρῶτον. ὀλίγα δ' ἁπλῶς τὰ δύο· πλῆθος γάρ ἐστιν ἔλλειψιν ἔχον πρῶτον (διὸ καὶ οὐκ ὀρθῶς ἀπέστη Ἀναξ-

[1] καὶ A^b. [2] δύο διπλάσια A^b.
[3] om. $A^bΓ$ Alexander.
[4] τὸ om. Alexander, secl. Bonitz.
[5] Jaeger. [6] ὁ om. recc.

[a] *i.e.*, a fluid, which cannot be described as "many."

"few." (2) Two will be many; since "twofold" is "manifold," and "twofold" is derived from two. Therefore one will be few; for in what relation can two be many if not in relation to one, which must therefore be few? for there can be nothing less. (3) If "much" and "little" are in plurality what "long" and "short" are in length, and if whatever is "much" is also "many," and "many" is "much" (unless indeed there is a difference in the case of a plastic continuum[a]), "few" will be a plurality. Therefore one will be a plurality, if it is few; and this necessarily follows if two is many. Presumably, however, although "many" in a sense means "much," there is a distinction; *e.g.*, water is called "much" but not "many." To all things, however, which are divisible the term "many" is applicable: in one sense, if there is a plurality which involves excess either absolutely or relatively (and similarly "few" is a plurality involving defect); and in another in the sense of number, in which case it is opposed to "one" only. For we say "one or many" just as if we were to say "one and ones," or "white thing and white things," or were to compare the things measured with the measure. Multiples, too, are spoken of in this way; for every number is "many," because it consists of "ones," and because every number is measurable by one; and also as being the opposite of one, and not of few. In this sense even two is many; but as a plurality involving excess either relatively or absolutely it is not many, but the first plurality. Two is, however, absolutely few; because it is the first plurality involving defect (hence Anaxagoras[b]

[b] *Cf.* I. iii. 9.

1056 b ἀγόρας εἰπὼν ὅτι ὁμοῦ πάντα χρήματα ἦν ἄπειρα
καὶ πλήθει καὶ μικρότητι· ἔδει δ' εἰπεῖν ἀντὶ
τοῦ "καὶ μικρότητι" "καὶ ὀλιγότητι"· οὐ γὰρ
ἄπειρα), ἐπεὶ τὸ ὀλίγον οὐ διὰ τὸ ἕν, ὥσπερ τινές
φασιν, ἀλλὰ διὰ τὰ δύο. Ἀντίκειται δὴ τὸ ἓν
καὶ τὰ πολλὰ τὰ ἐν ἀριθμοῖς ὡς μέτρον μετρητῷ·
ταῦτα δὲ ὡς τὰ πρός τι, ὅσα μὴ καθ' αὑτὰ τῶν
πρός τι. διήρηται δ' ἡμῖν ἐν ἄλλοις ὅτι διχῶς
λέγεται τὰ πρός τι, τὰ μὲν ὡς ἐναντία, τὰ δ' ὡς
1057 a ἐπιστήμη πρὸς ἐπιστητόν, τῷ λέγεσθαί τι ἄλλο πρὸς
αὐτό. Τὸ δὲ ἓν ἔλαττον εἶναι τινός, οἷον τοῖν
δυοῖν, οὐδὲν κωλύει· οὐ γὰρ εἰ ἔλαττον καὶ ὀλίγον.
τὸ δὲ πλῆθος οἷον γένος ἐστὶ τοῦ ἀριθμοῦ· ἔστι
γὰρ ἀριθμὸς πλῆθος ἐνὶ μετρητόν. καὶ ἀντίκειταί
5 πως τὸ ἓν καὶ ἀριθμός, οὐχ ὡς ἐναντίον, ἀλλ'
ὥσπερ εἴρηται τῶν πρός τι ἔνια· ᾗ γὰρ μέτρον,
τὸ δὲ μετρητόν, ταύτῃ ἀντίκειται. διὸ οὐ πᾶν ὃ
ἂν ᾖ ἓν ἀριθμός ἐστιν, οἷον εἴ τι ἀδιαίρετόν ἐστιν.
ὁμοίως δὲ λεγομένη ἡ ἐπιστήμη πρὸς τὸ ἐπιστητὸν
οὐχ ὁμοίως ἀποδίδωσιν· δόξειε μὲν γὰρ ἂν μέτρον
10 ἡ ἐπιστήμη εἶναι, τὸ δὲ ἐπιστητὸν τὸ μετρούμενον,
συμβαίνει δὲ ἐπιστήμην μὲν πᾶσαν ἐπιστητὸν
εἶναι, τὸ δὲ ἐπιστητὸν μὴ πᾶν ἐπιστήμην, ὅτι
τρόπον τινὰ ἡ ἐπιστήμη μετρεῖται τῷ ἐπιστητῷ.
Τὸ δὲ πλῆθος οὔτε τῷ ὀλίγῳ ἐναντίον, ἀλλὰ τούτῳ

[a] *sc.* "and then the absurdity of his view would have been apparent, for," etc. Aristotle assumes that Anaxagoras meant "smallness" (*μικρότης*) to be the opposite of "multitude" (*πλῆθος*); but he meant just what he said—that the particles of which things consist are infinitely many and infinitely small. See Bowman in *Class. Review* xxx. 42-44.

was not right in leaving the subject by saying "all things were together, infinite both in multitude and in smallness"; instead of "in smallness" he should have said "in fewness," [a] for things cannot be infinite in fewness), since fewness is constituted not by one, as some hold, but by two.

In the sphere of numbers "one" is opposed to 7
"many" as the measure to the measurable, *i.e.* as relative terms are opposed which are not of their own nature relative. We have distinguished elsewhere [b] that things are called "relative" in two senses—either as being contraries, or as knowledge is related to the knowable, A being related to B because B is described in relation to A.

There is no reason why one should not be fewer 8
than something, *e.g.* two; for if it is fewer it is not therefore few. Plurality is, as it were, a genus of number, since number is a plurality measurable by one. And in a sense one and number are opposed; not, however, as being contrary, but as we have said some relative terms to be; for it is *qua* measure and measurable that they are opposed. (Hence not 9
everything which is one is a number—*e.g.*, a thing which is indivisible.) But although the relation between knowledge and the knowable is said to be similar to this, it turns out not to be similar. For it would seem that knowledge is a measure, and the knowable that which is measurable by it; but it happens that whereas all knowledge is knowable, the knowable is not always knowledge, because in a way knowledge is measured by the knowable. [c]

Plurality is contrary neither to the few (whose 10

[b] V. xv. 8, 9. [c] *Cf.* ch. i. 19.

1057 a μὲν τὸ πολὺ ὡς ὑπερέχον πλῆθος ὑπερεχομένῳ πλήθει, οὔτε τῷ ἑνὶ πάντως· ἀλλὰ τὸ μὲν ὥσπερ εἴρηται, ὅτι διαιρετὸν τὸ δ' ἀδιαίρετον, τὸ δ' ὡς πρός τι, ὥσπερ ἡ ἐπιστήμη ἐπιστητῷ, ἐὰν ᾖ ἀριθμὸς τὸ δ' ἓν μέτρον.

VII. Ἐπεὶ δὲ τῶν ἐναντίων ἐνδέχεται εἶναί τι μεταξὺ καὶ ἐνίων ἔστιν, ἀνάγκη ἐκ τῶν ἐναντίων εἶναι τὰ μεταξύ· πάντα γὰρ τὰ μεταξὺ ἐν τῷ αὐτῷ γένει ἐστὶ καὶ ὧν ἐστὶ μεταξύ. μεταξὺ μὲν γὰρ ταῦτα λέγομεν εἰς ὅσα μεταβάλλειν ἀνάγκη πρότερον τὸ μεταβάλλον· οἷον ἀπὸ τῆς ὑπάτης ἐπὶ τὴν νήτην εἰ μεταβαίνοι τῷ ὀλιγίστῳ, ἥξει πρότερον εἰς τοὺς μεταξὺ φθόγγους· καὶ ἐν χρώμασιν εἰ [ἥξει][1] ἐκ τοῦ λευκοῦ εἰς τὸ μέλαν, πρότερον ἥξει εἰς τὸ φοινικοῦν καὶ φαιὸν ἢ εἰς τὸ μέλαν· ὁμοίως δὲ καὶ ἐπὶ τῶν ἄλλων. μεταβάλλειν δ' ἐξ ἄλλου γένους εἰς ἄλλο γένος οὐκ ἔστιν ἀλλ' ἢ κατὰ συμβεβηκός, οἷον ἐκ χρώματος εἰς σχῆμα. ἀνάγκη ἄρα τὰ μεταξὺ καὶ αὐτοῖς καὶ ὧν μεταξὺ εἰσὶν ἐν τῷ αὐτῷ γένει εἶναι. Ἀλλὰ μὴν πάντα γε τὰ μεταξύ ἐστιν ἀντικειμένων τινῶν· ἐκ τούτων γὰρ μόνων καθ' αὑτὰ ἔστι μεταβάλλειν. διὸ ἀδύνατον εἶναι μεταξὺ μὴ ἀντικειμένων· εἴη γὰρ ἂν μεταβολὴ καὶ μὴ ἐξ ἀντικειμένων. τῶν δ' ἀντικειμένων ἀντιφάσεως μὲν οὐκ ἔστι μεταξύ (τοῦτο γάρ ἐστιν ἀντίφασις, ἀντίθεσις ἧς ὁτῳοῦν θάτερον μόριον πάρεστιν, οὐκ ἐχούσης οὐθὲν μεταξύ), τῶν δὲ λοιπῶν τὰ μὲν πρός τι, τὰ δὲ στέρησις, τὰ δὲ

[1] Christ.

real contrary is the many, as an excessive plurality to an exceeded plurality) nor in *all* senses to one; but they are contrary in one sense (as has been said) as being the one divisible and the other indivisible; and in another as being relative (just as knowledge is relative to the knowable) if plurality is a number and one is the measure.

VII. Since there can be, and in some cases is, an intermediate between contraries, intermediates must be composed of contraries; for all intermediates are in the same genus as the things between which they are intermediate. By intermediates we mean 2 those things into which that which changes must first change. *E.g.*, if we change from the highest string to the lowest by the smallest gradations we shall first come to the intermediate notes; and in the case of colours if we change from white to black we shall come to red and grey before we come to black; and similarly in other cases. But change 3 from one genus into another is impossible except accidentally; *e.g.*, from colour to shape. Therefore intermediates must be in the same genus as one another and as the things between which they are intermediate. Intermediates.

But all intermediates are between certain opposites, for it is only from these *per se* that change is possible. Hence there can be no intermediate between things 4 which are not opposites; for then there would be change also between things which are not opposites. Of things which are opposites, contradiction has no intermediate term (for contradiction means this: an antithesis one term of which must apply to any given thing, and which contains no intermediate term); of the remaining types of opposites some

1057 a ἐναντία ἐστίν. τῶν δὲ πρός τι ὅσα μὴ ἐναντία οὐκ ἔχει μεταξύ. αἴτιον δ' ὅτι οὐκ ἐν τῷ αὐτῷ
1057 b γένει ἐστίν· τί γὰρ ἐπιστήμης καὶ ἐπιστητοῦ μεταξύ; ἀλλὰ μεγάλου καὶ μικροῦ. εἰ δ' ἐστὶν ἐν ταὐτῷ γένει τὰ μεταξύ, ὥσπερ δέδεικται, καὶ μεταξὺ ἐναντίων, ἀνάγκη αὐτὰ συγκεῖσθαι ἐκ τούτων τῶν ἐναντίων. ἢ γὰρ ἔσται τι γένος
5 αὐτῶν, ἢ οὐθέν. καὶ εἰ μὲν γένος ἔσται οὕτως ὥστ' εἶναι πρότερόν τι τῶν ἐναντίων, αἱ διαφοραὶ πρότεραι ἐναντίαι ἔσονται αἱ ποιήσασαι τὰ ἐναντία εἴδη ὡς γένους· ἐκ γὰρ τοῦ γένους καὶ τῶν διαφορῶν τὰ εἴδη. οἷον εἰ τὸ λευκὸν καὶ μέλαν ἐναντία, ἔστι δὲ τὸ μὲν διακριτικὸν χρῶμα τὸ δὲ
10 συγκριτικὸν χρῶμα, αὗται αἱ διαφοραὶ τὸ διακριτικὸν καὶ συγκριτικὸν πρότεραι· ὥστε ταῦτα ἐναντία ἀλλήλοις πρότερα. ἀλλὰ μὴν τά γε ἐναντίως διαφέροντα μᾶλλον ἐναντία, καὶ τὰ λοιπὰ καὶ τὰ μεταξὺ ἐκ τοῦ γένους ἔσται καὶ τῶν διαφορῶν· οἷον ὅσα χρώματα τοῦ λευκοῦ καὶ μέλανός
15 ἐστι μεταξύ, ταῦτα δεῖ ἐκ τοῦ γένους λέγεσθαι (ἔστι δὲ γένος τὸ χρῶμα) καὶ ἐκ διαφορῶν τινῶν. αὗται δὲ οὐκ ἔσονται τὰ πρῶτα ἐναντία· εἰ δὲ μή, ἔσται ἕκαστον ἢ λευκὸν ἢ μέλαν. ἕτεραι ἄρα· μεταξὺ ἄρα τῶν πρώτων ἐναντίων αὗται ἔσονται, αἱ πρῶται δὲ διαφοραὶ τὸ διακριτικὸν καὶ συγ-
20 κριτικόν. ὥστε ταῦτα πρῶτα ζητητέον ὅσα ἐναντία μὴ ἐν γένει, ἐκ τίνος τὰ μεταξὺ αὐτῶν. ἀνάγκη γὰρ τὰ ἐν τῷ αὐτῷ γένει ἐκ τῶν ἀσυνθέτων

---

[a] This is Plato's definition. *Cf. Timaeus* 67 D, E.

are relative, others privative, and others contrary. Those relative opposites which are not contrary 5 have no intermediate. The reason for this is that they are not in the same genus—for what is intermediate between knowledge and the knowable?—but between great and small there is an intermediate. Now since intermediates are in the same genus, as has been shown, and are between contraries, they must be composed of those contraries. For the contraries must either belong to a genus or not. And if there is a genus in such a way that it is some- 6 thing prior to the contraries, then the differentiae which constitute the contrary species (for species consist of genus and differentiae) will be contraries in a prior sense. *E.g.*, if white and black are con- 7 traries, and the one is a penetrative [a] and the other a compressive colour, these differentiae, "penetrative" and "compressive," are prior, and so are opposed to each other in a prior sense. But it is the 8 species which have contrary differentiae that are more truly contraries; the other, *i.e.* intermediate, species will consist of genus and differentiae. *E.g.*, all colours which are intermediate between white and black should be described by their genus (*i.e.* colour) and by certain differentiae. But these differentiae 9 will not be the primary contraries; otherwise everything will be either white or black. Therefore they will be different from the primary contraries. Therefore they will be intermediate between them, and the primary differentiae will be "the penetrative" and "the compressive." Thus we must first investigate the contraries which are not contained in a genus, and discover of what their intermediates are composed. For things which are in the same genus 10

1057 b τῷ γένει συγκεῖσθαι ἢ ἀσύνθετα εἶναι. τὰ μὲν οὖν ἐναντία ἀσύνθετα ἐξ ἀλλήλων, ὥστε ἀρχαί· τὰ δὲ μεταξὺ ἢ πάντα ἢ οὐδέν. ἐκ δὲ τῶν ἐναντίων γίγνεταί τι, ὥστ' ἔσται μεταβολὴ εἰς τοῦτο πρὶν ἢ εἰς αὐτά· ἑκατέρου γὰρ καὶ ἧττον ἔσται καὶ μᾶλλον. μεταξὺ ἄρα ἔσται καὶ τοῦτο τῶν ἐναντίων. καὶ τἆλλα ἄρα πάντα σύνθετα τὰ μεταξύ· τὸ γὰρ τοῦ μὲν μᾶλλον τοῦ δ' ἧττον σύνθετόν πως ἐξ ἐκείνων ὧν λέγεται εἶναι τοῦ μὲν μᾶλλον τοῦ δ' ἧττον. ἐπεὶ δ' οὐκ ἔστιν ἕτερα πρότερα ὁμογενῆ τῶν ἐναντίων, ἅπαντ' ἂν ἐκ τῶν ἐναντίων εἴη τὰ μεταξύ. ὥστε καὶ τὰ κάτω πάντα, καὶ τἀναντία καὶ τὰ μεταξύ, ἐκ τῶν πρώτων ἐναντίων ἔσονται. ὅτι μὲν οὖν τὰ μεταξὺ ἔν τε ταὐτῷ γένει πάντα καὶ μεταξὺ ἐναντίων καὶ σύγκειται ἐκ τῶν ἐναντίων πάντα,[1] δῆλον.

VIII. Τὸ δ' ἕτερον τῷ εἴδει τινός τι ἕτερόν ἐστι, καὶ δεῖ τοῦτο ἀμφοῖν ὑπάρχειν· οἷον εἰ ζῷον ἕτερον τῷ εἴδει, ἄμφω ζῷα. ἀνάγκη ἄρα ἐν γένει τῷ αὐτῷ εἶναι τὰ ἕτερα τῷ εἴδει. τὸ γὰρ τοιοῦτον 1058 a γένος καλῶ, ὃ[2] ἄμφω ἓν ταὐτὸ λέγεται, μὴ κατὰ συμβεβηκὸς ἔχον διαφοράν, εἶθ' ὡς ὕλη ὂν εἶτ'

[1] ἅπαντα A[b]. [2] ὃ A[b]: ᾧ Bekker.

must either be composed of differentiae which are not compounded with the genus, or be incomposite. Contraries are not compounded with one another, and are therefore first principles; but intermediates are either all incomposite or none of them. Now from the contraries something is generated in such a way that change will reach it before reaching the contraries themselves (for there must be something which is less in degree than one contrary and greater than the other). Therefore this also will be intermediate between the contraries. Hence all the 11
other intermediates must be composite; for that which is greater in degree than one contrary and less than the other is in some sense a compound of the contraries of which it is said to be greater in degree than one and less than the other. And since there is nothing else homogeneous which is prior to the contraries, all intermediates must be composed of contraries. Therefore all the lower 12
terms, both contraries and intermediates, must be composed of the primary contraries. Thus it is clear that intermediates are all in the same genus, and are between contraries, and are all composed of contraries.

VIII. That which is "other in species" than something else is "other" in respect of something; and that something must apply to both. *E.g.*, if an animal is other in species than something else, they must both be animals. Hence things which are other in species must be in the same genus. The sort of thing I mean by "genus" is that in virtue of which two things are both called the same one thing; and which is not accidentally differentiated, whether regarded as matter or otherwise. For not 2

The meaning of "other in species."

1058 a ἄλλως. οὐ μόνον γὰρ δεῖ τὸ κοινὸν ὑπάρχειν, οἷον ἄμφω ζῷα, ἀλλὰ καὶ ἕτερον ἑκατέρῳ τοῦτο αὐτὸ τὸ ζῷον, οἷον τὸ μὲν ἵππον τὸ δὲ ἄνθρωπον· διὸ[1] τοῦτο τὸ κοινὸν ἕτερον ἀλλήλων ἐστὶ τῷ εἴδει. ἔσται δὴ καθ' αὑτὰ τὸ μὲν τοιονδὶ ζῷον τὸ δὲ τοιονδί, οἷον τὸ μὲν ἵππος τὸ δ' ἄνθρωπος. ἀνάγκη ἄρα τὴν διαφορὰν ταύτην ἑτερότητα τοῦ γένους εἶναι (λέγω γὰρ γένους διαφορὰν ἑτερότητα ἢ ἕτερον ποιεῖ τοῦτο αὐτό). ἐναντίωσις τοίνυν ἔσται αὕτη. δῆλον δὲ καὶ ἐκ τῆς ἐπαγωγῆς. πάντα γὰρ διαιρεῖται τοῖς ἀντικειμένοις, καὶ ὅτι τἀναντία ἐν ταὐτῷ γένει, δέδεικται· ἡ γὰρ ἐναντιότης ἦν διαφορὰ τελεία. ἡ δὲ διαφορὰ ἡ εἴδει πᾶσα τινός τι· ὥστε τοῦτο τὸ αὐτό τε καὶ γένος ἐπ' ἀμφοῖν (διὸ καὶ ἐν τῇ αὐτῇ συστοιχίᾳ πάντα τὰ ἐναντία τῆς κατηγορίας, ὅσα εἴδει διάφορα καὶ μὴ γένει, ἕτερά τε ἀλλήλων μάλιστα· τελεία γὰρ ἡ διαφορά, καὶ ἅμα ἀλλήλοις οὐ γίγνεται)· ἡ ἄρα διαφορὰ ἐναντίωσίς ἐστιν. Τοῦτο ἄρα ἐστὶ τὸ ἑτέροις εἶναι τῷ εἴδει, τὸ ἐν ταὐτῷ γένει ὄντα ἐναντίωσιν ἔχειν ἄτομα ὄντα (ταὐτὰ δὲ τῷ εἴδει, ὅσα μὴ ἔχει ἐναντίωσιν ἄτομα ὄντα)· ἐν γὰρ τῇ διαιρέσει καὶ ἐν τοῖς μεταξὺ γίγνονται ἐναντιώσεις πρὶν εἰς τὰ ἄτομα ἐλθεῖν. ὥστε φανερὸν ὅτι πρὸς

[1] διὰ recc.

[a] Aristotle does not use induction to prove his point; indeed he does not prove it at all.
[b] In ch. iv.
[c] Or "category."
[d] *i.e.*, indivisible species and individuals.

only must the common quality belong to both, *e.g.*, that they are both animals, but the very animality of each must be different; *e.g.*, in one case it must be equinity and in the other humanity. Hence the common quality must for one be other in species than that which it is for the other. They must be, then, of their very nature, the one *this* kind of animal, and the other *that*; *e.g.*, the one a horse and the other a man. Therefore this differ- 3
ence must be "otherness of genus" (I say "otherness of genus" because by "difference of genus" I mean an "otherness" which makes the genus itself other); this, then, will be a form of contrariety. This is obvious by induction.[a] For all differentiation is by opposites, and we have shown[b] that contraries are in the same genus, because contrariety was shown to be complete difference. But difference in species is always difference from something in respect of something; therefore this is the same thing, *i.e.* the genus, for both. (Hence too all contraries 4
which differ in species but not in genus are in the same line of predication,[c] and are other than each other in the highest degree; for their difference is complete, and they cannot come into existence simultaneously.) Hence the difference is a form of contrariety.

To be "other in species," then, means this: to be in the same genus and involve contrariety, while being indivisible (and "the same in species" 5
applies to all things which do not involve contrariety, while being indivisible); for it is in the course of differentiation and in the intermediate terms that contrariety appears, before we come to the indivisibles.[d] Thus it is evident that in relation 6

1058 a τὸ καλούμενον[1] γένος οὔτε ταὐτὸν οὔτε ἕτερον τῷ εἴδει οὐθέν ἐστι τῶν ὡς γένους εἰδῶν (προσηκόντως[2]· ἡ γὰρ ὕλη ἀποφάσει δηλοῦται, τὸ δὲ γένος ὕλη οὗ λέγεται γένος, μὴ ὡς τὸ τῶν Ἡρακλειδῶν, 25 ἀλλ' ὡς τὸ ἐν τῇ φύσει), οὐδὲ πρὸς τὰ μὴ ἐν ταὐτῷ γένει, ἀλλὰ διοίσει τῷ γένει ἐκείνων, εἴδει δὲ τῶν ἐν ταὐτῷ γένει. ἐναντίωσιν γὰρ ἀνάγκη εἶναι τὴν διαφορὰν οὗ διαφέρει εἴδει· αὕτη δ' ὑπάρχει τοῖς ἐν ταὐτῷ τῷ γένει οὖσι μόνοις.

IX. Ἀπορήσειε δ' ἄν τις διὰ τί γυνὴ ἀνδρὸς οὐκ 30 εἴδει διαφέρει, ἐναντίου τοῦ θήλεος καὶ τοῦ ἄρρενος ὄντος, τῆς δὲ διαφορᾶς ἐναντιώσεως· οὐδὲ ζῷον θῆλυ καὶ ἄρρεν ἕτερον τῷ εἴδει, καίτοι καθ' αὑτὸ τοῦ ζῴου αὕτη ἡ διαφορὰ καὶ οὐχ ὡς λευκότης ἢ μελανία, ἀλλ' ᾗ ζῷον καὶ τὸ θῆλυ καὶ τὸ ἄρρεν ὑπάρχει. ἔστι δ' ἡ ἀπορία αὕτη σχεδὸν ἡ αὐτὴ 35 καὶ διὰ τί ἡ μὲν ποιεῖ τῷ εἴδει ἕτερα ἐναντίωσις, ἡ δ' οὔ, οἷον τὸ πεζὸν καὶ τὸ πτερωτόν, λευκότης δὲ καὶ μελανία οὔ. ἢ ὅτι τὰ μὲν οἰκεῖα πάθη τοῦ 1058 b γένους, τὰ δ' ἧττον; καὶ ἐπειδή ἐστι τὸ μὲν λόγος τὸ δ' ὕλη, ὅσαι μὲν ἐν τῷ λόγῳ εἰσὶν ἐναντιότητες εἴδει ποιοῦσι διαφοράν, ὅσαι δ' ἐν τῷ συνειλημμένῳ τῇ ὕλῃ οὐ ποιοῦσιν. διὸ ἀνθρώπου λευκότης οὐ ποιεῖ οὐδὲ μελανία, οὐδὲ τοῦ λευκοῦ ἀνθρώπου 5 ἐστὶ διαφορὰ κατ' εἶδος πρὸς μέλανα ἄνθρωπον, οὐδ' ἂν ὄνομα ἓν τεθῇ. ὡς ὕλη γὰρ ὁ ἄνθρωπος,

[1] καλούμενον δν A^b: καθόλου δν uel *κατηγορούμενον* Bonitz.
[2] προσηκόντων JΓ.

[a] *Cf.* V. xxviii. 1.

to what is called genus no species is either the same or other in species (and this is as it should be, for the matter is disclosed by negation, and the genus is the matter of that of which it is predicated as genus; not in the sense in which we speak of the genus or clan of the Heraclidae,[a] but as we speak of a genus in nature); nor yet in relation to things which are not in the same genus. From the latter it will differ in genus, but in species from things which are in the same genus. For the difference of things which differ in species must be a contrariety; and this belongs only to things which are in the same genus.

What constitutes "otherness in species"?

IX. The question might be raised as to why woman does not differ in species from man, seeing that female is contrary to male, and difference is contrariety; and why a female and a male animal are not other in species, although this difference belongs to "animal" *per se*, and not as whiteness or blackness does; "male" and "female" belong to it *qua* animal. This problem is practically the same 2 as "why does one kind of contrariety (*e.g.* "footed" and "winged") make things other in species, while another (*e.g.* whiteness and blackness) does not?" The answer may be that in the one case the attributes are peculiar to the genus, and in the other they are less so; and since one element is formula and the other matter, contrarieties in the formula produce difference in species, but contrarieties in the concrete whole do not. Hence the whiteness 3 or blackness of a man does not produce this, nor is there any specific difference between a white man and a black man; not even if one term is assigned to each. For we are now regarding "man" as

1058 b οὐ ποιεῖ δὲ διαφορὰν ἡ ὕλη· οὐδ'[1] ἀνθρώπου γὰρ εἴδη εἰσὶν οἱ ἄνθρωποι διὰ τοῦτο, καίτοι ἕτεραι αἱ σάρκες καὶ τὰ ὀστᾶ ἐξ ὧν ὅδε καὶ ὅδε· ἀλλὰ τὸ σύνολον ἕτερον μέν, εἴδει δ' οὐχ ἕτερον, ὅτι ἐν τῷ
10 λόγῳ οὐκ ἔστιν ἐναντίωσις· τοῦτο δ' ἐστὶ τὸ ἔσχατον ἄτομον. ὁ δὲ Καλλίας ἐστὶν ὁ λόγος μετὰ τῆς ὕλης· καὶ ὁ λευκὸς δὴ ἄνθρωπος ὅτι Καλλίας λευκός· κατὰ συμβεβηκὸς οὖν ὁ ἄνθρωπος λευκός. οὐδὲ χαλκοῦς δὴ κύκλος καὶ ξύλινος, οὐδὲ τρίγωνον χαλκοῦν καὶ κύκλος ξύλινος, οὐ διὰ τὴν ὕλην
15 εἴδει διαφέρουσιν, ἀλλ' ὅτι ἐν τῷ λόγῳ ἔνεστιν ἐναντίωσις.

Πότερον δ' ἡ ὕλη οὐ ποιεῖ ἕτερα τῷ εἴδει, οὖσά πως ἑτέρα, ἢ ἔστιν ὡς ποιεῖ; διὰ τί γὰρ ὁδὶ ὁ ἵππος τουδὶ ⟨τοῦ⟩[2] ἀνθρώπου ἕτερος τῷ εἴδει; καίτοι σὺν τῇ ὕλῃ οἱ λόγοι αὐτῶν. ἢ ὅτι ἔνεστιν ἐν τῷ λόγῳ ἐναντίωσις; καὶ γὰρ τοῦ λευκοῦ ἀνθρώπου καὶ μέλανος ἵππου. καὶ ἔστι γε
20 εἴδει, ἀλλ' οὐχ ᾗ ὁ μὲν λευκὸς ὁ δὲ μέλας, ἐπεὶ καὶ εἰ ἄμφω λευκὰ ἦν, ὁμοίως ἂν ἦν εἴδει ἕτερα. Τὸ δὲ ἄρρεν καὶ θῆλυ τοῦ ζώου οἰκεῖα μὲν πάθη, ἀλλ' οὐ κατὰ τὴν οὐσίαν ἀλλ' ἐν τῇ ὕλῃ καὶ τῷ σώματι. διὸ τὸ αὐτὸ σπέρμα θῆλυ ἢ ἄρρεν γίγνεται παθόν τι πάθος.

25 Τί μὲν οὖν ἐστὶ τὸ τῷ εἴδει ἕτερον εἶναι, καὶ διὰ τί τὰ μὲν διαφέρει εἴδει τὸ δ' οὔ, εἴρηται.

[1] οὐδ' J : οὐδὲν A^b : οὐκ E. [2] Ross.

matter, and matter does not produce difference; and for this reason, too, individual men are not species of "man," although the flesh and bones of which this and that man consist are different. The concrete whole is "other," but not "other in species," because there is no contrariety in the formula, and this is the ultimate indivisible species. But Callias is 4
definition *and* matter. Then so too is "white man," because it is the individual, Callias, who is white. Hence "man" is only white accidentally. Again, a bronze circle and a wooden one do not differ in species; and a bronze triangle and a wooden circle differ in species not because of their matter, but because there is contrariety in their formulae.

But does not matter, when it is "other" in a 5
particular way, make things "other in species"? Probably there is a sense in which it does. Otherwise why is this particular horse "other in species" than this particular man, although the definitions involve matter? Surely it is because there is contrariety in the definition, for so there also is in "white man" and "black horse"; and it is a contrariety in species, but not because one is white and the other black; for even if they had both been white, they would still be "other in species."

"Male" and "female" are attributes peculiar to 6
the animal, but not in virtue of its substance; they are material or physical. Hence the same semen may, as the result of some modification, become either female or male.

We have now stated what "to be other in species" means, and why some things differ in species and others do not.

1058 b

X. Ἐπειδὴ δὲ τὰ ἐναντία ἕτερα τῷ εἴδει, τὸ δὲ φθαρτὸν καὶ τὸ ἄφθαρτον ἐναντία (στέρησις γὰρ ἀδυναμία διωρισμένη), ἀνάγκη ἕτερον εἶναι τῷ γένει τὸ φθαρτὸν καὶ τὸ ἄφθαρτον. νῦν μὲν οὖν ἐπ' αὐτῶν εἰρήκαμεν τῶν καθόλου ὀνομάτων, ὥστε δόξειεν ἂν οὐκ ἀναγκαῖον εἶναι ὁτιοῦν ἄφθαρτον καὶ φθαρτὸν ἕτερα εἶναι τῷ εἴδει, ὥσπερ οὐδὲ λευκὸν καὶ μέλαν. τὸ γὰρ αὐτὸ ἐνδέχεται εἶναι καὶ ἅμα, ἐὰν ᾖ τῶν καθόλου, ὥσπερ ὁ ἄνθρωπος εἴη ἂν καὶ λευκὸς καὶ μέλας, καὶ τῶν καθ' ἕκαστον· εἴη γὰρ ἂν μὴ ἅμα ὁ αὐτὸς λευκὸς καὶ μέλας· καίτοι ἐναντίον τὸ λευκὸν τῷ μέλανι. ἀλλὰ τῶν ἐναντίων τὰ μὲν κατὰ συμβεβηκὸς ὑπάρχει ἐνίοις, οἷον καὶ 1059 a τὰ νῦν εἰρημένα καὶ ἄλλα πολλά, τὰ δὲ ἀδύνατον, ὧν ἐστὶ καὶ τὸ φθαρτὸν καὶ τὸ ἄφθαρτον· οὐδὲν γάρ ἐστι φθαρτὸν κατὰ συμβεβηκός· τὸ μὲν γὰρ συμβεβηκὸς ἐνδέχεται μὴ ὑπάρχειν, τὸ δὲ φθαρτὸν τῶν ἐξ ἀνάγκης ὑπαρχόντων ἐστὶν οἷς ὑπάρχει· ἢ 5 ἔσται ταὐτὸ καὶ ἓν φθαρτὸν καὶ ἄφθαρτον, εἰ ἐνδέχεται μὴ ὑπάρχειν αὐτῷ τὸ φθαρτόν. ἢ τὴν οὐσίαν ἄρα ἢ ἐν τῇ οὐσίᾳ ἀνάγκη ὑπάρχειν τὸ φθαρτὸν ἑκάστῳ τῶν φθαρτῶν. ὁ δ' αὐτὸς λόγος καὶ περὶ τοῦ ἀφθάρτου· τῶν γὰρ ἐξ ἀνάγκης ὑπαρχόντων ἄμφω. ἢ ἄρα καὶ καθ' ὃ πρῶτον τὸ 10 μὲν φθαρτὸν τὸ δ' ἄφθαρτον, ἔχει ἀντίθεσιν, ὥστε ἀνάγκη γένει ἕτερα εἶναι. φανερὸν τοίνυν ὅτι οὐκ ἐνδέχεται εἶναι εἴδη τοιαῦτα οἷα λέγουσί τινες· ἔσται γὰρ καὶ ἄνθρωπος ὁ μὲν φθαρτὸς ὁ δ' ἄ-

[a] It appears that in this chapter (apart from § 5, which may be a later addition) the terms εἶδος and γένος are used in a non-technical sense. *Cf.* Ross on 1058 b 28.

X. Since contraries are other in form,[a] and "the perishable" and "imperishable" are contraries (for privation is a definite incapacity), "the perishable" must be "other in kind" than "the imperishable." But so far we have spoken only of the universal terms; and so it might appear to be unnecessary that *anything* perishable and imperishable should be "other in form," just as in the case of white and black. For 2 the same thing may be both at the same time, if it is a universal (*e.g.*, "man" may be both white and black); and it may still be both if it is a particular, for the same person may be white and black, although not at the same time. Yet white is contrary to black. But although some contraries (*e.g.* those which we 3 have just mentioned, and many others) can belong to certain things accidentally, others cannot; and this applies to "the perishable" and "the imperishable." Nothing is accidentally perishable; for that which is accidental may not be applicable; but perishability is an attribute which applies necessarily when it is applicable at all. Otherwise one and the same thing will be imperishable as well as perishable, if it is possible for perishability not to apply to it. Thus perishability must be either the 4 substance or in the substance of every perishable thing. The same argument also applies to the imperishable; for both perishability and imperishability are attributes which are necessarily applicable. Hence the characteristics in respect of which and in direct consequence of which one thing is perishable and another imperishable are opposed; and therefore they must be other in kind. Thus it is obvious 5 that there cannot be Forms such as some thinkers maintain; for then there would be both a perishable

Difference in kind between perishable and imperishable things.

1059 a

φθαρτος. καίτοι τῷ εἴδει ταὐτὰ λέγεται εἶναι τὰ εἴδη τοῖς τισὶ καὶ οὐχ ὁμώνυμα· τὰ δὲ γένει ἕτερα πλεῖον διέστηκεν ἢ τὰ εἴδει.

[a] *i.e.*, the individual man is perishable and the Idea of man imperishable; and these must be other in kind (γένει non-technical). But the Platonists hold that the Idea is the same

and an imperishable "man."[a] Yet the Forms are said to be the same in species as the particulars, and not merely to share a common predicate with them; but things which are other in genus differ more widely than things which are other in species.

in species as the particular. This is impossible if it is other in genus (γένει technical).

K

1059 a

I. Ὅτι μὲν ἡ σοφία περὶ ἀρχὰς ἐπιστήμη τίς ἐστι, δῆλον ἐκ τῶν πρώτων ἐν οἷς διηπόρηται πρὸς τὰ ὑπὸ τῶν ἄλλων εἰρημένα περὶ τῶν ἀρχῶν· ἀπορήσειε δ' ἄν τις πότερον μίαν ὑπολαβεῖν εἶναι δεῖ τὴν σοφίαν ἐπιστήμην ἢ πολλάς. εἰ μὲν γὰρ μίαν, μία γ' ἐστὶν ἀεὶ τῶν ἐναντίων· αἱ δ' ἀρχαὶ οὐκ ἐναντίαι. εἰ δὲ μὴ μία, ποίας δεῖ θεῖναι ταύτας; Ἔτι τὰς ἀποδεικτικὰς ἀρχὰς θεωρῆσαι μιᾶς ἢ πλειόνων; εἰ μὲν γὰρ μιᾶς, τί μᾶλλον ταύτης ἢ ὁποιασοῦν; εἰ δὲ πλειόνων, ποίας δεῖ ταύτας θεῖναι; Ἔτι πότερον πασῶν τῶν οὐσιῶν ἢ οὔ; εἰ μὲν γὰρ μὴ πασῶν, ποίων χαλεπὸν ἀποδοῦναι· εἰ δὲ πασῶν μία, ἄδηλον πῶς ἐνδέχεται πλειόνων τὴν αὐτὴν ἐπιστήμην εἶναι. Ἔτι πότερον περὶ τὰς οὐσίας μόνον ἢ καὶ τὰ συμβεβηκότα[1]; εἰ γὰρ περί γε τὰ συμβεβηκότα ἀπόδειξίς ἐστιν, περὶ τὰς οὐσίας οὐκ ἔστιν· εἰ δὲ ἑτέρα, τίς ἑκατέρα καὶ ποτέρα σοφία; ἢ[2] μὲν γὰρ ἀπο-

[1] συμβεβηκότα ἀπόδειξίς ἐστιν EJ Alexander: om. A[b].
[2] ἢ . . . ἢ Luthe: ἡ . . . ἡ codd.

[a] I. iii.-x. [b] *Cf.* III. i. 5, ii. 1-10.
[c] *Cf.* III. i. 5, ii. 10-15, where the problem takes a slightly different form.
[d] *Cf.* III. i. 6, ii. 15-17.
[e] *Cf.* III. i. 8-10 ,ii. 18-19.

BOOK XI

cc. i.-viii. Summary of Books III., IV. and VI. cc. i, ii. The main problems of Metaphysics.

I. That Wisdom is a science of first principles is clear from our introductory remarks,[a] in which we raised objections to the statements of other thinkers about the first principles. It might be asked, however, whether we should regard Wisdom as one science or as more than one.[b] If as one, it may be objected that the objects of one science are always contraries; but the first principles are not contraries. And if it is not one, what sort of sciences are we to suppose them to be?

Again, is it the province of one science, or of more than one, to study the principles of demonstration? 2 [c] If of one, why of it rather than of any other? And if of more than one, of what sort are we to suppose them to be?

Again, are we to suppose that Wisdom deals with all substances or not?[d] If not with all, it is hard to lay down with what kind it does deal; while if there is one science of them all, it is not clear how the same science can deal with more than one subject.

Again, is this science concerned only with sub- 3 stances, or with attributes as well?[e] For if it is a demonstration of attributes, it is not concerned with substances; and if there is a separate science of each, what is each of these sciences, and which of them is Wisdom? *Qua* demonstrative, the science of attri-

1059 a δεικτικὴ σοφία ἡ περὶ τὰ συμβεβηκότα, ᾗ[1] δὲ περὶ τὰ πρῶτα ἡ τῶν οὐσιῶν. Ἀλλ' οὐδὲ περὶ τὰς
a6 ἐν τοῖς φυσικοῖς εἰρημένας αἰτίας τὴν ἐπιζητουμένην[2] ἐπιστήμην θετέον· οὔτε γὰρ περὶ τὸ οὗ ἕνεκεν· τοιοῦτον γὰρ τὸ ἀγαθόν, τοῦτο δ' ἐν τοῖς πρακτοῖς ὑπάρχει καὶ τοῖς οὖσιν ἐν κινήσει· καὶ τοῦτο πρῶτον κινεῖ (τοιοῦτον γὰρ τὸ τέλος), τὸ δὲ πρῶτον κινῆσαν οὐκ ἔστιν ἐν τοῖς ἀκινήτοις. ὅλως δ' ἀπορίαν ἔχει πότερόν ποτε περὶ τὰς
1059 b αἰσθητὰς οὐσίας ἐστὶν ἡ ζητουμένη νῦν ἐπιστήμη ἢ οὔ, περὶ δέ τινας ἑτέρας. εἰ γὰρ περὶ ἄλλας, ἢ περὶ τὰ εἴδη εἴη ἂν ἢ περὶ τὰ μαθηματικά. τὰ μὲν γὰρ εἴδη ὅτι οὐκ ἔστι, δῆλον· ὅμως δὲ ἀπορίαν ἔχει, κἂν εἶναί τις αὐτὰ θῇ, διὰ τί ποτ' οὐχ
5 ὥσπερ ἐπὶ τῶν μαθηματικῶν, οὕτως ἔχει καὶ ἐπὶ τῶν ἄλλων ὧν ἔστιν εἴδη· λέγω δ' ὅτι τὰ μαθηματικὰ μὲν μεταξύ τε τῶν εἰδῶν τιθέασι καὶ τῶν αἰσθητῶν οἷον τρίτα τινὰ παρὰ τὰ εἴδη τε καὶ τὰ δεῦρο, τρίτος δ' ἄνθρωπος οὐκ ἔστιν οὐδ' ἵππος παρ' αὐτόν τε καὶ τοὺς καθ' ἕκαστον· εἰ δ' αὖ μή
10 ἐστιν ὡς λέγουσι, περὶ ποῖα θετέον πραγματεύεσθαι τὸν μαθηματικόν; οὐ γὰρ δὴ περὶ τὰ δεῦρο· τούτων γὰρ οὐθέν ἐστιν οἷον αἱ μαθηματικαὶ ζητοῦσι τῶν ἐπιστημῶν. οὐδὲ μὴν περὶ τὰ μαθηματικὰ ἡ ζητουμένη νῦν ἐστὶν ἐπιστήμη· χωριστὸν γὰρ αὐτῶν οὐθέν. ἀλλ' οὐδὲ τῶν αἰσθητῶν οὐσιῶν· φθαρταὶ γάρ.

[1] ᾗ . . . ᾗ . . . Luthe: ἡ . . . ἡ codd.
[2] *ζητουμένην* EJ.

[a] *Physics* II. iii. [b] *Cf.* III. i. 7, ii. 20-30.
[c] This phrase has no technical sense here; *cf.* I. ix. 4.

butes appears to be Wisdom; but *qua* concerned with that which is primary, the science of substances.

Nor must we suppose that the science which we are 4
seeking is concerned with the causes described in the *Physics*.[a] It is not concerned with the final cause; for this is the Good, and this belongs to the sphere of action and to things which are in motion; and it is this which first causes motion (for the *end* is of this nature); but there is no Prime Mover in the sphere of immovable things. And in general it is a difficult 5
question whether the science which we are now seeking is concerned with sensible substances, or not with sensible substances, but with some other kind.[b] If with another kind, it must be concerned either with the Forms or with mathematical objects. Now clearly the Forms do not exist. (But nevertheless, even if we posit them, it is a difficult question as to why the same rule does not apply to the other things of which there are Forms as applies to the objects of mathematics. I mean that they posit the objects of 6
mathematics as intermediate between the Forms and sensible things, as a third class besides the Forms and the things of our world; but there is no "third man"[c] or "horse" besides the Ideal one and the particulars. If on the other hand it is not as they make out, what sort of objects are we to suppose to be the concern of the mathematician? Not surely the things of our world; for none of these is of the kind which the mathematical sciences investigate.) Nor indeed is the science which we are now seeking 7
concerned with the objects of mathematics; for none of them can exist separately. But it does not deal with sensible substances either; for they are perishable.

1059 b
15 Ὅλως δ' ἀπορήσειέ τις ἂν ποίας ἐστὶν ἐπιστήμης τὸ διαπορῆσαι περὶ τῆς τῶν μαθηματικῶν ὕλης. οὔτε γὰρ τῆς φυσικῆς, διὰ τὸ περὶ τὰ ἔχοντα ἐν αὑτοῖς ἀρχὴν κινήσεως καὶ στάσεως τὴν τοῦ φυσικοῦ πᾶσαν εἶναι πραγματείαν, οὐδὲ μὴν τῆς σκοπούσης περὶ ἀποδείξεώς τε καὶ
20 ἐπιστήμης· περὶ γὰρ αὐτὸ τοῦτο τὸ γένος τὴν ζήτησιν ποιεῖται. λείπεται τοίνυν τὴν προκειμένην φιλοσοφίαν περὶ αὐτῶν τὴν σκέψιν ποιεῖσθαι.

Διαπορήσειε δ' ἄν τις εἰ δεῖ θεῖναι τὴν ζητουμένην ἐπιστήμην περὶ τὰς ἀρχάς, τὰ καλούμενα ὑπό τινων στοιχεῖα· ταῦτα δὲ πάντες ἐνυπάρχοντα τοῖς
25 συνθέτοις τιθέασιν. μᾶλλον δ' ἂν δόξειε τῶν καθόλου δεῖν εἶναι τὴν ζητουμένην ἐπιστήμην· πᾶς γὰρ λόγος καὶ πᾶσα ἐπιστήμη τῶν καθόλου καὶ οὐ τῶν ἐσχάτων, ὥστ' εἴη ἂν οὕτω τῶν πρώτων γενῶν. ταῦτα δὲ γίγνοιτ' ἂν τό τε ὂν καὶ τὸ ἕν· ταῦτα γὰρ μάλιστ' ἂν ὑποληφθείη περιέχειν τὰ
30 ὄντα πάντα καὶ μάλιστα ἀρχαῖς ἐοικέναι διὰ τὸ εἶναι πρῶτα τῇ φύσει· φθαρέντων γὰρ αὐτῶν συναναιρεῖται καὶ τὰ λοιπά· πᾶν[1] γὰρ ὂν καὶ ἕν. ἦ δὲ τὰς διαφορὰς αὐτῶν ἀνάγκη μετέχειν εἰ θήσει τις αὐτὰ γένη, διαφορὰ δ' οὐδεμία τοῦ γένους μετέχει, ταύτῃ δ' οὐκ ἂν δόξειε δεῖν αὐτὰ τιθέναι
35 γένη οὐδ' ἀρχάς. ἔτι δ' εἰ μᾶλλον ἀρχὴ τὸ ἁπλούστερον τοῦ ἧττον τοιούτου, τὰ δ' ἔσχατα τῶν ἐκ τοῦ γένους ἁπλούστερα τῶν γενῶν (ἄτομα

[1] πᾶν A^b Alexander (?): πάντα EJ.

[a] *i.e.*, intelligible matter (*cf.* VII. x. 18). This problem is not raised in Book III.

In general the question might be raised, to what science it pertains to discuss the problems concerned with the matter [a] of mathematical objects. It is not 8
the province of physics, because the whole business of the physicist is with things which contain in themselves a principle of motion and rest; nor yet of the science which inquires into demonstration and scientific knowledge, for it is simply this sort of thing which forms the subject of its inquiry. It remains, therefore, that it is the science which we have set ourselves to find that treats of these subjects.

One might consider the question whether we should 9
regard the science which we are now seeking as dealing with the principles which by some are called elements.[b] But everyone assumes that these are present in composite things; and it would seem rather that the science which we are seeking must be concerned with universals, since every formula and every science is of universals and not of ultimate species; so that in this case it must deal with the primary genera. These would be Being and Unity; 10
for these, if any, might best be supposed to embrace all existing things, and to be most of the nature of first principles, because they are by nature primary; for if they are destroyed, everything else is destroyed with them, since everything exists and is one. But 11
inasmuch as, if Being and Unity are to be regarded as genera, they must be predicable of their differentiae, whereas no genus is predicable of any of its differentiae, from this point of view it would seem that they should be regarded neither as genera nor as principles. Further, since the more simple is more nearly a 12
principle than the less simple, and the ultimate subdivisions of the genus are more simple than the

[b] *Cf.* III. i. 10, iii.

1059 b γάρ), τὰ γένη δ' εἰς εἴδη πλείω καὶ διαφέροντα διαιρεῖται, μᾶλλον ἂν ἀρχὴ δόξειεν εἶναι τὰ εἴδη τῶν γενῶν. ἢ δὲ συναναιρεῖται τοῖς γένεσι τὰ
1060 a εἴδη, τὰ γένη ταῖς ἀρχαῖς ἔοικε μᾶλλον· ἀρχὴ γὰρ τὸ συναναιροῦν. τὰ μὲν οὖν τὴν ἀπορίαν ἔχοντα ταῦτα καὶ τοιαῦτ' ἐστὶν ἕτερα.

II. Ἔτι πότερον δεῖ τιθέναι τι παρὰ τὰ καθ' ἕκαστα ἢ οὔ, ἀλλὰ τούτων ἡ ζητουμένη ἐπιστήμη;
5 ἀλλὰ ταῦτα ἄπειρα. τά γε μὴν παρὰ τὰ καθ' ἕκαστα γένη ἢ εἴδη ἐστίν, ἀλλ' οὐδετέρου τούτων ἡ ζητουμένη νῦν ἐπιστήμη· διότι γὰρ ἀδύνατον τοῦτο, εἴρηται. καὶ γὰρ ὅλως ἀπορίαν ἔχει πότερον δεῖ τινὰ ὑπολαβεῖν οὐσίαν εἶναι χωριστὴν παρὰ τὰς αἰσθητὰς οὐσίας καὶ τὰς δεῦρο, ἢ οὔ, ἀλλὰ
10 ταῦτ' εἶναι τὰ ὄντα καὶ περὶ ταῦτα τὴν σοφίαν ὑπάρχειν. ζητεῖν μὲν γὰρ ἐοίκαμεν ἄλλην τινά, καὶ τὸ προκείμενον τοῦτ' ἐστὶν ἡμῖν, λέγω δὲ τὸ ἰδεῖν εἴ τι χωριστὸν καθ' αὑτὸ καὶ μηδενὶ τῶν αἰσθητῶν ὑπάρχον. ἔτι δ' εἰ παρὰ τὰς αἰσθητὰς οὐσίας ἔστι τις ἑτέρα οὐσία, παρὰ ποίας τῶν
15 αἰσθητῶν δεῖ τιθέναι ταύτην εἶναι; τί γὰρ μᾶλλον παρὰ τοὺς ἀνθρώπους ἢ τοὺς ἵππους ἢ τῶν ἄλλων ζῴων θήσει τις αὐτὴν ἢ καὶ τῶν ἀψύχων ὅλως; τό γε μὴν ἴσας ταῖς αἰσθηταῖς καὶ φθαρταῖς οὐσίαις

[a] *Cf.* III. i. 11, iv. 1-8.
[b] Ch. i. 11-13.

genera (because they are indivisible), and the genera are divided into a number of different species, it would seem that species are more nearly a principle than genera. On the other hand, inasmuch as 13
species are destroyed together with their genera, it seems more likely that the genera are principles; because that which involves the destruction of something else is a principle. These and other similar points are those which cause us perplexity.

II. Again, ought we to assume the existence of something else besides particular things, or are they the objects of the science which we are seeking?[a] It is true that they are infinite in number; but then the things which exist besides particulars are genera or species, and neither of these is the object of the science which we are now seeking. We have explained[b] why this is impossible. Indeed, in general 2
it is a difficult question whether we should suppose that there is some substance which exists separately besides sensible substances (*i.e.* the substances of our world), or that the latter constitute reality, and that it is with them that Wisdom is concerned. It *seems* that we are looking for some other kind of substance, and that this is the object of our undertaking: I mean, to see whether there is anything which exists separately and independently, and does not appertain to any sensible thing. But again, if 3
there is another kind of substance besides sensible substances, to what kind of sensible things are we to suppose that it corresponds? Why should we suppose that it corresponds to men or horses rather than to other animals, or even to inanimate objects in general? And yet to manufacture a set of eternal substances equal in number to those which are

1060 a ἀϊδίους ἑτέρας κατασκευάζειν ἐκτὸς τῶν εὐλόγων δόξειεν ἂν πίπτειν. εἰ δὲ μὴ χωριστὴ τῶν σω-
20 μάτων ἡ ζητουμένη νῦν ἐστὶν ἀρχή, τίνα ἄν τις ἄλλην θείη μᾶλλον[1] τῆς ὕλης; αὕτη γε μὴν ἐνεργείᾳ μὲν οὐκ ἔστι, δυνάμει δ' ἔστιν. μᾶλλόν τ' ἂν ἀρχὴ κυριωτέρα ταύτης δόξειεν εἶναι τὸ εἶδος καὶ ἡ μορφή· τοῦτο δὲ φθαρτόν, ὥσθ' ὅλως οὐκ ἔστιν ἀΐδιος οὐσία χωριστὴ καὶ καθ' αὑτήν.
25 ἀλλ' ἄτοπον· ἔοικε γὰρ καὶ ζητεῖται σχεδὸν ὑπὸ τῶν χαριεστάτων ὡς οὖσά τις ἀρχὴ καὶ οὐσία τοιαύτη· πῶς γὰρ ἔσται τάξις μή τινος ὄντος ἀϊδίου καὶ χωριστοῦ καὶ μένοντος; Ἔτι δ' εἴπερ ἔστι τις οὐσία καὶ ἀρχὴ τοιαύτη τὴν φύσιν οἵαν νῦν ζητοῦμεν, καὶ αὕτη μία πάντων καὶ ἡ αὐτὴ τῶν ἀϊδίων τε καὶ φθαρτῶν, ἀπορίαν ἔχει διὰ τί
30 ποτε τῆς αὐτῆς ἀρχῆς οὔσης τὰ μέν ἐστιν ἀΐδια τῶν ὑπὸ τὴν ἀρχήν, τὰ δ' οὐκ ἀΐδια· τοῦτο γὰρ ἄτοπον. εἰ δ' ἄλλη μέν ἐστιν ἀρχὴ τῶν φθαρτῶν ἄλλη δὲ τῶν ἀϊδίων, εἰ μὲν ἀΐδιος καὶ ἡ τῶν φθαρτῶν, ὁμοίως ἀπορήσομεν· διὰ τί γὰρ οὐκ ἀϊδίου τῆς ἀρχῆς οὔσης καὶ τὰ ὑπὸ τὴν ἀρχὴν
35 ἀΐδια; φθαρτῆς δ' οὔσης ἄλλη τις ἀρχὴ γίγνεται ταύτης κἀκείνης ἑτέρα, καὶ τοῦτ' εἰς ἄπειρον πρόεισιν.

Εἰ δ' αὖ τις τὰς δοκούσας μάλιστ' ἀρχὰς ἀκινήτους εἶναι, τό τε ὂν καὶ τὸ ἕν, θήσει, πρῶτον

[1] *θείη μᾶλλον*] *μᾶλλον θείη* A[b].

[a] Forms which are induced in matter are perishable, although not subject to the process of destruction; they *are* at one time and are not at another (*cf.* VII. xv. 1). The only pure form (*i.e.*, the only form which is independent of matter in any and every sense) is the prime mover (XII. vii.).

[b] *Cf.* III. i. 12, iv. 11-23.

sensible and perishable would seem to fall outside the bounds of plausibility. Yet if the principle 4
which we are now seeking does not exist in separation from bodies, what can we suppose it to be if not matter? Yes, but matter does not exist actually, but only potentially. It might seem rather that a more appropriate principle would be form or shape; but this is perishable[a]; and so in general there is no eternal substance which exists separately and independently. But this is absurd, because it seems 5
natural that there should be a substance and principle of this kind, and it is sought for as existing by nearly all the most enlightened thinkers. For how can there be any order in the universe if there is not something eternal and separate and permanent?

Again, if there is a substance and principle of such 6
a nature as that which we are now seeking, and if it is one for all things, *i.e.* the same for both eternal and perishable things, it is a difficult question as to why, when the principle is the same, some of the things which come under that principle are eternal, and others not; for this is paradoxical.[b] But if 7
there is one principle of perishable things, and another of eternal things, if the principle of perishable things is also eternal, we shall still have the same difficulty; because if the principle is eternal, why are not the things which come under that principle eternal? And if it is perishable, it must have another principle behind it, and that principle must have another behind it; and the process will go on to infinity.

On the other hand, if we posit the principles 8
which seem most unchangeable, Being and Unity,[c]

[c] *Cf.* III. i. 13, iv. 24-34.

1060 b μὲν εἰ μὴ τόδε τι καὶ οὐσίαν ἑκάτερον αὐτῶν σημαίνει, πῶς ἔσονται χωρισταὶ καὶ καθ' αὑτάς; τοιαύτας δὲ ζητοῦμεν τὰς ἀϊδίους τε καὶ πρώτας ἀρχάς. εἴ γε μὴν τόδε τι καὶ οὐσίαν ἑκάτερον αὐτῶν δηλοῖ, πάντ' ἐστὶν οὐσίαι τὰ ὄντα· κατὰ πάντων γὰρ τὸ ὂν κατηγορεῖται, κατ' ἐνίων δὲ καὶ τὸ ἕν. οὐσίαν δ' εἶναι πάντα τὰ ὄντα ψεῦδος. ἔτι δὲ τοῖς τὴν πρώτην ἀρχὴν τὸ ἓν λέγουσι καὶ τοῦτ' οὐσίαν, ἐκ δὲ τοῦ ἑνὸς καὶ τῆς ὕλης τὸν ἀριθμὸν γεννῶσι πρῶτον, καὶ τοῦτον οὐσίαν φάσκουσιν εἶναι, πῶς ἐνδέχεται τὸ λεγόμενον ἀληθὲς εἶναι; τὴν γὰρ δυάδα καὶ τῶν λοιπῶν ἕκαστον ἀριθμῶν τῶν συνθέτων πῶς ἓν δεῖ νοῆσαι; περὶ τούτου γὰρ οὔτε λέγουσιν οὐδὲν οὔτε ῥᾴδιον εἰπεῖν.

Εἴ γε μὴν γραμμὰς ἢ τὰ τούτων ἐχόμενα (λέγω δὲ ἐπιφανείας τὰς πρώτας) θήσει τις ἀρχάς, ταῦτά γ'[1] οὐκ εἰσὶν οὐσίαι χωρισταί, τομαὶ δὲ καὶ διαιρέσεις αἱ μὲν ἐπιφανειῶν αἱ δὲ σωμάτων, αἱ δὲ στιγμαὶ γραμμῶν, ἔτι δὲ πέρατα τῶν αὐτῶν τούτων· πάντα δὲ ταῦτα ἐν ἄλλοις ὑπάρχει καὶ χωριστὸν οὐδέν ἐστιν. ἔτι πῶς οὐσίαν ὑπολαβεῖν εἶναι δεῖ τοῦ ἑνὸς καὶ στιγμῆς; οὐσίας μὲν γὰρ πάσης γένεσις ἔστι, στιγμῆς δ' οὐκ ἔστιν· διαίρεσις γὰρ ἡ στιγμή.

Παρέχει δ' ἀπορίαν καὶ τὸ πᾶσαν μὲν ἐπιστήμην εἶναι τῶν καθόλου καὶ τοῦ τοιουδί, τὴν δ' οὐσίαν μὴ τῶν καθόλου εἶναι, μᾶλλον δὲ τόδε τι καὶ χωριστόν, ὥστ' εἰ περὶ τὰς ἀρχάς ἐστιν ἐπιστήμη,

[1] γ' γρ. J, Bonitz : δ' EJ : γὰρ A^b.

[a] *i.e.*, intelligible surfaces, etc.
[b] *Cf.* III. i. 15, v.
[c] *sc.* which is liable to generation or destruction.

(*a*) unless each of them denotes a particular thing and a substance, how can they be separate and independent? but the eternal and primary principles for which we are looking are of this nature. (*b*) If, however, each of them denotes a particular thing and a substance, then all existing things are substances; for Being is predicated of everything, and Unity also of some things. But that all things are substances is false. (*c*) As for those who maintain that Unity is the first principle and a substance, and who generate number from Unity and matter as their first product, and assert that it is a substance, how can their theory be true? How are we to conceive of 2 and each of the other numbers thus composed, as one? On this point they give no explanation; nor is it easy to give one.

But if we posit lines or the things derived from them (I mean surfaces in the primary sense[a]) as principles,[b] these at least are not separately existing substances, but sections and divisions, the former of surfaces and the latter of bodies (and points are sections and divisions of lines); and further they are limits of these same things. All these things are integral parts of something else, and not one of them exists separately. Further, how are we to suppose that there is a substance of unity or a point? for in the case of every substance[c] there is a process of generation, but in the case of the point there is not; for the point is a division.

It is a perplexing fact also that whereas every science treats of universals and types, substance is not a universal thing, but rather a particular and separable thing; so that if there is a science that

1060 b
πῶς δεῖ τὴν ἀρχὴν ὑπολαβεῖν οὐσίαν εἶναι; Ἔτι πότερον ἔστι τι παρὰ τὸ σύνολον ἢ οὔ; λέγω δὲ τὴν ὕλην καὶ τὸ μετὰ ταύτης. εἰ μὲν γὰρ μή, τά γε ἐν ὕλῃ φθαρτὰ πάντα· εἰ δ' ἔστι τι, τὸ εἶδος ἂν εἴη καὶ ἡ μορφή. τοῦτ' οὖν ἐπὶ τίνων ἐστὶ καὶ ἐπὶ τίνων οὔ, χαλεπὸν ἀφορίσαι· ἐπ' ἐνίων γὰρ δῆλον οὐκ ὂν χωριστὸν τὸ εἶδος, οἷον οἰκίας. Ἔτι πότερον αἱ ἀρχαὶ εἴδει ἢ ἀριθμῷ αἱ αὐταί; εἰ γὰρ ἀριθμῷ ἕν,[1] πάντ' ἔσται ταὐτά.

III. Ἐπεὶ δ' ἐστὶν ἡ τοῦ φιλοσόφου ἐπιστήμη τοῦ ὄντος ᾗ ὂν καθόλου καὶ οὐ κατὰ μέρος, τὸ δ' ὂν πολλαχῶς καὶ οὐ καθ' ἕνα λέγεται τρόπον· εἰ μὲν οὖν ὁμωνύμως κατὰ δὲ κοινὸν μηδέν, οὐκ ἔστιν ὑπὸ μίαν ἐπιστήμην (οὐ γὰρ ἓν γένος τῶν τοιούτων), εἰ δὲ κατά τι κοινόν, εἴη ἂν ὑπὸ μίαν ἐπιστήμην.

Ἔοικε δὴ τὸν εἰρημένον λέγεσθαι τρόπον καθάπερ τό τε ἰατρικὸν καὶ ὑγιεινόν· καὶ γὰρ τούτων ἑκάτερον πολλαχῶς λέγομεν. λέγεται δὲ τοῦτον τὸν τρόπον ἕκαστον τῷ τὸ μὲν πρὸς ἰατρικὴν ἐπιστήμην ἀνάγεσθαί πως, τὸ δὲ πρὸς ὑγίειαν, τὸ δ' ἄλλως, πρὸς ταὐτὸ δ' ἕκαστον. ἰατρικὸς γὰρ λόγος καὶ μαχαίριον λέγεται τῷ τὸ μὲν ἀπὸ τῆς ἰατρικῆς ἐπιστήμης εἶναι, τὸ δὲ ταύτῃ χρήσιμον. ὁμοίως δὲ καὶ ὑγιεινόν· τὸ μὲν γὰρ ὅτι σημαντικὸν ὑγιείας, τὸ δ' ὅτι ποιητικόν. ὁ δ' αὐτὸς τρόπος καὶ ἐπὶ τῶν λοιπῶν. τὸν αὐτὸν δὴ τρόπον καὶ τὸ

[1] ἕν om. EJΓ.

[a] *Cf.* III. i. 14, vi. 7-9.
[b] This section belongs to the problem discussed in §§ 1-5 above.
[c] *Cf.* III. i. 12, iv. 8-10.
[d] This chapter corresponds to IV. i., ii., with which it should be compared.

deals with first principles, how can we suppose that substance is a first principle ?[a]

Again, is there anything besides the concrete 13
whole (I mean the matter and the form in combination) or not ?[b] If not, all things in the nature of matter are perishable ; but if there is something, it must be the form or shape. It is hard to determine in what cases this is possible and in what it is not ; for in some cases, *e.g.* that of a house, the form clearly does not exist in separation.

Again, are the first principles formally or numerically the same ?[c] If they are numerically one, all things will be the same.

III. Since the science of the philosopher is con- The subject matter of Metaphysics.
cerned with Being *qua* Being universally,[d] and not with some part of it, and since the term Being has several meanings and is not used only in one sense, if it is merely equivocal and has no common significance it cannot fall under one science (for there is no one class in things of this kind) ; but if it has a common significance it must fall under one science.

Now it would seem that it is used in the sense 2
which we have described, like " medical " and " healthy," for we use each of these terms in several senses ; and each is used in this way because it has a reference, one to the science of medicine, and another to health, and another to something else ; but each refers always to the same concept. A diagnosis and a scalpel are both called medical, because the one proceeds from medical science and the other is useful to it. The same is true of 3
" healthy " ; one thing is so called because it is indicative, and another because it is productive, of health ; and the same applies to all other cases.

1061 a ὂν ἅπαν λέγεται· τῷ γὰρ τοῦ ὄντος ἢ ὂν πάθος ἢ ἕξις ἢ διάθεσις ἢ κίνησις ἢ τῶν ἄλλων τι τῶν τοιούτων εἶναι λέγεται ἕκαστον αὐτῶν ὄν. ἐπεὶ δὲ παντὸς τοῦ ὄντος πρὸς ἕν τι καὶ κοινὸν ἡ ἀναγωγὴ γίγνεται, καὶ τῶν ἐναντιώσεων ἑκάστη πρὸς τὰς πρώτας διαφορὰς καὶ ἐναντιώσεις ἀναχθήσεται τοῦ ὄντος, εἴτε πλῆθος καὶ ἓν εἴθ' ὁμοιότης καὶ ἀνομοιότης αἱ πρῶται τοῦ ὄντος εἰσὶ διαφοραί, εἴτ' ἄλλαι τινές· ἔστωσαν γὰρ αὗται τεθεωρημέναι. διαφέρει δ' οὐδὲν τὴν τοῦ ὄντος ἀναγωγὴν πρὸς τὸ ὂν ἢ πρὸς τὸ ἓν γίγνεσθαι. καὶ γὰρ εἰ μὴ ταὐτὸν ἄλλο δ' ἐστίν, ἀντιστρέφει γε· τό τε γὰρ ἓν καὶ ὄν πως, τό τε ὂν ἕν. Ἐπεὶ δ' ἐστὶ τὰ ἐναντία πάντα τῆς αὐτῆς καὶ μιᾶς ἐπιστήμης θεωρῆσαι, λέγεται δ' ἕκαστον αὐτῶν κατὰ στέρησιν (καίτοι γ' ἔνια ἀπορήσειέ τις ἂν πῶς λέγεται κατὰ στέρησιν, ὧν ἔστιν ἀνὰ μέσον τι, καθάπερ ἀδίκου καὶ δικαίου), περὶ πάντα δὴ τὰ τοιαῦτα τὴν στέρησιν δεῖ τιθέναι, μὴ τοῦ ὅλου λόγου, τοῦ τελευταίου δὲ εἴδους· οἷον εἰ ἔστιν ὁ δικαιος καθ' ἕξιν τινὰ πειθαρχικὸς τοῖς νόμοις, οὐ πάντως ὁ ἄδικος ἔσται τοῦ ὅλου στερούμενος λόγου, περὶ δὲ τὸ πείθεσθαι τοῖς νόμοις ἐκλείπων πῃ, καὶ ταύτῃ ἡ στέρησις ὑπάρξει αὐτῷ· τὸν αὐτὸν δὲ τρόπον καὶ ἐπὶ τῶν ἄλλων. καθάπερ δ' ὁ μαθηματικὸς περὶ τὰ ἐξ ἀφαιρέσεως τὴν θεωρίαν ποιεῖται (περιελὼν γὰρ πάντα τὰ αἰσθητὰ θεωρεῖ, οἷον βάρος καὶ κουφότητα καὶ σκληρότητα καὶ τοὐναν-

[a] *Cf.* IV. ii. 9 n.

Now it is in this same way that everything which exists is said to *be*; each thing is said to be because it is a modification or permanent or temporary state or motion or some other such affection of Being *qua* Being. And since everything that is can be referred 4 to some one common concept, each of the contrarieties too can be referred to the primary differentiae and contrarieties of Being—whether the primary differentiae of Being are plurality and unity, or similarity and dissimilarity, or something else; for we may take them as already discussed.[a] It makes no 5 difference whether that which *is* is referred to Being or Unity; for even if they are not the same but different, they are in any case convertible, since that which is one also in a sense *is*, and that which *is* is one.

Now since the study of contraries pertains to one 6 and the same science, and each contrary is so called in virtue of privation (although indeed one might wonder in what sense they can be called contraries in virtue of privation when they admit of a middle term —*e.g.* "unjust" and "just"), in all such cases we must regard the privation as being not of the whole definition but of the ultimate species. *E.g.*, if the just man is "one who is obedient to the laws in virtue of some volitional state," the unjust man will not be entirely deprived of the whole definition, but will be "one who is in some respect deficient in obedience to the laws"; and it is in this respect that the privation of justice will apply to him (and the same holds good in all other cases). And just as the mathematician 7 makes a study of abstractions (for in his investigations he first abstracts everything that is sensible, such as weight and lightness, hardness and its con-

τίον, ἔτι δὲ καὶ θερμότητα καὶ ψυχρότητα καὶ τὰς ἄλλας[1] αἰσθητὰς ἐναντιώσεις, μόνον δὲ καταλείπει τὸ ποσὸν καὶ συνεχές, τῶν μὲν ἐφ' ἓν τῶν δ' ἐπὶ δύο τῶν δ' ἐπὶ τρία, καὶ τὰ πάθη τὰ τούτων ᾗ ποσά ἐστι καὶ συνεχῆ, καὶ οὐ καθ' ἕτερόν τι θεωρεῖ, καὶ τῶν μὲν τὰς πρὸς ἄλληλα θέσεις σκοπεῖ καὶ τὰ ταύταις ὑπάρχοντα, τῶν δὲ τοὺς λόγους, καὶ τῶν μὲν τὰς συμμετρίας καὶ ἀσυμμετρίας, τῶν δὲ τοὺς λόγους, ἀλλ' ὅμως μίαν πάντων καὶ τὴν αὐτὴν τίθεμεν ἐπιστήμην τὴν γεωμετρικήν), τὸν αὐτὸν δὴ τρόπον ἔχει καὶ περὶ τὸ ὄν. τὰ γὰρ τούτῳ συμβεβηκότα καθ' ὅσον ἐστὶν ὄν, καὶ τὰς ἐναντιώσεις αὐτοῦ ᾗ ὄν, οὐκ ἄλλης ἐπιστήμης ἢ φιλοσοφίας θεωρῆσαι. τῇ φυσικῇ μὲν γὰρ οὐχ ᾗ ὄντα, μᾶλλον δ' ᾗ κινήσεως μετέχει, τὴν θεωρίαν τις ἀπονείμειεν ἄν. ἢ γε μὴν διαλεκτικὴ καὶ ἡ σοφιστικὴ τῶν συμβεβηκότων μέν εἰσι τοῖς οὐσιν, οὐχ ᾗ δ' ὄντα, οὐδὲ περὶ τὸ ὂν αὐτὸ καθ' ὅσον ὄν ἐστιν. ὥστε λείπεται τὸν φιλόσοφον, καθ' ὅσον ὄντ' ἐστίν, εἶναι περὶ τὰ λεχθέντα θεωρητικόν. ἐπεὶ δὲ τό τε ὂν ἅπαν καθ' ἕν τι καὶ κοινὸν λέγεται πολλαχῶς λεγόμενον, καὶ τἀναντία τὸν αὐτὸν τρόπον (εἰς τὰς πρώτας γὰρ ἐναντιώσεις καὶ διαφορὰς τοῦ ὄντος ἀνάγεται), τὰ δὲ τοιαῦτα δυνατὸν ὑπὸ μίαν ἐπιστήμην εἶναι, διαλύοιτ' ἂν ἡ κατ' ἀρχὰς ἀπορία λεχθεῖσα, λέγω δ' ἐν ᾗ διηπορεῖτο πῶς ἔσται πολλῶν καὶ διαφόρων ὄντων τῷ γένει μία τις ἐπιστήμη.

IV. Ἐπεὶ δὲ καὶ ὁ μαθηματικὸς χρῆται τοῖς κοινοῖς ἰδίως, καὶ τὰς τούτων ἀρχὰς ἂν εἴη

[1] ἄλλας A[b]; ἄλλας τὰς EJ Alexander (?).

[a] *i.e.*, identity, otherness, etc. [b] Ch. i. 1.
[c] Also the problem stated in ch. i. 3.

trary, and also heat and cold and all other sensible contrarieties, leaving only quantity and continuity—sometimes in one, sometimes in two and sometimes in three dimensions—and their affections *qua* quantitative and continuous, and does not study them with respect to any other thing; and in some cases investigates the relative positions of things and the properties of these, and in others their commensurability or incommensurability, and in others their ratios; yet nevertheless we hold that there is one and the same science of all these things, viz. geometry), so it is the same with regard to Being. For 8
the study of its attributes in so far as it is Being, and of its contrarieties [a] *qua* Being, belongs to no other science than Philosophy; for to physics one would assign the study of things not *qua* Being but *qua* participating in motion, while dialectics and sophistry deal with the attributes of existing things, but not of things *qua* Being, nor do they treat of Being itself in so far as it is Being. Therefore it remains that the 9
philosopher is the man who studies the things which we have described, in so far as they are Being. And since everything that *is*, although the term has several meanings, is so described in virtue of some one common concept, and the same is true of the contraries (since they can be referred to the primary contrarieties and differences of Being), and since things of this kind can fall under one science, the difficulty which we stated at the beginning [b] may be regarded as solved [c]—I mean the problem as to how there can be one science of several things which are different in genus.

IV. Since even the mathematician uses the common axioms only in a particular application, it will be the

Relation of mathematics and

1061 b
θεωρῆσαι τῆς πρώτης φιλοσοφίας. ὅτι γὰρ ἀπὸ τῶν ἴσων ἴσων ἀφαιρεθέντων ἴσα τὰ λειπόμενα, κοινὸν μέν ἐστιν ἐπὶ πάντων τῶν ποσῶν, ἡ μαθηματικὴ δ' ἀπολαβοῦσα περί τι μέρος τῆς οἰκείας ὕλης ποιεῖται τὴν θεωρίαν, οἷον περὶ γραμμὰς ἢ γωνίας ἢ ἀριθμοὺς ἢ τῶν λοιπῶν τι ποσῶν, οὐχ ᾗ δ' ὄντα ἀλλ' ᾗ συνεχὲς αὐτῶν ἕκαστον ἐφ' ἓν ἢ δύο ἢ τρία· ἡ δὲ φιλοσοφία περὶ τῶν ἐν μέρει μέν, ᾗ τούτων ἑκάστῳ τι[1] συμβέβηκεν, οὐ σκοπεῖ, περὶ τὸ ὂν δὲ ᾗ ὂν τῶν τοιούτων ἕκαστον θεωρεῖ. τὸν αὐτὸν δ' ἔχει τρόπον καὶ περὶ τὴν φυσικὴν ἐπιστήμην τῇ μαθηματικῇ· τὰ συμβεβηκότα γὰρ ᾗ φυσικὴ καὶ τὰς ἀρχὰς θεωρεῖ τὰς τῶν ὄντων ᾗ κινούμενα καὶ οὐχ ᾗ ὄντα. τὴν δὲ πρώτην εἰρήκαμεν ἐπιστήμην τούτων εἶναι καθ' ὅσον ὄντα τὰ ὑποκείμενά ἐστιν, ἀλλ' οὐχ ᾗ ἕτερόν τι. διὸ καὶ ταύτην καὶ τὴν μαθηματικὴν ἐπιστήμην μέρη τῆς σοφίας εἶναι θετέον.

V. Ἔστι δέ τις ἐν τοῖς οὖσιν ἀρχὴ περὶ ἣν οὐκ ἔστι διεψεῦσθαι, τοὐναντίον δὲ ἀναγκαῖον ἀεὶ ποιεῖν, λέγω δὲ ἀληθεύειν, οἷον ὅτι οὐκ ἐνδέχεται
1062 a τὸ αὐτὸ καθ' ἕνα καὶ τὸν αὐτὸν χρόνον εἶναι καὶ μὴ εἶναι, καὶ τἆλλα τὰ τοῦτον αὐτοῖς ἀντικείμενα τὸν τρόπον. καὶ περὶ τῶν τοιούτων ἁπλῶς μὲν οὐκ ἔστιν ἀπόδειξις, πρὸς τόνδε δ' ἔστιν. οὐ γὰρ ἔστιν ἐκ πιστοτέρας ἀρχῆς αὐτοῦ τούτου ποι-
5 ήσασθαι συλλογισμόν,[2] δεῖ δέ γ', εἴπερ ἔσται τὸ ἁπλῶς ἀποδεδεῖχθαι. πρὸς δὲ τὸν λέγοντα τὰς

[1] τι Γ Bessarion Alexander: τί codd.
[2] τὸν συλλογισμόν EJ.

[a] This chapter corresponds to IV. iii. 1-6, and answers the problem stated in ch. i. 2.

province of Primary Philosophy to study the principles of these as well.[a] That when equals are taken 2
from equals the remainders are equal is an axiom common to all quantities; but mathematics isolates a particular part of its proper subject matter and studies it separately; *e.g.* lines or angles or numbers or some other kind of quantity, but not *qua* Being, but only in so far as each of them is continuous in one, two or three dimensions. But philosophy does not investigate particular things in so far as each of them has some definite attribute, but studies that which *is*, in so far as each particular thing *is*. The same 3
applies to the science of physics as to mathematics, for physics studies the attributes and first principles of things *qua* in motion, and not *qua* Being; but Primary Science, as we have said, deals with these things only in so far as the subjects which underlie them are existent, and not in respect of anything else. Hence we should regard both physics and mathematics as subdivisions of Wisdom.

metaphysics.

V. There is a principle in existing things about which we cannot make a mistake[b]; of which, on the contrary, we must always realize the truth—viz. that the same thing cannot at one and the same time be and not be, nor admit of any other similar pair of opposites. Of such axioms although there is a proof *ad hominem*, there is no absolute proof; because there 2
is no principle more convincing than the axiom itself on which to base an argument, whereas there must be such a principle if there is to be absolute proof.[c] But he who wants to convince an opponent who 3

Argument in support of the Law of Contradiction.

[b] This chapter corresponds to IV. iii. 7–iv. 31. § 1 = IV. iii. 7-12.
[c] §§ 2-5 = IV. iv. 2-19.

1062 a ἀντικειμένας φάσεις τῷ δεικνύντι διότι ψεῦδος, λη-
πτέον τι τοιοῦτον ὃ ταὐτὸ μὲν ἔσται τῷ μὴ ἐν-
δέχεσθαι ταὐτὸ εἶναι καὶ μὴ εἶναι καθ' ἕνα καὶ τὸν
αὐτὸν χρόνον, μὴ δόξει δ' εἶναι ταὐτόν· οὕτω γὰρ
10 μόνως ἂν ἀποδειχθείη πρὸς τὸν φάσκοντα ἐνδέ-
χεσθαι τὰς ἀντικειμένας φάσεις ἀληθεύεσθαι κατὰ
τοῦ αὐτοῦ. τοὺς δὴ μέλλοντας ἀλλήλοις λόγου
κοινωνήσειν δεῖ τι συνιέναι αὑτῶν[1]· μὴ γιγνομένου
γὰρ τούτου πῶς ἔσται κοινωνία τούτοις πρὸς ἀλ-
λήλους λόγου; δεῖ τοίνυν τῶν ὀνομάτων ἕκαστον
15 εἶναι γνώριμον καὶ δηλοῦν τι, καὶ μὴ πολλά, μόνον
δὲ ἕν· ἂν δὲ πλείω[2] σημαίνῃ, φανερὸν ποιεῖν ἐφ' ὃ
φέρει τοὔνομα τούτων. ὁ δὴ λέγων εἶναι τοῦτο
καὶ μὴ εἶναι, τοῦτο ὅ[3] φησιν οὔ φησιν, ὥσθ' ὃ
σημαίνει τοὔνομα τοῦτ' οὐ φησι σημαίνειν· τοῦτο
δ' ἀδύνατον. ὥστ' εἴπερ σημαίνει τι τὸ εἶναι τόδε,
20 τὴν ἀντίφασιν ἀδύνατον ἀληθεύειν κατὰ τοῦ αὐτοῦ.[4]
Ἔτι δ' εἴ τι σημαίνει τοὔνομα καὶ τοῦτ' ἀληθεύεται,
δεῖ τοῦτ' ἐξ ἀνάγκης εἶναι· τὸ δ' ἐξ ἀνάγκης ὂν οὐκ
ἐνδέχεταί ποτε μὴ εἶναι· τὰς ἀντικειμένας ἄρα οὐκ
ἐνδέχεται φάσεις[5] ἀληθεύειν κατὰ τοῦ αὐτοῦ. Ἔτι
δ' εἰ μηθὲν μᾶλλον ἡ φάσις ἢ ἡ ἀπόφασις ἀλη-
25 θεύεται, ὁ λέγων ἄνθρωπον ἢ οὐκ ἄνθρωπον οὐδὲν
μᾶλλον ἀληθεύσει. δόξειε δὲ κἂν οὐχ ἵππον εἶναι
φάσκων τὸν ἄνθρωπον ἢ μᾶλλον ἢ οὐχ ἧττον ἀλη-
θεύειν ἢ οὐκ ἄνθρωπον, ὥστε καὶ ἵππον φάσκων
εἶναι τὸν αὐτὸν ἀληθεύσει· τὰς γὰρ ἀντικειμένας

[1] αὑτῶν Alexander, Bessarion: αὐτῶν codd.
[2] πλείονα EJ. [3] ὃ ὅλως εἶναι EJ.
[4] κατὰ τοῦ αὐτοῦ om. A^b. [5] φάσεις καὶ ἀποφάσεις EJ.

makes opposite statements that he is wrong must obtain from him an admission which shall be identical with the proposition that the same thing cannot at one and the same time be and not be, but shall seem not to be identical with it. This is the only method of proof which can be used against one who maintains that opposite statements can be truly made about the same subject. Now those who intend to join in dis- 4
cussion must understand one another to some extent; for without this how can there be any common discussion between them? Therefore each of the terms which they use must be intelligible and signify something; not several things, but one only; or if it signifies more than one thing, it must be made clear to which of these the term is applied. Now he who 5
says that A is and is not denies what he asserts, and therefore denies that the term signifies what it does signify. But this is impossible. Therefore if "to be so-and-so" has a definite meaning, the opposite statement about the same subject cannot be true.

Again, if the term has a definite significance and 6
this is truly stated, it must of necessity be so.[a] But that which of necessity is can never not be. Hence opposite statements about the same subject cannot be true.

Again, if the assertion is no more true than the negation, it will be no more true to say "A is man" than to say "A is not man."[b] But it would also be 7
admitted that it is more or at least not less true to say that a man is not a horse than to say that he is not a man; and therefore, since it was assumed that opposite statements are equally true, it will be true

[a] § 6 = IV. iv. 14-16.
[b] With this section *cf.* IV. iv. 26-30.

1062 a ὁμοίως ἦν ἀληθεύειν. συμβαίνει τοίνυν τὸν αὐτὸν
30 ἄνθρωπον εἶναι καὶ ἵππον ἢ τῶν ἄλλων τι ζῴων.

Ἀπόδειξις μὲν οὖν οὐδεμία τούτων ἐστὶν ἁπλῶς, πρὸς μέντοι τὸν ταῦτα τιθέμενον ἀπόδειξις. ταχέως δ' ἄν τις καὶ αὐτὸν τὸν Ἡράκλειτον τοῦτον ἐρωτῶν[1] τὸν τρόπον ἠνάγκασεν ὁμολογεῖν μηδέποτε τὰς ἀντικειμένας φάσεις δυνατὸν εἶναι κατὰ τῶν
35 αὐτῶν ἀληθεύεσθαι· νῦν δ' οὐ συνιεὶς[2] ἑαυτοῦ τί ποτε λέγει ταύτην ἔλαβε τὴν δόξαν. ὅλως δ' εἰ τὸ λεγόμενον ὑπ' αὐτοῦ ἐστὶν ἀληθές, οὐδ' ἂν αὐτὸ
1062 b τοῦτο εἴη ἀληθές, λέγω δὲ τὸ ἐνδέχεσθαι τὸ αὐτὸ καθ' ἕνα καὶ τὸν αὐτὸν χρόνον εἶναί τε καὶ μὴ εἶναι. καθάπερ γὰρ καὶ διῃρημένων αὐτῶν οὐδὲν μᾶλλον ἡ κατάφασις ἢ ἡ ἀπόφασις ἀληθεύεται, τὸν
5 αὐτὸν τρόπον καὶ τοῦ συναμφοτέρου καὶ τοῦ συμπεπλεγμένου καθάπερ μιᾶς τινος καταφάσεως οὔσης οὐθὲν ἧττον[3] ἡ ἀπόφασις ἢ τὸ ὅλον ὡς ἐν καταφάσει τιθέμενον ἀληθεύσεται.[4] ἔτι δ' εἰ μηθὲν ἔστιν ἀληθῶς καταφῆσαι, κἂν αὐτὸ τοῦτο ψεῦδος εἴη τὸ φάναι μηδεμίαν ἀληθῆ κατάφασιν
10 ὑπάρχειν. εἰ δ' ἔστι τι, λύοιτ' ἂν τὸ λεγόμενον ὑπὸ τῶν τὰ τοιαῦτα ἐνισταμένων καὶ παντελῶς ἀναιρούντων τὸ διαλέγεσθαι.

VI. Παραπλήσιον δὲ τοῖς εἰρημένοις ἐστὶ καὶ τὸ λεχθὲν ὑπὸ τοῦ Πρωταγόρου· καὶ γὰρ ἐκεῖνος ἔφη πάντων εἶναι χρημάτων[5] μέτρον ἄνθρωπον, οὐδὲν
15 ἕτερον λέγων ἢ τὸ δοκοῦν ἑκάστῳ τοῦτο καὶ εἶναι

[1] *ἐρωτήσας* EJ. [2] *συνεὶς* EJ.
[3] *ἧττον* scripsi (*μᾶλλον* codd.), cf. Ross, sed mauult retento *μᾶλλον ἢ* ante *ἡ* transponere.
[4] *ἀληθεύσεται* A^b: *ἀληθεύεται* Alexander: *ἀληθὲς ἔσται* EJ.
[5] *εἶναι χρημάτων*] *χρημάτων εἶναι* A^b.

to say that the same person is also a horse. It follows therefore, that the same person is a man and a horse, or any other animal.

Thus, although there is no absolute proof of these 8
axioms, there is an *ad hominem* proof where one's opponent makes these assumptions.[a] Perhaps even Heraclitus himself, if he had been questioned on these lines, would have been compelled to admit that opposite statements can never be true of the same subjects; as it is, he adopted this theory through ignorance of what his doctrine implied. In general,[b] 9
if what he says is true, not even this statement itself (I mean "that the same thing can at one and the same time be and not be") will be true; because 10
just as, when they are separated, the affirmation is no more true than the negation, so in the same way, if the complex statement is taken as a single affirmation, the negation will be just as true as the whole statement regarded as an affirmation. And further, 11
if nothing can be truly affirmed, then this very statement—that there is no such thing as a true affirmation—will be false. But if there is such a thing, the contentions of those who raise objections of this kind and utterly destroy rational discourse may be considered to be refuted.[c]

Criticism of the views which deny the Law of Contradiction.

VI. Very similar to the views which we have just mentioned is the dictum of Protagoras[d]; for he said that man is the measure of all things, by which he meant simply that each individual's impressions

[a] § 8 = IV. iii. 10.
[b] §§ 9-11 = IV. iv. 31.
[c] *Cf.* IV. viii. 4, 5.
[d] This chapter forms a summary of IV. v.-viii. §§ 1-3 = IV. v. 1-5.

παγίως. τούτου δὲ γιγνομένου τὸ αὐτὸ συμβαίνει καὶ εἶναι καὶ μὴ εἶναι, καὶ κακὸν καὶ ἀγαθὸν εἶναι, καὶ τἆλλα τὰ κατὰ τὰς ἀντικειμένας λεγόμενα φάσεις, διὰ τὸ πολλάκις τοισδὶ μὲν φαίνεσθαι τόδε εἶναι καλὸν τοισδὶ δὲ τοὐναντίον, μέτρον δ' εἶναι τὸ φαινόμενον ἑκάστῳ. λύοιτο δ' ἂν αὕτη ἡ ἀπορία θεωρήσασι πόθεν ἐλήλυθεν[1] ἡ ἀρχὴ τῆς ὑπολήψεως ταύτης. ἔοικε γὰρ ἐνίοις μὲν ἐκ τῆς τῶν φυσιολόγων δόξης γεγενῆσθαι, τοῖς δ' ἐκ τοῦ μὴ ταὐτὰ περὶ τῶν αὐτῶν ἅπαντας γιγνώσκειν, ἀλλὰ τοισδὶ μὲν ἡδὺ τόδε φαίνεσθαι τοισδὶ δὲ τοὐναντίον. τὸ γὰρ μηδὲν ἐκ μὴ ὄντος γίγνεσθαι, πᾶν δ' ἐξ ὄντος, σχεδὸν ἁπάντων ἐστὶ κοινὸν δόγμα τῶν περὶ φύσεως. ἐπεὶ οὖν οὐ λευκὸν γίγνεται λευκοῦ τελέως ὄντος καὶ οὐδαμῇ μὴ λευκοῦ [νῦν δὲ γεγενημένον μὴ λευκόν],[2] γίγνοιτ' ἂν ἐκ μὴ ὄντος λευκοῦ τὸ γιγνόμενον [μὴ][3] λευκόν· ὥστε ἐκ μὴ ὄντος γίγνοιτ' ἂν κατ' ἐκείνους, εἰ μὴ ὑπῆρχε λευκὸν τὸ αὐτὸ καὶ μὴ λευκόν.[3] οὐ χαλεπὸν δὲ διαλύειν τὴν ἀπορίαν ταύτην· εἴρηται γὰρ ἐν τοῖς φυσικοῖς πῶς ἐκ τοῦ μὴ ὄντος γίγνεται τὰ γιγνόμενα καὶ πῶς ἐξ ὄντος.

Τό γε μὴν ὁμοίως προσέχειν ταῖς δόξαις καὶ ταῖς φαντασίαις τῶν πρὸς αὐτοὺς διαμφισβητούντων εὔηθες· δῆλον γὰρ ὅτι τοὺς ἑτέρους αὐτῶν ἀνάγκη διεψεῦσθαι. φανερὸν δὲ τοῦτ' ἐκ τῶν γιγνομένων κατὰ τὴν αἴσθησιν· οὐδέποτε γὰρ τὸ αὐτὸ φαίνεται τοῖς μὲν γλυκὺ τοῖς δὲ τοὐναντίον,

[1] ἐλήλυθεν om. A[b] Alexander. [2] Bonitz.
[3] λευκὸν . . . καὶ μὴ λευκόν A[b] Alexander: μὴ λευκὸν . . . καὶ λευκόν.

are positively true. But if this is so, it follows that the same thing is and is not, and is bad and good, and that all the other implications of opposite statements are true; because often a given thing seems beautiful to one set of people and ugly to another, and that which seems to each individual is the measure. This difficulty will be solved if we consider the origin of the assumption. It seems probable that it arose in some cases from the doctrine of the natural philosophers, and in others from the fact that everyone does not form the same opinion about the same things, but to some a given thing seems sweet and to others the contrary. For that nothing comes from what is not, but everything from what is, is a doctrine common to nearly all natural philosophers.[a] Since, then, a thing does not become white which was before completely white and in no respect not-white, that which becomes white must come from what was not-white. Hence according to this theory there would be generation from what is not, unless the same thing were originally white *and* not-white. However, it is not hard to solve this difficulty. We have explained in the *Physics*[b] in what sense things which are generated are generated from what is not, and in what sense from what is.

But to attach equal importance to the opinions and impressions of disputing parties is foolish, because clearly one side or the other must be wrong.[c] This is evident from what happens in the sphere of sensation; for the same thing never seems to some people sweet and to others the contrary unless one

[a] With §§ 4, 5 *cf.* IV. v. 6.
[b] *Physics* I. vii.-ix. [c] §§ 5-7 = IV. v. 23-27.

1063 a
μὴ διεφθαρμένων καὶ λελωβημένων τῶν ἑτέρων τὸ αἰσθητήριον καὶ κριτήριον τῶν λεχθέντων χυμῶν. τούτου δ' ὄντος τοιούτου τοὺς ἑτέρους μὲν ὑπολη-
5 πτέον μέτρον εἶναι, τοὺς δ' ἄλλους[1] οὐχ ὑπολη πτέον. ὁμοίως δὲ τοῦτο λέγω καὶ ἐπὶ ἀγαθοῦ καὶ κακοῦ, καὶ καλοῦ καὶ αἰσχροῦ, καὶ τῶν ἄλλων τῶν τοιούτων. οὐδὲν γὰρ διαφέρει τοῦτ' ἀξιοῦν ἢ τὰ φαινόμενα τοῖς ὑπὸ τὴν ὄψιν ὑποβάλλουσι τὸν δάκτυλον καὶ ποιοῦσιν ἐκ τοῦ ἑνὸς φαίνεσθαι δύο, δύο δεῖν[2] εἶναι διὰ τὸ φαίνεσθαι τοσαῦτα, καὶ πάλιν ἕν·
10 τοῖς γὰρ μὴ κινοῦσι τὴν ὄψιν ἓν φαίνεται τὸ ἕν. ὅλως δὲ ἄτοπον ἐκ τοῦ φαίνεσθαι τὰ δεῦρο μεταβάλλοντα καὶ μηδέποτε διαμένοντα ἐν τοῖς αὐτοῖς, ἐκ τούτου περὶ τῆς ἀληθείας τὴν κρίσιν ποιεῖσθαι. δεῖ γὰρ ἐκ τῶν ἀεὶ κατὰ ταὐτὰ ἐχόντων καὶ
15 μηδεμίαν μεταβολὴν ποιουμένων τἀληθὲς θηρεύειν. τοιαῦτα δ' ἐστὶ τὰ κατὰ τὸν κόσμον· ταῦτα γὰρ οὐχ ὁτὲ μὲν τοιαδὶ πάλιν δ' ἀλλοῖα φαίνεται, ταὐτὰ δ' ἀεὶ καὶ μεταβολῆς οὐδεμιᾶς κοινωνοῦντα. Ἔτι δ' εἰ κίνησις ἔστι, καὶ κινούμενόν τι, κινεῖται δὲ πᾶν ἔκ τινος καὶ εἴς τι· δεῖ ἄρα τὸ κινούμενον
20 εἶναι ἐν ἐκείνῳ ἐξ οὗ κινήσεται καὶ οὐκ εἶναι ἐν αὐτῷ, καὶ εἰς τοδὶ κινεῖσθαι καὶ γίγνεσθαι ἐν τούτῳ, τὸ δὲ κατὰ τὴν ἀντίφασιν μὴ συναληθεύεσθαι[3] κατ' αὐτούς. καὶ εἰ κατὰ τὸ ποσὸν συνεχῶς τὰ δεῦρο ῥεῖ καὶ κινεῖται, καί τις τοῦτο θείη καίπερ οὐκ ἀληθὲς ὄν, διὰ τί κατὰ τὸ ποιὸν οὐ

[1] ἑτέρους EJ.
[2] δεῖν JΓ: δ' EA[b]: γ' Bessarion, Bonitz: incl. Christ.
[3] ἀληθεύεσθαι EJ.

[a] *i.e.*, that the same thing has contrary qualities.
[b] §§ 8, 9 (first half) = IV. v. 21, 22.

of the parties has the organ of sense which distinguishes the said flavours injured or impaired. Such being the case, the one party should be taken as the "measure," and the other not. And I hold 7
the same in the case of good and bad, and of beautiful and ugly, and of all other such qualities. For to maintain this view[a] is just the same as to maintain that what appears to us when we press the finger below the eye and make a thing seem two instead of one must be two because it appears to be so, and then afterwards that it must be one; because if we do not interfere with our sight that which is one appears to be one. And in general it is absurd to 8
form our opinion of the truth from the appearances of things in this world of ours which are subject to change and never remain in the same state[b]; for it is by reference to those things which are always in the same state and undergo no change that we should prosecute our search for truth. Of this kind 9
are the heavenly bodies; for these do not appear to be now of one nature and subsequently of another, but are manifestly always the same and have no part in change of any kind.

Again, if there is motion there is also something which is moved; and everything is moved from something and into something. Therefore that which is moved must be in that from which it is to be moved, and must also not be in it; and must be moved into so-and-so and must also come to be in it; but the contradictory statements cannot be true at the same time, as our opponents allege. And if the things of our world are in a state of con- 10
tinuous flux and motion in respect of quantity, and we assume this although it is not true, why should

1063 a μενεῖ[1]; φαίνονται γὰρ οὐχ ἥκιστα τὰ κατὰ τὰς
25 ἀντιφάσεις ταὐτοῦ κατηγορεῖν ἐκ τοῦ τὸ ποσὸν
ὑπειληφέναι μὴ μένειν ἐπὶ τῶν σωμάτων, διὸ[2] καὶ
εἶναι τετράπηχυ τὸ αὐτὸ καὶ οὐκ εἶναι. ἡ δ' οὐσία
κατὰ τὸ ποιόν, τοῦτο δὲ τῆς ὡρισμένης φύσεως, τὸ δὲ
ποσὸν τῆς ἀορίστου. Ἔτι διὰ τί προστάττοντος
τοῦ ἰατροῦ τοδὶ τὸ σιτίον προσενέγκασθαι προσ-
30 φέρονται; τί γὰρ μᾶλλον τοῦτο ἄρτος ἐστὶν ἢ οὐκ
ἔστιν; ὥστ' οὐθὲν ἂν διέχοι φαγεῖν ἢ μὴ φαγεῖν.
νῦν δ' ὡς ἀληθεύοντες περὶ αὐτὸ καὶ ὄντος τοῦ
προσταχθέντος σιτίου τούτου προσφέρονται τοῦτο.
καίτοι γ' οὐκ ἔδει μὴ διαμενούσης παγίως μηδε-
μιᾶς φύσεως ἐν τοῖς αἰσθητοῖς, ἀλλ' ἀεὶ πασῶν
35 κινουμένων καὶ ῥεουσῶν. Ἔτι δ' εἰ μὲν ἀλλοιού-
μεθα ἀεὶ καὶ μηδέποτε διαμένομεν οἱ αὐτοί, τί καὶ
θαυμαστὸν εἰ μηδέποθ' ἡμῖν ταὐτὰ φαίνεται
1063 b καθάπερ τοῖς κάμνουσιν; καὶ γὰρ τούτοις διὰ τὸ
μὴ ὁμοίως διακεῖσθαι τὴν ἕξιν καὶ ὅθ' ὑγίαινον, οὐχ
ὅμοια φαίνεται τὰ κατὰ τὰς αἰσθήσεις, αὐτὰ μὲν
οὐδεμιᾶς διά γε τοῦτο μεταβολῆς κοινωνοῦντα τὰ
αἰσθητά, αἰσθήματα δ' ἕτερα ποιοῦντα τοῖς κάμ-
5 νουσι καὶ μὴ τὰ αὐτά. τὸν αὐτὸν δὴ τρόπον ἔχειν
καὶ τῆς εἰρημένης μεταβολῆς γιγνομένης ἴσως
ἀναγκαῖόν ἐστιν· εἰ δὲ μὴ μεταβάλλομεν ἀλλ' οἱ
αὐτοὶ διατελοῦμεν ὄντες, εἴη ἄν τι μένον. Πρὸς
μὲν οὖν τοὺς ἐκ λόγου τὰς εἰρημένας ἀπορίας

[1] *μενεῖ* Richards, Alexander (?): *μένει*.
[2] *διὰ τὸ* EJ.

[a] *Cf.* IV. v. 20, 21.
[b] *Cf.* IV. iv. 39-42.
[c] With this section *cf.* IV. v. 7-14.
[d] With this section *cf.* IV. v. 3, 4, vi. 1-3.

they not be constant in respect of quality?[a] It appears that not the least reason why our opponents predicate opposite statements of the same thing is that they start with the assumption that quantity is not constant in the case of bodies; hence they say that the same thing is and is not six feet long. But 11
essence depends upon quality, and this is of a determinate, whereas quantity is of an indeterminate nature.

Again, when the doctor orders them to adopt some article of diet, why do they adopt it?[b] For on their view it is no more true that a thing is bread than that it is not; and therefore it would make no difference whether they ate it or not. But as it is, they adopt a particular food as though they knew the truth about it and it were the food prescribed; yet they ought not to do so if there were no fixed 12
and permanent nature in sensible things and everything were always in a state of motion and flux.

Again, if we are always changing and never remain the same, is it any wonder that to us, as to the diseased, things never appear the same?[c] For to 13
the diseased, since they are not in the same physical condition as when they were well, sensible qualities do not appear to be the same; although this does not mean that the sensible things themselves partake of any change, but that they cause different, and not the same, sensations in the diseased. Doubtless the same must be true if the change which we have referred to takes place in us. If, however, 14
we do not change but remain always the same, there must be something permanent.

As for those who raise the aforesaid difficulties on dialectical grounds,[d] it is not easy to find a solution

1063 b ἔχοντας οὐ ῥᾴδιον διαλῦσαι μὴ τιθέντων τι καὶ
10 τούτου μηκέτι λόγον[1] ἀπαιτούντων· οὕτω γὰρ
πᾶς λόγος καὶ πᾶσα ἀπόδειξις γίγνεται· μηδὲν γὰρ
τιθέντες ἀναιροῦσι τὸ διαλέγεσθαι καὶ ὅλως λόγον.
ὥστε πρὸς μὲν τοὺς τοιούτους οὐκ ἔστι λόγος, πρὸς
δὲ τοὺς διαποροῦντας ἐκ τῶν παραδεδομένων ἀπο-
ριῶν ῥᾴδιον ἁπαντᾶν καὶ διαλύειν τὰ ποιοῦντα τὴν
15 ἀπορίαν ἐν αὐτοῖς. δῆλον δ' ἐκ τῶν εἰρημένων.

Ὥστε φανερὸν ἐκ τούτων ὅτι οὐκ ἐνδέχεται τὰς
ἀντικειμένας φάσεις περὶ ταὐτοῦ καθ' ἕνα χρόνον
ἀληθεύειν, οὐδὲ τὰ ἐναντία, διὰ τὸ λέγεσθαι κατὰ
στέρησιν πᾶσαν ἐναντιότητα. δῆλον δὲ τοῦτ' ἐπ'
ἀρχὴν τοὺς λόγους ἀναλύουσι τοὺς τῶν ἐναντίων.
Ὁμοίως δ' οὐδὲ τῶν ἀνὰ μέσον οὐδὲν οἷόν τε
20 κατηγορεῖσθαι καθ' ἑνὸς καὶ τοῦ αὐτοῦ. λευκοῦ
γὰρ ὄντος τοῦ ὑποκειμένου λέγοντες αὐτὸ εἶναι οὔτε
λευκὸν οὔτε μέλαν ψευσόμεθα· συμβαίνει γὰρ εἶναι
λευκὸν αὐτὸ καὶ μὴ εἶναι· θάτερον γὰρ τῶν συμ-
πεπλεγμένων ἀληθεύσεται κατ' αὐτοῦ, τοῦτο δ'
ἐστὶν ἀντίφασις τοῦ λευκοῦ. Οὔτε δὴ καθ' Ἡρά-
25 κλειτον ἐνδέχεται λέγοντας ἀληθεύειν, οὔτε κατ'
Ἀναξαγόραν. εἰ δὲ μή, συμβήσεται τἀναντία τοῦ
αὐτοῦ κατηγορεῖν· ὅταν γὰρ ἐν παντὶ φῇ παντὸς
εἶναι μοῖραν, οὐδὲν μᾶλλον εἶναί φησι γλυκὺ ἢ
πικρὸν ἢ τῶν λοιπῶν ὁποιανοῦν ἐναντιώσεων, εἴπερ

[1] λόγον μηκέτι A[b].

[a] *Cf.* IV. vi. 10, 11.
[b] *Cf.* IV. vii. where, however, the point which is proved is that there can be no intermediate between contradictories.
[c] *Cf.* ch. v. 8.
[d] *Cf.* IV. vii. 8–viii. 5.

which will convince them unless they grant some assumption for which they no longer require an explanation; for every argument and proof is possible only in this way. If they grant no assumption, they destroy discussion and reasoning in general. Thus there is no arguing with people of this kind; 15 but in the case of those who are perplexed by the traditional difficulties it is easy to meet and refute the causes of their perplexity. This is evident from what has been already said.

Thus from these considerations it is obvious that 16 opposite statements cannot be true of the same thing at one time; nor can contrary statements, since every contrariety involves privation. This is clear if we reduce the formulae of contraries to their first principles.[a]

Similarly no middle term can be predicated of one and the same thing of which one of the contraries is predicated.[b] If, when the subject is white, we say 17 that it is neither white nor black, we shall be in error; for it follows that it is and is not white, because the first of the two terms in the complex statement will be true of the subject, and this is the contradictory of white.

Thus we cannot be right in holding the views either of Heraclitus[c] or of Anaxagoras.[d] If we could, it 18 would follow that contraries are predicable of the same subject; for when he[e] says that in everything there is a part of everything, he means that nothing is sweet any more than it is bitter, and similarly with any of the other pairs of contraries; that is,

[e] Anaxagoras. What he really meant was that even the sweetest things contain some bitter particles. *Cf.* fr. 11 (Diels); Burnet, *E.G.P.* § 129.

1063 b
ἐν ἅπαντι πᾶν ὑπάρχει μὴ δυνάμει μόνον ἀλλ'
30 ἐνεργείᾳ καὶ ἀποκεκριμένον. Ὁμοίως δὲ οὐδὲ
πάσας ψευδεῖς οὐδ' ἀληθεῖς τὰς φάσεις δυνατὸν
εἶναι, δι' ἄλλά τε πολλὰ τῶν συναχθέντων ἂν δυσ-
χερῶν διὰ ταύτην τὴν θέσιν, καὶ διότι ψευδῶν μὲν
οὐσῶν πασῶν οὐδ' αὐτὸ τοῦτό τις φάσκων ἀληθεύσει,
35 ἀληθῶν δὲ ψευδεῖς εἶναι πάσας λέγων οὐ ψεύσεται.

VII. Πᾶσα δ' ἐπιστήμη ζητεῖ τινὰς ἀρχὰς καὶ
αἰτίας περὶ ἕκαστον τῶν ὑφ' αὑτὴν ἐπιστητῶν,
1064 a οἷον ἰατρικὴ καὶ γυμναστικὴ καὶ τῶν λοιπῶν ἑκάστη
τῶν ποιητικῶν καὶ μαθηματικῶν. ἑκάστη γὰρ
τούτων περιγραψαμένη τι γένος αὑτῇ περὶ τοῦτο
πραγματεύεται ὡς ὑπάρχον καὶ ὄν, οὐχ ᾗ δὲ ὄν,
ἀλλ' ἑτέρα τις αὕτη παρὰ ταύτας τὰς ἐπιστήμας
5 ἐστὶν ἐπιστήμη. τῶν δὲ λεχθεισῶν ἐπιστημῶν
ἑκάστη λαβοῦσά πως τὸ τί ἐστιν ἐν ἑκάστῳ γένει
πειρᾶται δεικνύναι τὰ λοιπὰ μαλακώτερον ἢ ἀκρι-
βέστερον. λαμβάνουσι δὲ τὸ τί ἐστιν αἱ μὲν δι'[1]
αἰσθήσεως αἱ δ' ὑποτιθέμεναι· διὸ καὶ δῆλον ἐκ
τῆς τοιαύτης ἐπαγωγῆς ὅτι τῆς οὐσίας καὶ τοῦ τί
10 ἐστιν οὐκ ἔστιν ἀπόδειξις. Ἐπεὶ δ' ἔστι τις ἡ
περὶ φύσεως ἐπιστήμη, δῆλον ὅτι καὶ πρακτικῆς
ἑτέρα καὶ ποιητικῆς ἔσται. ποιητικῆς μὲν γὰρ ἐν
τῷ ποιοῦντι καὶ οὐ τῷ ποιουμένῳ τῆς κινήσεως
ἡ ἀρχή, καὶ τοῦτ' ἐστὶν εἴτε τέχνη τις εἴτ' ἄλλη
τις δύναμις· ὁμοίως δὲ καὶ ἐπὶ τῆς πρακτικῆς
15 οὐκ ἐν τῷ πρακτῷ, μᾶλλον δ' ἐν τοῖς πράττουσιν ἡ
κίνησις. ἡ δὲ τοῦ φυσικοῦ περὶ τὰ ἔχοντ' ἐν

[1] δι'] διὰ τῆς EJ.

[a] This chapter corresponds to VI. i.; *cf.* also IV. iii. 1-6 and ch. iv. above. It also answers the problem stated in ch. i. 2.

if everything is present in everything not merely potentially but actually and in differentiation.

Similarly *all* statements cannot be false, nor all 19
true. Among many other difficulties which might be adduced as involved by this supposition there is the objection that if all statements were false, not even this proposition itself would be true; while if they were all true it would not be false to say that they are all false.

Distinction of metaphysics from physics and mathematics.

VII. Every science inquires for certain principles and causes with respect to every knowable thing which comes within its scope[a]; *e.g.*, the sciences of medicine and physical culture do this, and so does each of the other productive and mathematical sciences. Each one of these marks out for itself some class of objects, and concerns itself with this as with something existent and real, but not *qua* real; it is another science distinct from these which does this. Each of the said sciences arrives in some 2
way at the essence in a particular class of things, and then tries to prove the rest more or less exactly. Some arrive at the essence through sense-perception, and some by hypothesis; hence it is obvious from such a process of induction that there is no demonstration of the reality or essence.

Now since there is a science of nature, clearly it 3
must be different from both practical and productive science. In a productive science the source of motion is in the producer and not in the thing produced, and is either an art or some other kind of potency; and similarly in a practical science the motion is not in the thing acted upon but rather in the agent. But 4
the science of the natural philosopher is concerned with things which contain in themselves a source of

1064 a ἑαυτοῖς κινήσεως ἀρχήν ἐστιν. ὅτι μὲν τοίνυν οὔτε πρακτικὴν οὔτε ποιητικὴν ἀλλὰ θεωρητικὴν ἀναγκαῖον εἶναι τὴν φυσικὴν ἐπιστήμην, δῆλον ἐκ τούτων· εἰς ἓν γάρ τι τούτων τῶν γενῶν ἀνάγκη πίπτειν αὐτήν. ἐπεὶ δὲ τὸ τί ἐστιν ἀναγκαῖον
20 ἑκάστῃ πως τῶν ἐπιστημῶν εἰδέναι καὶ τούτῳ χρῆσθαι ἀρχῇ, δεῖ μὴ λανθάνειν πῶς ὁριστέον τῷ φυσικῷ καὶ πῶς ὁ τῆς οὐσίας λόγος ληπτέος, πότερον ὡς τὸ σιμόν, ἢ μᾶλλον ὡς τὸ κοῖλον. τούτων γὰρ ὁ μὲν τοῦ σιμοῦ λόγος μετὰ τῆς ὕλης λέγεται τῆς τοῦ πράγματος, ὁ δὲ τοῦ κοίλου χωρὶς τῆς
25 ὕλης· ἡ γὰρ σιμότης ἐν ῥινὶ γίγνεται, διὸ καὶ ὁ λόγος αὐτῆς μετὰ ταύτης θεωρεῖται· τὸ σιμὸν γάρ ἐστι ῥὶς κοίλη. φανερὸν οὖν ὅτι καὶ σαρκὸς καὶ ὀφθαλμοῦ καὶ τῶν λοιπῶν μορίων μετὰ τῆς ὕλης ἀεὶ τὸν λόγον ἀποδοτέον. Ἐπεὶ δ' ἔστι τις ἐπιστήμη τοῦ ὄντος ᾗ ὂν καὶ χωριστόν, σκεπτέον
30 πότερόν ποτε τῇ φυσικῇ τὴν αὐτὴν θετέον ταύτην εἶναι ἢ μᾶλλον ἑτέραν. ἡ μὲν οὖν φυσικὴ περὶ τὰ κινήσεως ἔχοντ' ἀρχὴν ἐν αὑτοῖς ἐστίν, ἡ δὲ μαθηματικὴ θεωρητικὴ μὲν καὶ περὶ μένοντά τις αὖτη, ἀλλ' οὐ χωριστά. περὶ τὸ χωριστὸν ἄρα ὂν καὶ[1] ἀκίνητον ἑτέρα τούτων ἀμφοτέρων τῶν ἐπι-
35 στημῶν ἐστί τις, εἴπερ ὑπάρχει τις οὐσία τοιαύτη, λέγω δὲ χωριστὴ καὶ ἀκίνητος, ὅπερ πειρασόμεθα δεικνύναι. καὶ εἴπερ ἔστι τις τοιαύτη φύσις ἐν τοῖς οὖσιν, ἐνταῦθ' ἂν εἴη που καὶ τὸ θεῖον, καὶ
1064 b αὕτη ἂν εἴη πρώτη καὶ κυριωτάτη ἀρχή. δῆλον τοίνυν ὅτι τρία γένη τῶν θεωρητικῶν ἐπιστημῶν

[1] καὶ τὸ EJ.

[a] XII. vi., vii.

motion. From this it is clear that natural science must be neither practical nor productive, but speculative; since it must fall under one of these classes. And since every science must have some knowledge 5
of the essence and must use it as a starting-point, we must be careful to observe how the natural philosopher should define, and how he should regard the formula of essence—whether in the same way as the term "snub," or rather as the term "concave." For 6
of these the formula of "snub" is stated in conjunction with the matter of the object, whereas that of "concave" is stated apart from the matter; since snubness is only found in the nose, which is therefore included in the formula, for "the snub" is a concave *nose*. Thus it is obvious that the formula of "flesh" and "eye" and the other parts of the body must always be stated in conjunction with their matter.

Since there is a science of Being *qua* Being and 7
separately existent, we must inquire whether this should be regarded as identical with natural science or rather as a distinct branch of knowledge. Physics deals with things which contain a source of motion in themselves, and mathematics is speculative and is a science which deals with permanent things, but not with things which can exist separately. Hence there 8
is a science distinct from both of these, which deals with that which exists separately and is immovable; that is, if there really is a substance of this kind—I mean separately existent and immovable—as we shall endeavour to prove.[a] And if there is an entity of this kind in the world of reality, here surely must be the Divine, and this must be the first and most fundamental principle. Evidently, then, there are 9
three kinds of speculative science: physics, mathe-

1064 b ἐστί, φυσική, μαθηματική, θεολογική. βέλτιστον μὲν οὖν τὸ τῶν θεωρητικῶν [ἐπιστημῶν][1] γένος, τούτων δ' αὐτῶν ἡ τελευταία λεχθεῖσα· περὶ τὸ τιμιώτατον γάρ ἐστι τῶν ὄντων, βελτίων δὲ καὶ χείρων ἑκάστη λέγεται κατὰ τὸ οἰκεῖον ἐπιστητόν.

Ἀπορήσειε δ' ἄν τις, πότερόν ποτε τὴν τοῦ ὄντος ᾗ ὂν ἐπιστήμην καθόλου δεῖ θεῖναι ἢ οὔ. τῶν μὲν γὰρ μαθηματικῶν ἑκάστη περὶ ἕν τι γένος ἀφωρισμένον ἐστίν, ἡ δὲ καθόλου κοινὴ περὶ πάντων. εἰ μὲν οὖν αἱ φυσικαὶ οὐσίαι πρῶται τῶν ὄντων εἰσί, κἂν ἡ φυσικὴ πρώτη τῶν ἐπιστημῶν εἴη· εἰ δ' ἔστιν ἑτέρα φύσις καὶ οὐσία χωριστὴ καὶ ἀκίνητος, ἑτέραν ἀνάγκη καὶ τὴν ἐπιστήμην αὐτῆς εἶναι καὶ προτέραν τῆς φυσικῆς καὶ καθόλου τῷ προτέραν.

VIII. Ἐπεὶ δὲ τὸ ἁπλῶς ὂν κατὰ πλείους λέγεται τρόπους, ὧν εἷς ἐστὶν ὁ κατὰ συμβεβηκὸς εἶναι[2] λεγόμενος, σκεπτέον πρῶτον περὶ τοῦ οὕτως ὄντος. ὅτι μὲν οὖν οὐδεμία τῶν παραδεδομένων ἐπιστημῶν πραγματεύεται περὶ τὸ συμβεβηκός, δῆλον· οὔτε γὰρ οἰκοδομικὴ σκοπεῖ τὸ συμβησόμενον τοῖς τῇ οἰκίᾳ χρησομένοις, οἷον εἰ λυπηρῶς ἢ τοὐναντίον οἰκήσουσιν, οὔθ' ὑφαντικὴ οὔτε σκυτοτομικὴ οὔτε ὀψοποιική, τὸ δὲ καθ' αὑτὴν ἴδιον ἑκάστη τούτων σκοπεῖ τῶν ἐπιστημῶν μόνον· τοῦτο δ' ἐστὶ τὸ οἰκεῖον τέλος. οὐδ' ⟨εἰ τὸ⟩[3] μουσικὸν καὶ γραμματικόν, οὐδὲ τὸν ὄντα μουσικὸν ὅτι γενόμενος γραμματικὸς ἅμα ἔσται τὰ ἀμ-

[1] ἐπιστημῶν A^b: om. cet.
[2] εἶναι om. EJ.
[3] εἰ τὸ Bullinger: εἰ Bonitz, τὸ Christ: ᾗ JΓ, ut uid. E^1: om. A^b.

[a] Sections 1-9 of this chapter correspond to VI. ii.-iv.

matics, and theology. The highest class of science is the speculative, and of the speculative sciences themselves the highest is the last named, because it deals with the most important side of reality; and each science is reckoned higher or lower in accordance with the proper object of its study.

The question might be raised as to whether the science of Being *qua* Being should be regarded as universal or not. Each of the mathematical sciences deals with some one class of things which is determinate, but universal mathematics is common to all alike. If, then, natural substances are the first of existing things, physics will be the first of the sciences; but if there is some other nature and substance which exists separately and is immovable, then the science which treats of it must be different from and prior to physics, and universal because of its priority.

VIII. Since the term Being in its unqualified sense is used with several meanings, of which one is accidental Being, we must first consider Being in this sense.[a] Clearly none of the traditional sciences concerns itself with the accidental; the science of building does not consider what will happen to the occupants of the house, *e.g.* whether they will find it unpleasant or the contrary to live in; nor does the science of weaving or of shoemaking or of confectionery. Each of these sciences considers only what is proper to it, *i.e.* its particular end. As for the question whether "the cultured" is also "the lettered," or the quibble[b] that "the man who is cultured, when he has become lettered, will be both

Accidental Being.

[b] This is a different form of the "quibble" in VI. ii. 4. Here the fallacy obviously consists in the wrong application of the word ἅμα ("at once" or "at the same time").

φότερα,[1] πρότερον οὐκ ὤν, ὃ δὲ μὴ ἀεὶ ὄν ἐστιν, ἐγένετο τοῦτο, ὥσθ' ἅμα μουσικὸς ἐγένετο καὶ γραμματικός,—τοῦτο δὲ οὐδεμία ζητεῖ τῶν ὁμολογουμένως οὐσῶν ἐπιστημῶν, πλὴν ἡ σοφιστική· περὶ τὸ συμβεβηκὸς γὰρ αὕτη μόνη πραγματεύεται, διὸ Πλάτων οὐ κακῶς εἴρηκε φήσας τὸν σοφιστὴν περὶ τὸ μὴ ὂν διατρίβειν. ὅτι δ' οὐδ' ἐνδεχόμενόν ἐστιν εἶναι τοῦ συμβεβηκότος ἐπιστήμην φανερὸν ἔσται πειραθεῖσιν ἰδεῖν τί ποτ' ἐστὶ τὸ συμβεβηκός.

Πᾶν δὴ φαμὲν εἶναι τὸ μὲν ἀεὶ καὶ ἐξ ἀνάγκης (ἀνάγκης δ' οὐ τῆς κατὰ τὸ βίαιον λεγομένης, ἀλλ' ᾗ χρώμεθα ἐν τοῖς κατὰ τὰς ἀποδείξεις), τὸ δ' ὡς ἐπὶ τὸ πολύ, τὸ δ' οὔθ' ὡς ἐπὶ τὸ πολὺ οὔτ' ἀεὶ καὶ ἐξ ἀνάγκης, ἀλλ' ὅπως ἔτυχεν· οἷον ἐπὶ κυνὶ γένοιτ' ἂν ψῦχος, ἀλλὰ τοῦτ' οὔθ' ὡς ἀεὶ καὶ ἐξ ἀνάγκης οὔθ' ὡς ἐπὶ τὸ πολὺ γίγνεται, συμβαίη δέ ποτ' ἄν. ἔστι δὴ τὸ συμβεβηκὸς ὃ γίγνεται μέν, οὐκ ἀεὶ δ' οὐδ' ἐξ ἀνάγκης οὐδ' ὡς ἐπὶ τὸ πολύ. τί μὲν οὖν ἐστὶ τὸ συμβεβηκός, εἴρηται, διότι δ' οὐκ ἔστιν ἐπιστήμη τοῦ τοιούτου, δῆλον· ἐπιστήμη μὲν γὰρ πᾶσα τοῦ ἀεὶ ὄντος ἢ ὡς ἐπὶ τὸ πολύ, τὸ δὲ συμβεβηκὸς ἐν οὐδετέρῳ τούτων ἐστίν.

Ὅτι δὲ τοῦ κατὰ συμβεβηκὸς ὄντος οὐκ εἰσὶν αἰτίαι καὶ ἀρχαὶ τοιαῦται οἵαίπερ τοῦ καθ' αὑτὸ ὄντος, δῆλον· ἔσται γὰρ ἅπαντ' ἐξ ἀνάγκης. εἰ γὰρ τόδε μὲν ἔστι τοῦδε ὄντος, τόδε δὲ τοῦδε, τοῦτο δὲ μὴ ὅπως ἔτυχεν ἀλλ' ἐξ ἀνάγκης, ἐξ ἀνάγκης ἔσται καὶ οὗ τοῦτ' ἦν αἴτιον ἕως τοῦ

[1] ἅμα ἔσται τὰ ἀμφότερα] τὰ ἀμφότερα ἅμα ἔσται A^b.

at once although he was not before; but that which is but was not always so must have come to be; therefore he must have become at the same time cultured and lettered"—none of the recognized sciences considers this, except sophistry. This is the only science which concerns itself with the accidental, and hence Plato was not far wrong in saying[a] that the sophist spends his time in the study of unreality. But that it is not even possible for there to be a science of the accidental will be apparent if we try to see what the accidental really is.

Of some things we say that they are so always and of necessity (necessity having the sense not of compulsion, but that which we use in logical demonstration[b]), and of others that they are so usually, but of others that they are so neither usually nor always and of necessity, but fortuitously. *E.g.*, there might be a frost at midsummer, although this comes about neither always and of necessity nor usually; but it might happen sometimes. The accidental, then, is that which comes about, but not always nor of necessity nor usually. Thus we have now stated what the accidental is; and it is obvious why there can be no science of such a thing, because every science has as its object that which is so always or usually, and the accidental falls under neither of these descriptions.

Clearly there can be no causes and principles of the accidental such as there are of that which is *per se*; otherwise everything would be of necessity. For if A is when B is, and B is when C is, and C is not fortuitously but of necessity, then that of which C was the cause will also be of necessity, and so on

[a] *Sophist* 254 A. [b] *Cf.* VI. ii. 6.

1065 a τελευταίου λεγομένου αἰτιατοῦ (τοῦτο δ' ἦν κατὰ συμβεβηκός)· ὥστε ἐξ ἀνάγκης ἅπαντ' ἔσται, καὶ τὸ ὁποτέρως ἔτυχε καὶ τὸ ἐνδέχεσθαι καὶ γίγνεσθαι καὶ μὴ παντελῶς ἐκ τῶν γιγνομένων ἀναιρεῖται. κἂν μὴ ὂν δὲ ἀλλὰ γιγνόμενον τὸ αἴτιον ὑποτεθῇ, ταὐτὰ[1] συμβήσεται· πᾶν γὰρ ἐξ ἀνάγκης γενήσεται. ἡ γὰρ αὔριον ἔκλειψις γενήσεται ἂν τόδε γένηται, τοῦτο δ' ἂν ἕτερόν τι, καὶ τοῦτ' ἂν ἄλλο· καὶ τοῦτον δὴ τὸν τρόπον ἀπὸ πεπερασμένου χρόνου τοῦ ἀπὸ τοῦ νῦν μέχρι αὔριον ἀφαιρουμένου χρόνου ἥξει ποτὲ εἰς τὸ ὑπάρχον. ὥστ' ἐπεὶ τοῦτ' ἔστιν, ἅπαντ' ἐξ ἀνάγκης τὰ μετὰ τοῦτο γενήσεται, ὥστε πάντα ἐξ ἀνάγκης γίγνεσθαι.

Τὸ δ' ὡς ἀληθὲς[2] ὂν καὶ[3] κατὰ συμβεβηκὸς τὸ μέν ἐστιν ἐν συμπλοκῇ διανοίας[4] καὶ πάθος ἐν ταύτῃ· διὸ περὶ μὲν τὸ οὕτως ὂν οὐ ζητοῦνται αἱ ἀρχαί, περὶ δὲ τὸ ἔξω ὂν καὶ χωριστόν τὸ δ' οὐκ ἀναγκαῖον ἀλλ' ἀόριστον, λέγω δὲ τὸ κατὰ συμβεβηκός· τοῦ τοιούτου δ' ἄτακτα καὶ ἄπειρα τὰ αἴτια. Τὸ δὲ ἕνεκά του ἐν τοῖς φύσει γιγνομένοις ἢ ἀπὸ διανοίας ἐστίν· τύχη δ' ἐστὶν ὅταν τι τούτων γένηται κατὰ συμβεβηκός· ὥσπερ γὰρ καὶ ὂν ἐστι τὸ μὲν καθ' αὐτὸ τὸ δὲ κατὰ συμβεβηκός, οὕτω καὶ αἴτιον. ἡ τύχη δ' αἰτία[5] κατὰ συμβεβηκὸς ἐν τοῖς κατὰ προαίρεσιν τῶν ἕνεκά του γιγνομένοις. διὸ περὶ ταὐτὸ τύχη καὶ διάνοια· προαίρεσις γὰρ οὐ χωρὶς διανοίας. τὰ δ' αἴτια ἀόριστα ἀφ' ὧν ἂν γένοιτο τὰ ἀπὸ τύχης· διὸ

[1] ταῦτα E. [2] ἀληθῶς EJ Alexander.
[3] καὶ μὴ A^b γρ. E Alexander.
[4] τῆς διανοίας EJ. [5] αἴτιον A^b.

[a] This section is taken from *Physics* II. v., vi.

down to the last *causatum*, as it is called. (But this was assumed to be accidental.) Therefore everything will be of necessity, and the element of chance, *i.e.* the possibility of a thing's either happening or not, is entirely banished from the world of events. Even if we suppose the cause not to exist already but to be coming to be, the result will be the same; for everything will come to be of necessity. The eclipse to- 8
morrow will come about if A does, and A will if B does, and B if C does; and in this way if we keep on subtracting time from the finite time between now and to-morrow, we shall at some point arrive at the present existing condition. Therefore since this exists, everything subsequent to it will happen of necessity, and so everything happens of necessity.

As for "what is" in the sense of what is *true* or 9
what is *accidental*, the former depends upon a com- Being as truth.
bination in thought, and is an affection of thought (hence we do not look for the principles of Being in this sense, but only for those of objective and separable Being): the latter is not necessary but indeterminate (I mean the accidental); and of such a thing the causes are indefinite and cannot be reduced to a system.

Teleology is found in events which come about in 10
the course of nature or as a result of thought.[a] It is Chance.
"chance" ⟨or "luck"⟩ when one of these comes about by accident; for a thing may be a cause, just as it may exist, either *per se* or accidentally. Chance is an accidental cause of normally purposive teleological events. Hence chance and thought have the 11
same sphere of action, for there is no purpose without thought. Causes from which chance results may come about are indeterminate; hence chance is

1065 a ἄδηλος ἀνθρωπίνῳ λογισμῷ καὶ αἴτιον κατὰ συμ-
35 βεβηκός, ἁπλῶς δὲ οὐδενός. ἀγαθὴ δὲ τύχη καὶ
1065 b κακὴ ὅταν ἀγαθὸν ἢ φαῦλον ἀποβῇ· εὐτυχία δὲ
καὶ δυστυχία περὶ μέγεθος τούτων. Ἐπεὶ δ'
οὐθὲν κατὰ συμβεβηκὸς πρότερον τῶν καθ' αὑτό,
οὐδ' ἄρ' αἴτια. εἰ ἄρα τύχη ἢ τὸ αὐτόματον αἴτιον
τοῦ οὐρανοῦ, πρότερον νοῦς αἴτιος[1] καὶ φύσις.

5 IX. Ἔστι δὲ τὸ μὲν ἐνεργείᾳ μόνον, τὸ δὲ
δυνάμει, τὸ δὲ δυνάμει καὶ ἐνεργείᾳ, τὸ μὲν ὄν,
τὸ δὲ ποσόν, τὸ δὲ τῶν λοιπῶν. οὐκ ἔστι δέ τις[2]
κίνησις παρὰ τὰ πράγματα· μεταβάλλει γὰρ ἀεὶ
κατὰ τὰς τοῦ ὄντος κατηγορίας. κοινὸν δ' ἐπὶ
τούτων οὐδέν ἐστιν ὃ[3] οὐδ' ἐν μιᾷ κατηγορίᾳ.
10 ἕκαστον δὲ διχῶς ὑπάρχει πᾶσιν (οἷον τὸ τόδε· τὸ
μὲν γὰρ μορφὴ αὐτοῦ τὸ δὲ στέρησις· καὶ κατὰ τὸ
ποιὸν τὸ μὲν λευκὸν τὸ δὲ μέλαν, καὶ κατὰ τὸ
ποσὸν τὸ μὲν τέλειον τὸ δὲ ἀτελές, καὶ κατὰ φορὰν
τὸ μὲν ἄνω τὸ δὲ κάτω, ἢ κοῦφον καὶ βαρύ), ὥστε
κινήσεως καὶ μεταβολῆς τοσαῦτ' εἴδη ὅσα τοῦ
ὄντος.

15 Διῃρημένου δὲ καθ' ἕκαστον γένος τοῦ μὲν
δυνάμει τοῦ δ' ἐντελεχείᾳ, τὴν τοῦ δυνάμει ἧ

[1] αἴτιον J.
[2] τι JΓ: om. A[b]. [3] om. A[b].

[a] The argument is stated more fully and clearly in *Physics* II. vi. *ad fin.* Chance produces indirectly the effects produced directly by mind; and spontaneity is similarly related

inscrutable to human calculation, and is a cause only accidentally, but in the strictest sense is a cause of nothing. It is "good" or "bad luck" when the 12
result is good or bad, and "good" or "bad fortune" when the result is on a large scale.

Since nothing accidental is prior to that which is *per se*, neither are accidental causes prior. Therefore if chance or spontaneity is the cause of the universe, mind and nature are prior causes.[a]

Motion.

IX. A thing may exist only actually or potentially, or actually and potentially; it may be a substance or a quantity or one of the other categories. There is no motion[b] apart from things, for change is always in accordance with the categories of Being[c]; and there is nothing which is common to these and in no one category. Each category belongs to all its members in two ways—*e.g.* substance, for this is sometimes the form of the thing and sometimes its privation; and as regards quality there is white and 2
black; and as regards quantity, complete and incomplete; and as regards spatial motion there is up and down or light and heavy—so that there are as many forms of motion and change as there are of Being.[d]

Motion is the actualization of the

Now since every kind of thing is divided into the potential and the real, I call the actualization of the

to nature. But the indirect cause presupposes the direct. The argument is directed against the Atomists. *Cf. Physics* II. iv., 196 a 24, Simplicius 327. 24, Cicero, *De Nat. Deor.* I. § 66 ("nulla cogente natura, sed concursu quodam fortuito").

[b] The discussion of motion in this chapter consists of extracts from *Physics* III. i.-iii.

[c] *i.e.*, change is substantial (generation and destruction); quantitative (increase and decrease); qualitative (alteration); spatial (locomotion). *Cf.* ch. xii. 1. 2.

[d] This is inaccurate; see previous note.

1065 b τοιοῦτόν ἐστιν ἐνέργειαν λέγω κίνησιν. ὅτι δ' ἀληθῆ λέγομεν, ἐνθένδε δῆλον· ὅταν γὰρ τὸ οἰκοδομητόν, ᾗ[1] τοιοῦτον αὐτὸ λέγομεν εἶναι, ἐνεργείᾳ ᾖ,[2] οἰκοδομεῖται, καὶ ἔστι τοῦτο οἰκοδόμησις· ὁμοίως μάθησις, ἰατρευσις [καὶ κύλισις],[3] βάδισις, ἅλσις, γήρανσις, ἄδρυνσις. συμβαίνει δὲ κινεῖσθαι ὅταν ᾖ[4] ἐντελέχεια ᾗ[4] αὐτή, καὶ οὔτε πρότερον οὔθ' ὕστερον. ἡ δὴ τοῦ δυνάμει ὄντος, ὅταν ἐντελεχείᾳ ὂν ἐνεργῇ, οὐχ ᾗ αὐτὸ ἀλλ'[5] ᾗ κινητόν, κίνησίς ἐστιν. λέγω δὲ τὸ ᾗ ὧδε. ἔστι γὰρ ὁ χαλκὸς δυνάμει ἀνδριάς· ἀλλ' ὅμως οὐχ ἡ τοῦ χαλκοῦ ἐντελέχεια, ᾗ χαλκός, κίνησίς ἐστιν. οὐ γὰρ ταὐτὸν χαλκῷ εἶναι καὶ δυνάμει τινί, ἐπεὶ εἰ ταὐτὸν ἦν ἁπλῶς κατὰ τὸν λόγον, ἦν ἂν ἡ τοῦ χαλκοῦ ἐντελέχεια κίνησίς τις. οὐκ ἔστι δὲ ταὐτό (δῆλον δ' ἐπὶ τῶν ἐναντίων· τὸ μὲν γὰρ δύνασθαι ὑγιαίνειν καὶ δύνασθαι κάμνειν οὐ ταὐτόν—καὶ γὰρ ἂν τὸ ὑγιαίνειν καὶ τὸ κάμνειν ταὐτὸν ἦν—τὸ δ' ὑποκείμενον καὶ ὑγιαῖνον καὶ νοσοῦν, εἴθ' ὑγρότης εἴθ' αἷμα, ταὐτὸ καὶ ἕν). ἐπεὶ δὲ οὐ τὸ αὐτό, ὥσπερ οὐδὲ χρῶμα ταὐτὸν καὶ ὁρατόν, ἡ τοῦ δυνατοῦ ᾗ δυνατὸν ἐντελέχεια κίνησίς ἐστιν. ὅτι μὲν οὖν[6] ἐστὶν αὕτη, καὶ ὅτι συμβαίνει τότε κινεῖ-

[1] ᾗ A^b. [2] ᾖ Bekker.
[3] καὶ κύλισις A^b Physics: om. cet.
[4] ᾖ . . . ᾗ E^1 Physics: vulgo ᾖ . . . ᾗ.
[5] οὐχ ᾗ αὐτὸ ἀλλ'] ᾗ αὐτὸ ᾗ ἄλλο A^b Alexander Porphyrion.
[6] οὖν A^b Physics: γὰρ EJΓ.

[a] What Aristotle means by this is explained more clearly in the following sections, which may be summarized thus. The material substrate, *e.g.* bricks, etc., which is potentially a house, may be regarded (*a*) as potential material; in this

potential as such,[a] motion. That this is a true statement will be clear from what follows. When the "buildable" in the sense in which we call it such exists actually, it is being built; and this is the process of building. The same is true of the processes of learning, healing, walking, jumping, ageing, maturing. Motion results when the complete reality itself exists, and neither sooner nor later. The complete reality, then, of that which exists potentially, when it is completely real and actual, not *qua* itself but *qua* movable, is motion. By *qua* I mean this. The bronze is potentially a statue; but nevertheless the complete reality of the bronze *qua* bronze is not motion. To be bronze is not the same as to be a particular potentiality; since if it were absolutely the same by definition the complete reality of the bronze would be a kind of motion; but it is not the same. (This is obvious in the case of contraries; for the potentiality for health and the potentiality for illness are not the same—for if they were, health and illness would be the same too—but the substrate which becomes healthy or ill, whether it is moisture or blood, is one and the same.) And since it is not the same, just as "colour" and "visible" are not the same, it is the complete reality of the potential *qua* potential that is motion. It is evident that it is this, and that motion results

3 potential as such.

4

5

6

sense it is actualized as bricks before building begins; (*b*) as potentially a house; in this sense when it is actualized it is no longer buildable but built, *i.e.*, it is no longer potential; (*c*) as potentially buildable into a house. In this sense its actualization is conterminous with the process of building, and is incomplete (§ 11), and should not be described as ἐντελεχεια or "complete reality." But Aristotle often uses this term as synonymous with the vaguer ἐνέργεια.

σθαι ὅταν ἡ ἐντελέχεια ᾖ αὐτή,[1] καὶ οὔτε πρότερον
οὔθ' ὕστερον, δῆλον. ἐνδέχεται γὰρ ἕκαστον ὁτὲ
μὲν ἐνεργεῖν ὁτὲ δὲ μή, οἷον τὸ οἰκοδομητὸν ᾗ
οἰκοδομητόν, καὶ ἡ τοῦ οἰκοδομητοῦ ἐνέργεια ᾗ
οἰκοδομητὸν οἰκοδόμησίς ἐστιν. ᾗ γὰρ τοῦτό ἐστιν,
ἡ οἰκοδόμησις, ἡ ἐνέργεια, ᾗ οἰκία· ἀλλ' ὅταν οἰκία
ᾖ, οὐκέτι οἰκοδομητὸν ἔσται· οἰκοδομεῖται δὲ τὸ
οἰκοδομητόν. ἀνάγκη ἄρα οἰκοδόμησιν τὴν ἐνέρ-
γειαν εἶναι, ἡ δ' οἰκοδόμησις κίνησίς τις· ὁ δ' αὐτὸς
λόγος καὶ ἐπὶ τῶν ἄλλων κινήσεων.

Ὅτι δὲ καλῶς εἴρηται, δῆλον ἐξ ὧν οἱ ἄλλοι
λέγουσι περὶ αὐτῆς, καὶ ἐκ τοῦ μὴ ῥᾴδιον εἶναι
διορίσαι ἄλλως αὐτήν. οὔτε γὰρ ἐν ἄλλῳ τις γένει
δύναιτ' ἂν θεῖναι αὐτήν· δῆλον δ' ἐξ ὧν λέγουσιν· οἱ
μὲν γὰρ[2] ἑτερότητα καὶ ἀνισότητα καὶ τὸ μὴ ὄν,
ὧν οὐδὲν ἀνάγκη κινεῖσθαι· ἀλλ' οὐδ' ἡ μεταβολὴ
οὔτ' εἰς ταῦτα οὔτ' ἐκ τούτων μᾶλλον ἢ ἐκ τῶν
ἀντικειμένων. αἴτιον δὲ τοῦ εἰς ταῦτα τιθέναι ὅτι
ἀόριστόν τι δοκεῖ εἶναι ἡ κίνησις, τῆς δ' ἑτέρας
συστοιχίας αἱ ἀρχαὶ διὰ τὸ στερητικαὶ εἶναι ἀόρι-
στοι· οὔτε γὰρ τόδε οὔτε τοιόνδε οὐδεμία αὐτῶν
οὔτε τῶν λοιπῶν κατηγοριῶν. τοῦ δὲ δοκεῖν
ἀόριστον εἶναι τὴν κίνησιν αἴτιον ὅτι οὔτ' εἰς
δύναμιν τῶν ὄντων οὔτ' εἰς ἐνέργειαν ἔστι θεῖναι
αὐτήν· οὔτε γὰρ τὸ δυνατὸν ποσὸν εἶναι κινεῖται ἐξ
ἀνάγκης, οὔτε τὸ ἐνεργείᾳ ποσόν· ἥ τε κίνησις

[1] αὐτή Christ: αὕτη. [2] γὰρ om. EJ.

[a] Pythagoreans and Platonists. *Cf.* I. v. 6, Plato, *Sophist* 256 D.

[b] The criticism implied is: If motion is identified with otherness, inequality, etc., then these concepts must be either

when the complete reality itself exists, and neither sooner nor later. For everything may sometimes be actual, and sometimes not; *e.g.* the "buildable" *qua* "buildable"; and the actualization of the "buildable" *qua* "buildable" is the act of building. For the actualization is either this—the act of 7
building—or a house. But when the house exists, it will no longer be buildable; the buildable is that which is *being* built. Hence the actualization must be the act of building, and the act of building is a kind of motion. The same argument applies to the other kinds of motion.

That this account is correct is clear from what the 8
other authorities say about motion, and from the fact that it is not easy to define it otherwise. For one thing, it could not be placed in any other class; this is clear from the fact that some people[a] identify it with otherness and inequality and not-being, none of which is necessarily moved; moreover change is 9
no more into these or out of them than into or out of their opposites.[b] The reason for placing motion in this class is that it is considered to be indeterminate, and the principles in one of the columns of contraries are indeterminate, being privative; for none of them is a determinate thing or quality or any of the other categories. The reason for con- 10
sidering motion to be indeterminate is that it cannot be associated either with the potentiality or with the actuality of things; for neither that which is potentially nor that which is actually of a certain size is necessarily moved. And motion is considered 11

(*a*) subjects of motion, which is absurd, or (*b*) termini of motion, in which case the same must be true of their contraries, since motion is between contraries.

1066 a ἐνέργεια μὲν εἶναι δοκεῖ τις, ἀτελὴς δέ· αἴτιον δ' ὅτι ἀτελὲς τὸ δυνατὸν οὗ ἔστιν ἐνέργεια. Καὶ διὰ τοῦτο χαλεπὸν αὐτὴν λαβεῖν τί ἐστιν· ἢ γὰρ εἰς στέρησιν ἀνάγκη θεῖναι ἢ εἰς δύναμιν ἢ εἰς ἐνέργειαν ἁπλῆν, τούτων δ' οὐδὲν φαίνεται ἐνδεχόμενον. ὥστε λείπεται τὸ λεχθὲν εἶναι καὶ ἐνέργειαν καὶ [μὴ][1] ἐνέργειαν τὴν εἰρημένην, ἰδεῖν μὲν χαλεπὴν ἐνδεχομένην δ' εἶναι. Καὶ ὅτι ἐστὶν ἡ κίνησις ἐν τῷ κινητῷ, δῆλον· ἐντελέχεια γάρ ἐστι τούτου ὑπὸ τοῦ κινητικοῦ, καὶ ἡ τοῦ κινητικοῦ ἐνέργεια οὐκ ἄλλη ἐστίν. δεῖ μὲν γὰρ εἶναι ἐντελέχειαν ἀμφοῖν· κινητικὸν μὲν γάρ ἐστι τῷ δύνασθαι, κινοῦν δὲ τῷ ἐνεργεῖν, ἀλλ' ἔστιν ἐνεργητικὸν τοῦ κινητοῦ, ὥσθ' ὁμοίως μία ἡ[2] ἀμφοῖν ἐνέργεια ὥσπερ τὸ αὐτὸ διάστημα ἓν πρὸς δύο καὶ δύο πρὸς ἕν, καὶ τὸ ἄναντες καὶ τὸ κάταντες, ἀλλὰ τὸ εἶναι οὐχ ἕν· ὁμοίως δὲ καὶ ἐπὶ τοῦ κινοῦντος καὶ κινουμένου.

X. Τὸ δ' ἄπειρον ἢ τὸ ἀδύνατον διελθεῖν τῷ μὴ πεφυκέναι διιέναι, καθάπερ ἡ φωνὴ ἀόρατος, ἢ τὸ διέξοδον ἔχον ἀτελεύτητον, ἢ ὃ μόλις, ἢ ὃ 1066 b πεφυκὸς ἔχειν μὴ ἔχει διέξοδον ἢ πέρας· ἔτι προσθέσει ἢ ἀφαιρέσει ἢ ἄμφω. Χωριστὸν μὲν δὴ αὐτό τι ὄν, αἰσθητὸν δ' ⟨οὔ⟩,[3] οὐχ οἷόν τ' εἶναι.

[1] Bonitz. [2] ἡ om. A^b.
[3] οὔ ci. Ross: αἰσθητὸν δ' om. E.

[a] *Cf.* note on § 2 (end) above, and IX. vi. 7-10.
[b] This chapter consists of extracts from *Physics* III. iv., v., vii.

to be a kind of actualization, but incomplete[a]; the reason of this is that the potential, of which it is the actualization, is incomplete.

Thus it is difficult to comprehend what motion is; for we must associate it either with privation or with potentiality or with absolute actuality; and apparently none of these is possible. There remains, 12
then, the account which we have given; that it is an actuality, and an actuality of the kind which we have described, which is hard to visualize but capable of existing.

That motion is in the movable is evident; for it is the complete realization of the movable by that which is capable of causing motion, and the actualization of that which is capable of causing motion is identical with that of the movable. For it must be 13
a complete realization of them both; since a thing is capable of moving because it has the potentiality, but it moves only when it is active; but it is upon the movable that it is capable of acting. Thus the actuality of both alike is one; just as there is the same interval from one to two as from two to one, and the hill up and the hill down are one, although their *being* is not one; the case of the mover and the thing moved is similar.

X.[b] The infinite is either (*a*) that which cannot be traversed because it is not its nature to be traversed (just as sound is by nature invisible); or (*b*) that which admits of an endless traverse; or (*c*) scarcely admits of traverse; or (*d*) which, though it would naturally admit of traverse or limit, does not do so. Further, it may be infinite in respect of addition or of subtraction or of both. The infinite has several senses.

That the infinite should be a separate independent It cannot be

1066 b εἰ γὰρ μήτε μέγεθός ἐστι μήτε πλῆθος, οὐσία δ' αὐτὸ[1] τὸ ἄπειρον καὶ μὴ συμβεβηκός, ἀδιαίρετον ἔσται· τὸ γὰρ διαιρετὸν ἢ μέγεθος ἢ πλῆθος. εἰ δὲ ἀδιαίρετον, οὐκ ἄπειρον, εἰ μὴ καθάπερ ἡ φωνὴ ἀόρατος· ἀλλ' οὐχ οὕτω λέγουσιν οὐδ' ἡμεῖς ζητοῦμεν, ἀλλ' ὡς ἀδιέξοδον. Ἔτι πῶς ἐνδέχεται καθ' αὐτὸ εἶναι ἄπειρον, εἰ μὴ καὶ ἀριθμὸς καὶ μέγεθος, ὧν πάθος τὸ ἄπειρον; ἔτι εἰ κατὰ συμβεβηκός, οὐκ ἂν εἴη στοιχεῖον τῶν ὄντων ἢ ἄπειρον, ὥσπερ οὐδὲ τὸ ἀόρατον τῆς διαλέκτου, καίτοι ἡ φωνὴ ἀόρατος. καὶ ὅτι οὐκ ἔστιν ἐνεργείᾳ εἶναι τὸ ἄπειρον, δῆλον. ἔσται γάρ τι οὗ αὐτοῦ ἄπειρον μέρος τὸ λαμβανόμενον· τὸ γὰρ ἀπείρῳ εἶναι καὶ ἄπειρον τὸ αὐτό, εἴπερ οὐσία τὸ ἄπειρον καὶ μὴ καθ' ὑποκειμένου. ὥστε ἢ ἀδιαίρετον, ἢ εἰς ἄπειρα διαιρετόν, εἰ μεριστόν. πολλὰ δ' εἶναι τὸ αὐτὸ ἀδύνατον ἄπειρα· ὥσπερ γὰρ ἀέρος ἀὴρ μέρος, οὕτως ἄπειρον ἀπείρου, εἰ ἔστιν οὐσία καὶ ἀρχή. ἀμέριστον ἄρα καὶ ἀδιαίρετον. ἀλλὰ ἀδύνατον τὸ ἐντελεχείᾳ ὂν ἄπειρον· ποσὸν γὰρ εἶναι ἀνάγκη. κατὰ συμβεβηκὸς ἄρα ὑπάρχει. ἀλλ' εἰ οὕτως, εἴρηται ὅτι οὐκ ἐνδέχεται εἶναι ἀρχήν, ἀλλ' ἐκεῖνο ᾧ συμβέβηκε, τὸν ἀέρα ἢ τὸ ἄρτιον. Αὕτη μὲν οὖν ἡ ζήτησις καθόλου, ὅτι δ' ἐν τοῖς αἰσθητοῖς

[1] αὐτοῦ A^b.

[a] The Pythagorean and Platonic view.
[b] Aristotle has argued that they do not in I. ix. 16-25.
[c] According to Anaximenes; *cf.* Theophrastus, *Phys. Opin.* fr. 2 (Ritter and Preller 26).
[d] According to the Pythagoreans. *Cf.* I. v. 5 n.

entity,[a] and yet imperceptible, is impossible. For 2
if it is neither magnitude nor plurality, but infinity itself is the essence of it, and not merely an accident, it must be indivisible; because that which is divisible is either magnitude or plurality. And if it is indivisible it cannot be infinite, except in the same way as sound is invisible. But this is not what people mean by infinite; and it is not the infinite in this sense that we are investigating, but the infinite in the sense of the untraversable.

a separate entity.

Again, how can the infinite exist independently 3
unless number and magnitude, of which infinity is an attribute, also exist independently?[b] And further, if the infinite is accidental, it cannot, *qua* infinite, be an element of things; just as the invisible is not an element of speech, although sound is invisible. It is clear also that the infinite cannot exist actually. Otherwise any part of it which we might take would 4
be infinite; for infinity and the infinite are the same, if the infinite is substance and is not predicated of a subject. Therefore it is either indivisible, or if it is partible, the parts into which it is divisible are infinite. But the same thing cannot be many infinites; for just as a part of air is air, so a part of the infinite will be infinite, if the infinite is a substance and principle. Therefore it is impartible 5
and indivisible. But this is impossible of the actually infinite, because it must be some quantity. Therefore infinity is an accidental attribute. But if so, as we have said, it cannot be it that is a principle, but that of which it is an accident: air[c] or "the even."[d]

Proofs that the Infinite does not

The foregoing inquiry is general; but what follows will show that the infinite does not exist in

1066 b οὐκ ἔστιν, ἐνθένδε δῆλον· εἰ γὰρ σώματος λόγος τὸ ἐπιπέδοις ὡρισμένον, οὐκ εἴη ἂν ἄπειρον σῶμα, οὔτ' αἰσθητὸν οὔτε νοητόν, οὔτ' ἀριθμὸς ὡς κεχωρισμένος καὶ ἄπειρος· ἀριθμητὸν γὰρ ὁ ἀριθμὸς ἢ τὸ ἔχον ἀριθμόν. φυσικῶς δὲ ἐκ τῶνδε δῆλον· οὔτε γὰρ σύνθετον οἷόν τε εἶναι, οὔθ' ἁπλοῦν. σύνθετον μὲν γὰρ οὐκ ἔσται σῶμα, εἰ[1] πεπέρανται τῷ πλήθει τὰ στοιχεῖα. δεῖ γὰρ ἰσάζειν τἀναντία καὶ μὴ εἶναι ἓν αὐτῶν ἄπειρον· εἰ γὰρ ὁτῳοῦν[2] λείπεται ἡ θατέρου σώματος δύναμις, φθαρήσεται ὑπὸ τοῦ ἀπείρου τὸ πεπερασμένον. ἕκαστον δ' ἄπειρον εἶναι ἀδύνατον· σῶμα γάρ ἐστι τὸ πάντῃ ἔχον διάστασιν, ἄπειρον δὲ τὸ ἀπεράντως διεστηκός, ὥστ' εἰ τὸ ἄπειρον σῶμα, πάντῃ ἔσται ἄπειρον. οὐδὲ ἓν δὲ καὶ ἁπλοῦν ἐνδέχεται τὸ ἄπειρον εἶναι σῶμα, οὔθ' ὡς λέγουσί τινες, παρὰ τὰ στοιχεῖα ἐξ οὗ γεννῶσι ταῦτα (οὐκ ἔστι γὰρ[3] τοιοῦτο σῶμα παρὰ τὰ στοιχεῖα· ἅπαν[4] γὰρ ἐξ οὗ[5] ἐστὶ καὶ διαλύεται εἰς τοῦτο,[6] οὗ φαίνεται δὲ τοῦτο παρ'[7] τὰ ἁπλᾶ σώματα), οὐδὲ πῦρ οὐδ' ἄλλο τι τῶν στοιχείων οὐθέν· χωρὶς γὰρ τοῦ ἄπειρον εἶναί τι αὐτῶν ἀδύνατον τὸ ἅπαν, κἂν ᾖ πεπερασμένον, ἢ εἶναι ἢ γίγνεσθαι ἕν τι αὐτῶν, ὥσπερ Ἡράκλειτός φησιν ἅπαντα γίγνεσθαί ποτε πῦρ. ὁ δ' αὐτὸς λόγος καὶ ἐπὶ τοῦ ἑνός, ὃ ποιοῦσι παρὰ τὰ στοιχεῖα οἱ φυσικοί.

[1] ἐπείπερ A^b.
[2] ὁπωσῳοῦν Physics E, Simplicius (?): ὁπωσοῦν A^b Physics FI Philoponus.
[3] γὰρ τὸ A^b.
[4] ἅπαντα A^b.
[5] ὧν A^b.
[6] ταῦτα A^b.
[7] περὶ EJ.

[a] This is proved in *Physics* I. vi.
[b] *sc.* and so no other body can exist beside it.

sensible things. If the definition of a body is "that which is bounded by surfaces," then no body, whether sensible or intelligible, can be infinite; nor can there be any separate and infinite number, since number or that which involves number is numerable. This is clearly shown by the following concrete argument. The infinite can neither be composite nor simple. For (*a*) it cannot be a composite body if the elements are limited in number[a]; for the contraries must be equal, and no one of them must be infinite; for if the potency of one of the two corporeal elements is in any way inferior, the finite element will be destroyed by the infinite. And every element cannot be infinite, because body is that which has extension in all directions, and the infinite is that which is extended without limit; so that if the infinite is corporeal it will be infinite in all directions.[b] Nor (*b*) can the infinite be any simple body; neither, as some[c] hold, something which is apart from the elements and from which they suppose the elements to be generated (for there is no such body apart from the elements; everything can be resolved into that of which it consists, but we do not see things resolved into anything apart from the simple bodies), nor fire nor any other element. Apart from the question of how any of them could be infinite, the All, even if it is finite, cannot be or become any one of the elements, as Heraclitus says[d] all things at certain times become fire. The same argument applies as to the One which the physicists

6 exist in sensible things.

7

8

9

[c] Anaximander. It seems, however, that by ἄπειρον he meant "indeterminate" or "undifferentiated," although he no doubt regarded this principle as "infinite" as well. *Cf.* notes on I. vii. 3, XII. ii. 3.
[d] *Cf.* frr. 20-22 (Bywater).

1067 a

πᾶν γὰρ μεταβάλλει ἐξ ἐναντίου, οἷον ἐκ θερμοῦ εἰς ψυχρόν.

Ἔτι τὸ αἰσθητὸν σῶμα πού, καὶ ὁ αὐτὸς τόπος ὅλου καὶ μορίου, οἷον τῆς γῆς. ὥστ' εἰ μὲν ὁμοειδές, ἀκίνητον ἔσται ἢ ἀεὶ οἰσθήσεται. τοῦτο δὲ ἀδύνατον· τί γὰρ μᾶλλον κάτω ἢ ἄνω ἢ ὁπουοῦν; οἷον εἰ βῶλος εἴη, ποῦ αὐτῇ κινήσεται ἢ μενεῖ; ὁ γὰρ τόπος τοῦ συγγενοῦς αὐτῇ[1] σώματος ἄπειρος. καθέξει οὖν τὸν ὅλον τόπον; καὶ πῶς; τίς οὖν ἡ μονὴ καὶ ἡ κίνησις; ἢ πανταχοῦ μενεῖ—οὐ κινήσεται[2] ἄρα—ἢ πανταχοῦ κινήσεται[3]—οὐκ ἄρα στήσεται. εἰ δ' ἀνόμοιον τὸ πᾶν, ἀνόμοιοι καὶ οἱ τόποι, καὶ πρῶτον μὲν οὐχ ἓν τὸ σῶμα τοῦ παντὸς ἀλλ' ἢ τῷ ἅπτεσθαι, εἶτα ἢ πεπερασμένα ταῦτ' ἔσται ἢ ἄπειρα εἴδει. πεπερασμένα μὲν οὖν οὐχ οἷόν τε· ἔσται γὰρ τὰ μὲν ἄπειρα τὰ δ' οὔ, εἰ τὸ πᾶν ἄπειρον, οἷον πῦρ ἢ ὕδωρ· φθορὰ δὲ τὸ τοιοῦ-

[1] τοῦ συγγενοῦς αὐτῇ Physics: αὐτῆς τοῦ συγγενοῦς.
[2] κινηθήσεται EJ Physics.
[3] κινήσεται Bekker: κινηθήσεται E Physics: om. A[b]J.

[a] The argument seems to be: Since all change is from contrary to contrary, and it is impossible that either (*a*) one of the elements should be contrary to the rest, or (*b*) one material principle should be contrary to all four elements, it follows that no one element, and similarly that no one material principle apart from the elements, can be the ultimate material principle of the universe.

[b] *i.e.*, the region of the universe which is proper to a given element is proper also to any part of that element. The proper region of earth is the centre, of fire the circumference of the universe. *Cf. De Caelo* I. ii.

[c] Ross is evidently right in taking this to refer to the rest

posit besides the elements; for all change proceeds from the contrary, *e.g.* from hot to cold.[a]

Again, a sensible body is in some region, and the 10
region of the whole and of the part (*e.g.* of the earth) is the same.[b] Therefore if the infinite body is homogeneous, it will be immovable or will always be in motion[c]; but this is impossible, for why should there be rest or motion below rather than above or in any other region? *E.g.*, if there were a clod, in what region would it move or be at rest? The 11
region proper to the body which is homogeneous with the clod is infinite. Then will the clod occupy the whole of that region? How can it? Then what of its rest or motion? It will either rest everywhere—in which case it cannot move—or move everywhere; in which case it cannot rest.[d] And if the whole is not alike throughout, the regions proper to its parts are unlike also; and (*a*) the body of the whole is not one, except in virtue of contact; (*b*) the parts will be either finite or infinite in kind. Finite 12
they cannot be, for then those of one kind would be infinite[e] and those of another would not (if the whole is infinite); *e.g.*, fire or water would be infinite. But such a condition would involve the destruction of the

or motion of the parts. An infinite body cannot move as a whole, because there is no space outside it.

[d] If earth is an infinite body, its region must be infinite. But the infinite has no centre (*cf.* § 13). Therefore a clod, which cannot occupy the whole region proper to earth, will have no region proper to itself to which it can move or in which it can rest.

[e] *sc.* in quantity. If the universe is infinite in quantity, and the elements are limited in kind, some of the elements (or at least one) must be infinite in quantity. But this is impossible, just as it is impossible that all the elements should be infinite in quantity. *Cf.* § 7 above.

1067 a τον τοῖς ἐναντίοις. εἰ δ' ἄπειρα καὶ ἁπλᾶ, καὶ οἱ τόποι ἄπειροι καὶ ἔσται ἄπειρα τὰ στοιχεῖα· εἰ δὲ τοῦτ' ἀδύνατον, καὶ οἱ τόποι πεπερασμένοι, καὶ τὸ πᾶν ἀνάγκη πεπεράνθαι. Ὅλως δ' ἀδύνατον ἄπειρον εἶναι σῶμα καὶ τόπον τοῖς σώμασιν, εἰ πᾶν
25 σῶμα αἰσθητὸν ἢ βάρος ἔχει ἢ κουφότητα. ἢ γὰρ ἐπὶ τὸ μέσον ἢ ἄνω οἰσθήσεται, ἀδύνατον δὲ τὸ ἄπειρον ἢ πᾶν ἢ τὸ ἥμισυ[1] ὁποτερονοῦν πεπονθέναι· πῶς γὰρ διελεῖς; ἢ πῶς τοῦ ἀπείρου ἔσται τὸ μὲν κάτω τὸ δ' ἄνω, ἢ ἔσχατον καὶ μέσον; ἔτι πᾶν σῶμα αἰσθητὸν ἐν τόπῳ, τόπου δὲ εἴδη ἕξ, ἀδύ-
30 νατον δ' ἐν τῷ ἀπείρῳ σώματι ταῦτ' εἶναι. ὅλως δ' εἰ ἀδύνατον τόπον ἄπειρον εἶναι, καὶ σῶμα ἀδύνατον· τὸ γὰρ ἐν τόπῳ πού, τοῦτο δὲ σημαίνει ἢ ἄνω ἢ κάτω ἢ τῶν λοιπῶν τι, τούτων δ' ἕκαστον πέρας τι. Τὸ δ' ἄπειρον οὐ ταὐτὸν ἐν μεγέθει καὶ κινήσει καὶ χρόνῳ ὡς μία τις φύσις, ἀλλὰ
35 τὸ ὕστερον λέγεται κατὰ τὸ πρότερον, οἷον κίνησις κατὰ τὸ μέγεθος ἐφ' οὗ κινεῖται ἢ ἀλλοιοῦται ἢ αὔξεται, χρόνος δὲ διὰ τὴν κίνησιν.

1067 b XI. Μεταβάλλει δὲ τὸ μεταβάλλον τὸ μὲν κατὰ συμβεβηκός, ὡς τὸ μουσικὸν βαδίζει,[2] τὸ δὲ τῷ τούτου τι μεταβάλλειν ἁπλῶς λέγεται μεταβάλλειν, οἷον ὅσα κατὰ μέρη· ὑγιάζεται γὰρ τὸ σῶμα, ὅτι
5 ὁ ὀφθαλμός. ἔστι δέ τι ὃ καθ' αὑτὸ πρῶτον κινεῖται, καὶ τοῦτ' ἐστὶ τὸ καθ' αὑτὸ κινητόν. ἔστι δέ [τι][3] καὶ ἐπὶ τοῦ κινοῦντος ὡσαύτως· κινεῖ

[1] ἡμισυ ἢ A[b]. [2] βαδίζειν E[1]J.
[3] secl. Bonitz; om. Bessarion, Physics.

[a] *se.* in kind or number.
[b] *Cf.* § 6 n.
[c] *Cf.* § 14 n.
[d] *i.e.*, above and below, before and behind, right and left (*Physics* 205 b 31).
[e] *Cf.* V. xiii. 5.

contraries. But if the parts are infinite[a] and simple, the regions proper to them are infinite and the elements will be infinite. And since this is impossible,[b] the regions are finite[c] and the whole must be finite.

In general, there cannot be an infinite body *and* 13
a place for bodies if every body which is sensible has either weight or lightness; for it will have to move either towards the centre or upwards, and the infinite —either the whole or the half—cannot do either; for how can you divide it? How can the infinite be part up and part down, or part extreme and part centre? Further, every sensible body is in some 14
place, and of place there are six kinds,[d] but these cannot exist in an infinite body. In general, if an infinite place is impossible, so is an infinite body; because that which is in a place is somewhere, and this means either up or down or one of the other kinds of place, and each of these is a limit.

The infinite is not the same in the sense that it is 15
one nature whether it applies to magnitude or to motion or to time; the posterior is derived from the prior sense, *e.g.* motion is called infinite in virtue of the magnitude involved when a thing is moved or changed or increased, and time is so called on account of motion.[e]

XI. That which changes either changes accident- Modes of change and motion.
ally, as when "the cultured" walks; or is said to change in general because something in it changes, as in the case of things which change in their parts; the body becomes healthy because the eye does. But there is something which is moved directly *per se*, 2
i.e. the essentially movable. The same applies to that which moves, for it moves sometimes accident-

1067 b γὰρ κατὰ συμβεβηκὸς τὸ δὲ[1] κατὰ μέρος τὸ δὲ καθ' αὑτό· ἔστι δέ τι τὸ κινοῦν πρῶτον· ἔστι δέ τι τὸ κινούμενον· ἔτι ἐν ᾧ[2] χρόνῳ, καὶ ἐξ οὗ, καὶ εἰς ὅ. τὰ δ' εἴδη καὶ τὰ πάθη καὶ ὁ τόπος, εἰς ἃ κινοῦνται τὰ κινούμενα, ἀκίνητά ἐστιν, οἷον ἐπιστήμη καὶ θερμότης· ἔστι δ' οὐχ ἡ θερμότης κίνησις ἀλλ' ἡ θέρμανσις. Ἡ δὲ μὴ κατὰ συμβεβηκὸς μεταβολὴ οὐκ ἐν ἅπασιν ὑπάρχει, ἀλλ' ἐν τοῖς ἐναντίοις καὶ μεταξὺ καὶ ἐν ἀντιφάσει. τούτου δὲ πίστις ἐκ τῆς ἐπαγωγῆς. μεταβάλλει δὲ τὸ μεταβάλλον ἢ ἐξ ὑποκειμένου εἰς ὑποκείμενον, ἢ οὐκ ἐξ ὑποκειμένου εἰς οὐχ ὑποκείμενον, ἢ ἐξ ὑποκειμένου εἰς οὐχ ὑποκείμενον, ἢ οὐκ ἐξ ὑποκειμένου εἰς ὑποκείμενον. λέγω δὲ ὑποκείμενον τὸ καταφάσει δηλούμενον. ὥστ' ἀνάγκη τρεῖς εἶναι μεταβολάς· ἡ γὰρ ἐξ οὐχ ὑποκειμένου εἰς μὴ ὑποκείμενον οὐκ ἔστι μεταβολή· οὔτε γὰρ ἐναντία οὔτε ἀντίφασίς ἐστιν, ὅτι οὐκ ἀντίθεσις. ἡ μὲν οὖν οὐκ ἐξ ὑποκειμένου εἰς ὑποκείμενον κατ' ἀντίφασιν γένεσίς ἐστιν, ἡ μὲν ἁπλῶς ἁπλῆ, ἡ δὲ τινὸς τίς· ἡ δ' ἐξ ὑποκειμένου εἰς μὴ ὑποκείμενον φθορά, ἡ μὲν ἁπλῶς ἁπλῆ, ἡ δὲ τινὸς τίς. εἰ δὴ τὸ μὴ ὂν λέγεται πλεοναχῶς, καὶ μήτε τὸ κατὰ σύνθεσιν ἢ διαίρεσιν ἐνδέχεται κινεῖσθαι, μήτε τὸ κατὰ δύναμιν τὸ τῷ ἁπλῶς ὄντι ἀντικείμενον (τὸ γὰρ μὴ λευκὸν ἢ μὴ ἀγαθὸν ὅμως ἐνδέχεται κινεῖσθαι κατὰ συμβεβηκός· εἴη γὰρ ἂν

[1] μὲν EJ. [2] ἔτι ἐν ᾧ] ἔν τινι A^b.

[a] The change from positive to positive is omitted here (but *cf.* § 7). Aristotle no doubt intended to use it as an example of non-substantial change, *e.g.* from "poor man" to "rich man"; but since this can be regarded as change from "poor man" to "not-poor man," or "not-rich man"

ally, sometimes partially, and sometimes *per se*. There is something that moves directly, and something that is moved; and also a time in which, and something from which, and something into which it is moved. But the forms and modifications and place into which moving things are moved are immovable; *e.g.* knowledge and warmth. It is not warmth that is motion, but the process of warming.

Non-accidental change is not found in all things, 3
but only between contraries and intermediates and contradictories. We can convince ourselves of this by means of induction. That which changes changes either from positive into positive, or from negative into negative, or from positive into negative, or from negative into positive. By "positive" I mean that 4
which is denoted by an affirmation. Thus there must be three forms of change; for that which is from negative into negative is not change, because they are neither contraries nor contradictories, since they entail no opposition. The change from the negative into its contradictory positive is generation —absolute change absolute generation, and qualified change qualified generation; and the change from the positive to the negative is destruction—absolute change absolute destruction, and qualified change qualified destruction.[a] Now if "what is not" has 5
several meanings, and neither that which implies a combination or separation of terms,[b] nor that which relates to potentiality and is opposed to unqualified Being, admits of motion ("not-white" or "not-good," however, admits of motion accidentally,

to "rich man," he includes it as a qualified type of substantial change.

[b] *i.e.*, falsity. *Cf.* IX. x. 1.

1067 b
ἄνθρωπος τὸ μὴ λευκόν· τὸ δ' ἁπλῶς μὴ τόδε οὐδαμῶς), ἀδύνατον τὸ[1] μὴ ὂν κινεῖσθαι· εἰ δὲ τοῦτο, καὶ τὴν γένεσιν κίνησιν εἶναι· γίγνεται γὰρ τὸ μὴ ὄν. εἰ γὰρ καὶ ὅτι μάλιστα κατὰ συμβεβηκὸς γίγνεται, ἀλλ' ὅμως ἀληθὲς εἰπεῖν ὅτι ὑπάρχει τὸ μὴ ὂν κατὰ τοῦ γιγνομένου ἁπλῶς. ὁμοίως δὲ καὶ τὸ ἠρεμεῖν. ταῦτά τε δὴ συμβαίνει δυσχερῆ, καὶ εἰ πᾶν τὸ κινούμενον ἐν τόπῳ, τὸ δὲ μὴ ὂν οὐκ ἔστιν ἐν τόπῳ· εἴη γὰρ ἂν πού. οὐδὲ δὴ ἡ φθορὰ κίνησις· ἐναντίον γὰρ κινήσει
1068 a κίνησις ἢ ἠρεμία, φθορὰ δὲ γενέσει. ἐπεὶ δὲ πᾶσα κίνησις μεταβολή τις, μεταβολαὶ δὲ τρεῖς αἱ εἰρημέναι, τούτων δ' αἱ κατὰ γένεσιν καὶ φθορὰν οὐ κινήσεις, αὗται δ' εἰσὶν αἱ κατ' ἀντίφασιν, ἀνάγκη τὴν ἐξ ὑποκειμένου εἰς ὑποκείμενον κίνησιν
5 εἶναι μόνην. τὰ δ' ὑποκείμενα ἢ ἐναντία ἢ μεταξύ (καὶ γὰρ ἡ στέρησις κεῖσθω ἐναντίον), καὶ δηλοῦται καταφάσει, οἷον τὸ γυμνὸν καὶ νωδὸν καὶ[2] μέλαν.

XII. Εἰ οὖν αἱ κατηγορίαι διῄρηνται οὐσίᾳ, ποιότητι, τόπῳ, τῷ ποιεῖν ἢ πάσχειν, τῷ πρός τι,
10 τῷ ποσῷ, ἀνάγκη τρεῖς εἶναι κινήσεις, ποιοῦ, ποσοῦ, τόπου· κατ' οὐσίαν δ' οὔ, διὰ τὸ μηθὲν εἶναι οὐσίᾳ ἐναντίον, οὐδὲ τοῦ πρός τι· ἔστι γὰρ

[1] τὸ JT Themistius: γὰρ τὸ EA^{b}Γ Physics. [2] καὶ τὸ EJ.

[a] § 3.

[b] Aristotle generally distinguishes eight categories (originally ten, but he seems to have abandoned κεῖσθαι "position" and ἔχειν "state" at an early date); here he omits "time" as being relative to motion (it is that by which motion can be numerically estimated; *cf.* XII. vi. 2, *Physics* 219 b 1) and therefore neither the subject nor the terminus of motion. *Cf.* Ross *ad loc.*

because "not-white" may be a man; but that which is "not so-and-so" in an absolute sense does not admit of it at all), then "what is not" cannot be moved. If this is so, generation cannot be motion; for it is "what is not" that is generated. For even 6
if the generation is in the highest degree accidental, still it is true to say that not-being is predicable of that which is generated absolutely. And the argument applies similarly to rest. Thus not only do these difficult conclusions follow, but also that everything which is moved is in a place, whereas "what is not" is not in a place; for then it would *be* somewhere. Nor is destruction motion; for the contrary of motion is motion or rest, but the contrary of destruction is generation. And since every motion is a kind 7
of change, and the three kinds of change are those which we have described,[a] and of these those which relate to generation and destruction are not motions, and these are the changes between contradictories, the change from positive to positive must alone be motion. The subjects are either contraries or intermediates (for privative terms may also be regarded as contraries) and are denoted by a positive term—*e.g.* "naked" or "toothless" or "black."

XII. Now since the categories are distinguished as substance, quality, place, activity or passivity, relation and quantity,[b] there must be three kinds of motion, in respect of quality, quantity and place. There is no motion[c] in respect of substance, because substance has no contrary; nor of the relative,

There are three kinds of motion or change—of quality, quantity and place.

[c] There is, however, change in respect of substance (generation and destruction), but this is between contradictories and is not motion in the strict sense. *Cf.* xi. 6, and § 4 below. The distinction between motion and change is not always maintained.

1068 a θατέρου μεταβάλλοντος μὴ[1] ἀληθεύεσθαι θάτερον μηδὲν μεταβάλλον, ὥστε κατὰ συμβεβηκὸς ἡ κίνησις αὐτῶν· οὐδὲ ποιοῦντος καὶ πάσχοντος, ἢ κινοῦντος καὶ κινουμένου, ὅτι οὐκ ἔστι κινήσεως κίνησις οὐδὲ γενέσεως γένεσις, οὐδ' ὅλως μεταβολῆς μεταβολή. διχῶς γὰρ ἐνδέχεται κινήσεως εἶναι κίνησιν, ἢ ὡς ὑποκειμένου (οἷον ὁ ἄνθρωπος κινεῖται ὅτι ἐκ λευκοῦ εἰς μέλαν μεταβάλλει, ὥστε οὕτω καὶ ἡ κίνησις ἢ θερμαίνεται ἢ ψύχεται ἢ τόπον ἀλλάττει ἢ αὔξεται· τοῦτο δὲ ἀδύνατον· οὐ γὰρ τῶν ὑποκειμένων τι ἡ μεταβολή), ἢ τῷ ἕτερόν τι ὑποκείμενον ἐκ μεταβολῆς μεταβάλλειν εἰς ἄλλο εἶδος, οἷον ἄνθρωπον ἐκ νόσου εἰς ὑγίειαν. ἀλλ' οὐδὲ τοῦτο δυνατὸν πλὴν κατὰ συμβεβηκός. πᾶσα γὰρ κίνησις ἐξ ἄλλου εἰς ἄλλο ἐστὶ μεταβολή, καὶ γένεσις καὶ φθορὰ ὡσαύτως· πλὴν αἱ μὲν εἰς ἀντικείμενα ὧδί, ἡ δ' ὧδί,[2] ἡ κίνησις.[3] ἅμα οὖν μεταβάλλει ἐξ ὑγιείας εἰς νόσον, καὶ ἐξ αὐτῆς ταύτης τῆς μεταβολῆς εἰς ἄλλην. δῆλον δὴ ὅτι ἂν νοσήσῃ, μεταβεβληκὸς ἔσται εἰς ὁποιανοῦν (⟨οὐκ⟩[4] ἐνδέχεται γὰρ ἠρεμεῖν), καὶ ἔτι εἰς μὴ τὴν τυχοῦσαν ἀεί· κἀκείνη ἔκ τινος εἴς τι ἄλλο ἔσται· ὥσθ' ἡ ἀντικειμένη ἔσται, ὑγίανσις, ἀλλὰ τῷ συμβεβηκέναι, οἷον ἐξ ἀναμνήσεως εἰς λήθην μετα-

[1] *μεταβάλλοντος μὴ* ut uid. Alexander, Themistius, Schwegler: *μετ. μηδὲν* A^b: *μηθὲν μετ.* EJ: *μεταβάλλοντος* Bessarion, Physics, Simplicius.
[2] *ἡ δ' ὧδί* A^b Simplicius: *ἢ ὧδί* EJ Philoponus Physics E^2: om. Physics FHI.
[3] *ἡ κίνησις* A^b Physics E Simplicius: *ἡ δὲ κίνησις* Physics H: *ἡ δὲ κίνησις οὐχ ὁμοίως* Physics FI: *οὐ κινήσεις* EJ.
[4] *οὐκ* ci. Ross.

because it is possible that when one of two related things changes the relation to it of the other thing, even though the thing itself does not change, may become untrue; therefore the motion of these related things is accidental. Nor is there motion 2
of the agent or patient, or of the mover and the thing moved, because there is no motion of motion nor generation of generation, nor in general is there change of change. There are two ways in which there might be motion of motion: (1) Motion might be the subject of motion, as, *e.g.*, a man is moved because he changes from white to black; in this way motion might be heated or cooled or might change its place or increase. But this is impossible, 3
because the change is not a subject. Or (2) some other subject might change from change to some other form of existence, as, *e.g.*, a man changes from sickness to health. But this is also impossible except accidentally. Every motion is a change from one 4
thing into something else; and the same is true of generation and destruction, except that these are changes into opposites in one sense,[a] while the other, *i.e.* motion, is a change into opposites in another sense.[b] Hence a thing changes at the same time from health to sickness, and from this change itself into another. Now clearly if it has fallen ill it will 5
be already changed (for it cannot remain at rest) into that other change, whatever it may be; and further this cannot be, in any given case, any chance change; and it also must be from something into something else. Therefore it will be the opposite change, viz. becoming healthy. But this is so accidentally; just as there is change from recollect-

There can be no motion of motion, or change of change. First proof.

[a] *sc.* contradictories. [b] *sc.* contraries.

1068 a βάλλει ὅτι ᾧ ὑπάρχει ἐκεῖνο μεταβάλλει, ὁτὲ μὲν εἰς ἐπιστήμην ὁτὲ δὲ εἰς ἄγνοιαν.[1] Ἔτι εἰς ἄπειρον βαδιεῖται, εἰ ἔσται μεταβολῆς μεταβολὴ καὶ γενέσεως γένεσις. ἀνάγκη δὴ καὶ τὴν προτέραν, 1068 b εἰ ἡ ὑστέρα· οἷον εἰ ἡ ἁπλῆ γένεσις ἐγίγνετό ποτε, καὶ τὸ γιγνόμενον ἐγίγνετο[2]· ὥστε οὔπω ἦν τὸ γιγνόμενον ἁπλῶς, ἀλλά τι γιγνόμενον [ἤ] γιγνόμενον[3] ἤδη.[4] καὶ τοῦτ' ἐγίγνετό ποτε, ὥστ' οὐκ ἦν πω τότε γιγνόμενον. ἐπεὶ δὲ τῶν ἀπείρων οὐκ ἔστι τι πρῶτον, οὐκ ἔσται τὸ πρῶτον, ὥστ' οὐδὲ τὸ ἐχόμενον. οὔτε γίγνεσθαι οὖν οὔτε κινεῖσθαι οἷόν τε οὔτε μεταβάλλειν οὐδέν. Ἔτι τοῦ αὐτοῦ κίνησις ἡ ἐναντία καὶ ἠρέμησις, καὶ γένεσις καὶ φθορά· ὥστε τὸ γιγνόμενον, ὅταν γένηται γιγνόμενον, τότε φθείρεται· οὔτε γὰρ εὐθὺς γιγνόμενον οὔθ' ὕστερον· εἶναι γὰρ δεῖ τὸ φθειρόμενον. Ἔτι δεῖ ὕλην ὑπεῖναι τῷ γιγνομένῳ καὶ μεταβάλλοντι. τίς οὖν ἔσται;—ὥσπερ τὸ ἀλλοιωτὸν σῶμα ἢ ψυχή, οὕτω τί τὸ γιγνόμενον κίνησις ἢ γένεσις; καὶ ἔτι

[1] Smith: ὑγίειαν codd., Physics.
[2] ἁπλῶς ἐγίγνετο A^b.
[3] τι γιγνόμενον γιγνόμενον Bonitz: τι γιγνόμενον ἢ γενόμενον E: τι γιγνόμενον ἁπλῶς ἢ γενόμενον J: τι γιγνόμενον καὶ γιγνόμενον Physics Fl: γιγνόμενόν τι ἢ γινόμενον A^b: γιγνόμενον τὸ Physics E.
[4] ἤδη A^b Physics: εἰ δὴ EJ.

[a] *sc.* which is absurd.
[b] That which comes to be must cease to be, and it can cease to be only when it exists. Therefore if that which comes to be comes to be coming to be, it must cease to be when it

ing to forgetting because the *subject* changes, now in the direction of knowledge and now in that of ignorance.

Further, we shall have an infinite series if there is 6
to be change of change and becoming of becoming, Second proof.
because if the latter of two becomings comes to be from the former, the former must come to be too. *E.g.*, if simple becoming was once coming to be, that which comes to be something was also once coming to be. Therefore that which simply comes to be was not yet, but there was already something coming to be coming to be something. But this too was at one 7
time coming to be, and therefore it was not at that time coming to be something. But in infinite series there is no first term, and therefore in this series the first term cannot exist, nor can any subsequent term. Therefore nothing can be either generated or moved or changed.

Further, the same thing which admits of motion Third proof
admits also of the contrary motion and of rest, and that which admits of generation admits also of destruction. Therefore that which comes to be, 8
when it has come to be coming to be, is then in course of perishing [a]; for it does not perish as soon as it is coming to be coming to be, nor afterwards, because that which is perishing must *exist*.[b]

Further, there must be some matter underlying Fourth proof.
that which is coming to be or changing. What then will it be? What is it that becomes motion or generation in the same way as it is body or soul that undergoes change? And moreover what is

is coming to be; before this it does not exist, but is only coming to be coming to be, and after this it is not "that which comes to be" but "that which has come to be."

1068 b τί εἰς ὃ κινοῦνται; δεῖ γὰρ εἶναι τὴν τοῦδε ἐκ τοῦδε εἰς τόδε κίνησιν ἢ γένεσιν.[1] πῶς οὖν; οὐ γὰρ ἔσται μάθησις τῆς μαθήσεως, ὥστ' οὐδὲ γένεσις γενέσεως. Ἐπεὶ δ' οὔτ' οὐσίας οὔτε τοῦ πρός τι οὔτε τοῦ ποιεῖν καὶ πάσχειν, λείπεται κατὰ τὸ ποιὸν καὶ ποσὸν καὶ τόπον κίνησιν εἶναι· τούτων γὰρ ἑκάστῳ ἐναντίωσις ἔστιν. λέγω δὲ τὸ ποιὸν οὐ τὸ ἐν τῇ οὐσίᾳ (καὶ γὰρ καὶ ἡ διαφορὰ ποιόν) ἀλλὰ τὸ παθητικὸν καθ' ὃ λέγεται πάσχειν ἢ ἀπαθὲς εἶναι. τὸ δὲ ἀκίνητον τό τε ὅλως ἀδύνατον κινηθῆναι καὶ τὸ μόλις ἐν χρόνῳ πολλῷ ἢ βραδέως ἀρχόμενον, καὶ τὸ πεφυκὸς μὲν κινεῖσθαι, μὴ δυνάμενον[2] δὲ ὅτε πέφυκε καὶ οὗ καὶ ὡς· ὃ καλῶ ἠρεμεῖν τῶν ἀκινήτων μόνον· ἐναντίον γὰρ ἠρεμία κινήσει, ὥστε στέρησις ἂν εἴη τοῦ δεκτικοῦ.

"Αμα κατὰ τόπον ὅσα ἐν ἑνὶ τόπῳ πρώτῳ, καὶ χωρὶς ὅσα ἐν ἄλλῳ. ⟨ἐναντίον κατὰ τόπον τὸ κατ' εὐθεῖαν ἀπέχον πλεῖστον.⟩[3] ἅπτεσθαι δὲ ὧν τὰ ἄκρα ἅμα. μεταξὺ δ' εἰς ὃ πέφυκε πρότερον

[1] ἢ γένεσιν Physics E²HI Alexander Simplicius: μὴ κίνησιν codd. γρ. Alexander: καὶ μὴ κίνησιν Physics E¹: μὴ κίνησιν ἢ γένεσιν Physics F: μὴ κίνησιν ἁπλῶς Lasson.

[2] μὴ δυνάμενον] καὶ δυνάμενον, μὴ κινούμενον Physics.

[3] ἐναντίον . . . πλεῖστον hic posui: habent codd. post μεταβάλλον l. 30.

---

[a] *Cf.* V. xiv.

[b] *i.e.*, when they occupy one place to the exclusion of anything else. *Cf. Physics* 209 a 33-b 1.

[c] I have transferred this sentence from the end of the section, where it is placed in the text, on the ground that it fits more naturally here. I suspect that it, like the displaced portion of § 13, was originally a marginal note which was later inserted in the body of the text, but in the wrong position.

that which is the terminus of the motion? For that which we are considering must be a motion or generation *of* A *from* B *into* C. How then can these conditions be fulfilled? There can be no learning of learning, and therefore there can be no generation of generation. 9

Since there is no motion of substance or of the relative or of activity and passivity, it remains that there is motion in respect of quality, quantity and place; for each of these admits of contrariety. By "quality" I mean not that which is in the substance (for indeed even the differentia is a quality), but the passive quality in virtue of which a thing is said to be acted upon or to be immune from being acted upon.[a] The immovable is either that which is wholly incapable of being moved, or that which is scarcely moved in the course of a long time or is slow in starting, or that which would naturally be moved but cannot be moved at the time when and from the place whence and in the way in which it would naturally be moved. This last is the only kind of immovable thing which I recognize as being at rest; for rest is contrary to motion, and so must be a privation of that which admits of motion. 10

Motion is in respect of quality, quantity and place.

Things are "together in place" which are in the primary sense[b] in one place, and "separate" which are in different places. "Contrary in place" is that which is at a maximum distance in a straight line.[c] Things are said to be "in contact" whose extremes are together in place. An "intermediate" is that at which a changing thing which changes 11

Various definitions.

1068 b 29 ἀφικνεῖσθαι τὸ μεταβάλλον ἢ εἰς ὃ ἔσχατον μετα-
30 βάλλει κατὰ φύσιν τὸ συνεχῶς μεταβάλλον. ⟨ἐπεὶ
(1069 a) 3 δὲ πᾶσα μεταβολὴ ἐν τοῖς ἀντικειμένοις, ταῦτα δὲ
4 τά τ' ἐναντία καὶ ἀντίφασις, ἀντιφάσεως δὲ οὐδὲν
5 ἀνὰ μέσον, δῆλον ὡς ἐν τοῖς ἐναντίοις τὸ μεταξύ.⟩[1]
ἑξῆς δὲ οὗ μετὰ τὴν ἀρχὴν ὄντος, θέσει ἢ εἴδει ἢ
1068 b) 32 ἄλλως πως ἀφορισθέντος, μηθὲν μεταξύ ἐστι τῶν
33 ἐν ταὐτῷ γένει καὶ οὗ ἐφεξῆς ἐστίν, οἷον γραμμαὶ
34 γραμμῆς ἢ μονάδες μονάδος ἢ οἰκίας οἰκία· ἄλλο
35 δ' οὐθὲν κωλύει μεταξὺ εἶναι· τὸ γὰρ ἑξῆς τινὸς
1069 a ἐφεξῆς καὶ ὕστερόν τι· οὐ γὰρ τὸ ἓν ἑξῆς τῶν
2 δύο, οὐδ' ἡ νουμηνία τῆς δευτέρας. ἐχόμενον δὲ
ὃ ἂν ἑξῆς ὂν ἅπτηται. τὸ δὲ συνεχὲς ὅπερ ἐχό-
6 μενόν τι. λέγω[2] δὲ συνεχὲς ὅταν ταὐτὸ γένηται
καὶ ἓν τὸ ἑκατέρου πέρας οἷς ἅπτονται καὶ συν-
έχονται, ὥστε δῆλον ὅτι τὸ συνεχὲς ἐν τούτοις ἐξ ὧν
ἕν τι πέφυκε γίγνεσθαι κατὰ τὴν σύναψιν. Καὶ
10 ὅτι πρῶτον τὸ ἐφεξῆς, δῆλον· τὸ γὰρ ἐφεξῆς[3] οὐχ
ἅπτεται, τοῦτο δ' ἐφεξῆς· καὶ εἰ συνεχές, ἅπτεται,
εἰ δ' ἅπτεται, οὔπω συνεχές. ἐν οἷς δὲ μή ἐστιν
ἁφή, οὐκ ἔστι σύμφυσις ἐν τούτοις. ὥστ' οὐκ
ἔστι στιγμὴ μονάδι ταὐτόν· ταῖς μὲν γὰρ ὑπάρχει
τὸ ἅπτεσθαι, ταῖς δ' οὔ, ἀλλὰ τὸ ἐφεξῆς· καὶ τῶν
μὲν μεταξύ τι, τῶν δ' οὔ.

[1] ἐπεὶ δὲ . . . μεταξύ hic ponenda ci. Prantl.
[2] λέγω] ἢ ἁπτόμενον. λέγεται A[b].
[3] ἑξῆς EJ.

[a] I have followed Prantl's suggestion in transferring this sentence from the end of § 13.
[b] *i.e.*, the first day of the month.

continuously in accordance with its nature naturally arrives before it arrives at the extreme into which it is changing. Since all change takes place between (13) opposites, and these are either contraries or contradictories, and contradictories have no middle term, clearly it is to the sphere of contraries that the intermediate belongs.[a] "Successive" is that which 12 comes after the beginning (the order being determined by position or form or in some other way) and has nothing of the same class between itself and that which it succeeds; *e.g.* lines in the case of a line, and units in that of a unit, and a house in the case of a house (but there is nothing to prevent something else from coming between). For that which is successive is a thing which is successive and posterior to some other thing. 1 is not successive to 2, nor is the new moon[b] to the second day of the month. "Contiguous" is that which is successive 13 and in contact. The "continuous" is a species of the contiguous. I call two things continuous when 14 their respective boundaries, by which they are kept together in contact, become one and the same; hence clearly the continuous belongs to the sphere of things whose nature it is to become one by contiguity.

Clearly "successive" is the most ultimate term; for the successive need not be in contact, but contact implies succession; and if there is continuity there is contact, but if there is contact there is not necessarily continuity; and where there is no con- 15 tact there is no coalescence. Therefore a point is not the same as a unit; for points admit of contact, whereas units do not, but only of succession; and between points there is something intermediate, but between units there is not.

Λ

1069 a

I. Περὶ τῆς οὐσίας ἡ θεωρία· τῶν γὰρ οὐσιῶν αἱ ἀρχαὶ καὶ τὰ αἴτια ζητοῦνται. καὶ γὰρ εἰ ὡς ὅλον τι τὸ πᾶν, ἡ οὐσία πρῶτον μέρος· καὶ εἰ τῷ ἐφεξῆς, κἂν οὕτω πρῶτον ἡ οὐσία, εἶτα τὸ ποιόν, εἶτα τὸ ποσόν. ἅμα δ' οὐδ' ὄντα ὡς εἰπεῖν ἁπλῶς ταῦτα,[1] ἀλλὰ ποιότητες καὶ κινήσεις, ἢ[2] καὶ τὸ οὐ λευκὸν καὶ τὸ οὐκ εὐθύ· λέγομεν γοῦν εἶναι καὶ ταῦτα, οἷον "ἔστιν οὐ λευκόν." ἔτι οὐδὲν τῶν ἄλλων χωριστόν. μαρτυροῦσι δὲ καὶ οἱ ἀρχαῖοι ἔργῳ· τῆς γὰρ οὐσίας ἐζήτουν ἀρχὰς καὶ στοιχεῖα καὶ αἴτια. οἱ μὲν οὖν νῦν τὰ καθόλου οὐσίας μᾶλλον τιθέασιν· τὰ γὰρ γένη καθόλου, ἃ φασιν ἀρχὰς καὶ οὐσίας εἶναι μᾶλλον διὰ τὸ λογικῶς ζητεῖν· οἱ δὲ πάλαι τὰ καθ' ἕκαστα,[3] οἷον πῦρ καὶ γῆν, ἀλλ' οὐ τὸ κοινὸν σῶμα. Οὐσίαι δὲ τρεῖς, μία μὲν αἰσθητή—ἧς ἡ μὲν ἀΐδιος ἡ δὲ φθαρτή, ἣν πάντες ὁμολογοῦσιν, οἷον τὰ φυτὰ καὶ τὰ ζῷα [ἡ δ' ἀΐδιος][4]—ἧς ἀνάγκη τὰ στοιχεῖα λαβεῖν, εἴτε ἓν εἴτε πολλά· ἄλλη δὲ ἀκίνητος, καὶ ταύτην φασί τινες

[1] τἄλλα A[b] γρ. E Themistius.
[2] ἢ EA[b]Γ Themistius. [3] ἕκαστον EJ.
[4] om. Themistius, Alexander apud Averroem.

[a] *Cf.* ch. x. 14, XIV. iii. 9.
[b] Platonists. [c] *i.e.*, the celestial bodies.

BOOK XII

Book XII. Substance, and especially non-sensible substance.

Substance is the primary reality.

I. Our inquiry is concerned with substance; for it is the principles and causes of substances that we are investigating. Indeed if the universe is to be regarded as a whole, substance is its first part; and if it is to be regarded as a succession,[a] even so substance is first, then quality, then quantity. Moreover, the latter hardly exist at all in the full sense, but are merely qualifications and affections of Being. Otherwise "not-white" and "not-straight" would also exist; at any rate we say that they too "are," *e.g.*, "it is not white." Further, none of the other 2
categories is separately existent. Even the ancients in effect testify to this, for it was of substance that they sought the principles and elements and causes. Present-day thinkers[b] tend to regard universals as substance, because genera are universal, and they hold that these are more truly principles and substances because they approach the question theoretically; but the ancients identified substance with particular things, *e.g.* fire and earth, and not with body in general.

Now there are three kinds of substance. One is 3
sensible (and may be either eternal[c] or perishable; the latter, *e.g.* plants and animals, is universally recognized); of this we must apprehend the elements, whether they are one or many. Another is 4

Substance may be (a) sensible; and eternal

1069 a
35 εἶναι[1] χωριστήν, οἱ μὲν εἰς δύο διαιροῦντες, οἱ δὲ εἰς
μίαν φύσιν τιθέντες τὰ εἴδη καὶ τὰ μαθηματικά, οἱ
δὲ τὰ μαθηματικὰ μόνον τούτων. ἐκεῖναι μὲν δὴ
1069 b φυσικῆς (μετὰ κινήσεως γάρ), αὕτη δ' ἑτέρας, εἰ
μηδεμία αὐτοῖς ἀρχὴ κοινή. Ἡ δ' αἰσθητὴ οὐσία
μεταβλητή. εἰ δ' ἡ μεταβολὴ ἐκ τῶν ἀντικειμέ-
5 νων ἢ τῶν μεταξύ, ἀντικειμένων δὲ μὴ πάντων (οὐ
λευκὸν γὰρ ἡ φωνή) ἀλλ' ἐκ τοῦ ἐναντίου, ἀνάγκη
ὑπεῖναί τι τὸ μεταβάλλον εἰς τὴν ἐναντίωσιν· οὐ
γὰρ τὰ ἐναντία μεταβάλλει.

II. Ἔτι τὸ μὲν ὑπομένει, τὸ δ' ἐναντίον οὐχ
ὑπομένει· ἔστιν ἄρα τι τρίτον παρὰ τὰ ἐναντία, ἡ
10 ὕλη. εἰ δὴ αἱ μεταβολαὶ τέτταρες, ἢ κατὰ τὸ τί[2] ἢ
κατὰ τὸ ποιὸν ἢ ποσὸν ἢ ποῦ, καὶ γένεσις μὲν ἡ
ἁπλῆ καὶ φθορὰ ἡ κατὰ τόδε, αὔξησις δὲ καὶ φθίσις
ἡ κατὰ τὸ ποσόν, ἀλλοίωσις δὲ ἡ κατὰ τὸ πάθος,
φορὰ δὲ ἡ κατὰ τόπον, εἰς ἐναντιώσεις ἂν εἶεν
τὰς καθ' ἕκαστον αἱ μεταβολαί. ἀνάγκη δὴ μετα-
15 βάλλειν τὴν ὕλην δυναμένην ἄμφω· ἐπεὶ δὲ διττὸν
τὸ ὄν, μεταβάλλει πᾶν ἐκ τοῦ δυνάμει ὄντος εἰς τὸ
ἐνεργείᾳ ὄν, οἷον ἐκ λευκοῦ δυνάμει εἰς τὸ ἐνεργείᾳ
λευκόν (ὁμοίως δὲ καὶ ἐπ' αὐξήσεως καὶ φθίσεως)·
ὥστε οὐ μόνον κατὰ συμβεβηκὸς ἐνδέχεται γίγνε-
σθαι ἐκ μὴ ὄντος, ἀλλὰ καὶ ἐξ ὄντος γίγνεται πάντα,

[1] φασί τινες εἶναι] τινὲς εἶναί φασι A^b.
[2] τί scripsi: τι.

[a] These three views were held respectively by Plato, Xenocrates and Speusippus. *Cf.* VII. ii. 3, 4; XIII. i. 4, and see Vol. I. Introd. p. xxiv.
[b] *Cf.* X. vii.
[c] *i.e.*, contrary qualities. *Cf.* VIII. v. 1.

immutable, which certain thinkers hold to exist separately; some dividing it into two classes, others combining the Forms and the objects of mathematics into a single class, and others recognizing only the objects of mathematics as of this nature.[a] The first two kinds of substance come within the scope of physics, since they involve motion; the last belongs to some other science, if there is no principle common to all three.

(*b*) sensible and perishable; (*c*) non-sensible and immutable.

Sensible substance is liable to change. Now if 5
change proceeds from opposites or intermediates—not however from all opposites (for speech is not white), but only from the contrary[b]—then there must be something underlying which changes into the opposite contrary; for the contraries[c] do not change.

Sensible substance is liable to change, which implies matter

II. Further, something persists, whereas the contrary does not persist. Therefore besides the contraries there is some third thing, the *matter*. Now if change is of four kinds, in respect either of substance or of quality or of quantity or of place, and if change of substance is generation or destruction in the simple sense, and change of quantity is increase or decrease, and change of affection is alteration, and change of place is locomotion, then changes must be in each case into the corresponding contrary state. It must 2
be the matter, then, which admits of both contraries, that changes. And since "that which is" is twofold, everything changes from that which is potentially to that which is actually; *e.g.* from potentially white to actually white. The same applies to increase and decrease. Hence not only may there be generation accidentally from that which is not, but also everything is generated from that which is, but is poten-

The four kinds of change.

1069 b
δυνάμει μέντοι ὄντος, ἐκ μὴ ὄντος δὲ ἐνεργείᾳ. καὶ τοῦτ' ἔστι τὸ 'Αναξαγόρου ἕν· βέλτιον γὰρ ἢ "ὁμοῦ πάντα"—καὶ 'Εμπεδοκλέους τὸ μῖγμα καὶ 'Αναξιμάνδρου, καὶ ὡς Δημόκριτός φησιν—"ἦν ὁμοῦ πάντα δυνάμει, ἐνεργείᾳ δ' οὔ"· ὥστε τῆς ὕλης ἄν εἶεν ἡμμένοι. πάντα δ' ὕλην ἔχει ὅσα μεταβάλλει, ἀλλ' ἑτέραν· καὶ τῶν ἀϊδίων ὅσα μὴ γενητὰ[1] κινητὰ δὲ φορᾷ, ἀλλ' οὐ γενητήν,[1] ἀλλὰ ποθὲν ποί. 'Απορήσειε δ' ἄν τις ἐκ ποίου μὴ ὄντος ἡ γένεσις· τριχῶς γὰρ τὸ μὴ ὄν. εἰ δή τι ἔστι δυνάμει, ἀλλ' ὅμως οὐ τοῦ τυχόντος, ἀλλ' ἕτερον ἐξ ἑτέρου. οὐδ' ἱκανὸν ὅτι ὁμοῦ πάντα χρήματα· διαφέρει γὰρ τῇ ὕλῃ, ἐπεὶ διὰ τί ἄπειρα ἐγένετο ἀλλ' οὐχ ἕν; ὁ γὰρ νοῦς εἷς, ὥστ' εἰ καὶ ἡ ὕλη μία, ἐκεῖνο ἐγένετο ἐνεργείᾳ οὗ ἡ ὕλη ἦν δυνάμει. τρία δὴ τὰ αἴτια καὶ τρεῖς αἱ ἀρχαί, δύο μὲν ἡ ἐναντίωσις, ἧς τὸ μὲν λόγος καὶ εἶδος τὸ δὲ στέρησις, τὸ δὲ τρίτον ἡ ὕλη.

III. Μετὰ ταῦτα ὅτι οὐ γίγνεται οὔτε ἡ ὕλη οὔτε τὸ εἶδος, λέγω δὲ τὰ ἔσχατα. πᾶν γὰρ μεταβάλλει

[1] γεννητὰ . . . γεννητήν Ab.

[a] Fr. 1 (Diels).

[b] In this passage I follow Ross's punctuation and interpretation, which seem to me to be certainly right. Anaxagoras's undifferentiated infinity of homoeomerous particles (although contrasted with the unifying principle of Mind, *cf.* I. viii. 14) can be regarded as in a sense a unity. Again, μῖγμα (as Ross points out) in its Aristotelian sense of "complete fusion" is a fair description of Anaximander's "indeterminate." The general meaning of the passage is that in each of the systems referred to the material principle in its elemental state should have been described as existing only potentially.

[c] *Cf.* ch. i. 3. VIII. i. 7, 8.

tially and is not actually. And this is the "one" of Anaxagoras; for his "all things were together,"[a] and the "mixture" of Empedocles and Anaximander and the doctrine of Democritus would be better expressed as "all things were together potentially, but not actually."[b] Hence these thinkers must have had some conception of matter. All things which change have matter, but different things have different kinds; and of eternal things such as are not generable but are movable by locomotion have matter; matter, however, which admits not of generation, but of motion from one place to another.[c] 3 4 Different things have different kinds of matter.

One might raise the question from what sort of "not-being" generation takes place; for not-being has three senses.[d] If a thing exists through a potentiality, nevertheless it is not through a potentiality for any chance thing; different things are derived from different things. Nor is it satisfactory to say that "all things were together," for they differ in their matter, since otherwise why did they become an infinity and not one? For Mind is one; so that if matter is also one, only that could have come to be in actuality whose matter existed potentially. The causes and principles, then, are three; two being the pair of contraries, of which one is the formula or form and the other the privation, and the third being the matter.[e] 5 There are three principles: form, privation, matter

III. We must next observe[f] that neither matter nor form (I mean in the proximate sense) is generated. Generation of substance.

[d] *i.e.*, (1) the negation of a category, (2) falsity, (3) unrealized potentiality. *Cf.* XIV. ii. 10.

[e] This classification is found in *Physics* I. vi., vii., but is foreign to the main treatise of the *Metaphysics*. See Vol. I. Introd. p. xxviii.

[f] See Vol. I. Introd. p. xxxii.

1070 a τι καὶ ὑπό τινος καὶ εἴς τι· ὑφ' οὗ μέν, τοῦ πρώτου κινοῦντος· ὃ δέ, ἡ ὕλη· εἰς ὃ δέ, τὸ εἶδος. εἰς ἄπειρον οὖν εἶσιν, εἰ μὴ μόνον ὁ χαλκὸς γίγνεται στρογγύλος ἀλλὰ καὶ τὸ στρογγύλον ἢ ὁ χαλκός· ἀνάγκη δὴ στῆναι. Μετὰ ταῦτα ὅτι
5 ἑκάστη ἐκ συνωνύμου γίγνεται οὐσία[1]· τὰ γὰρ φύσει οὐσίαι καὶ τἆλλα· ἢ γὰρ τέχνῃ ἢ φύσει γίγνεται ἢ τύχῃ ἢ τῷ αὐτομάτῳ. ἡ μὲν οὖν τέχνη ἀρχὴ ἐν ἄλλῳ, ἡ δὲ φύσις ἀρχὴ ἐν αὐτῷ (ἄνθρωπος γὰρ ἄνθρωπον γεννᾷ), αἱ δὲ λοιπαὶ αἰτίαι στερήσεις τούτων.

10 Οὐσίαι δὲ τρεῖς, ἡ μὲν ὕλη τόδε τι οὖσα τῷ
11 φαίνεσθαι (ὅσα γάρ ἐστιν ἁφῇ καὶ μὴ συμφύσει,
20 ὕλη καὶ ὑποκείμενον, ⟨οἷον πῦρ, σάρξ, κεφαλή. ἅπαντα γὰρ ὕλη ἐστί, καὶ τῆς μάλιστ' οὐσίας ἡ
21, 12 τελευταία⟩[2]), ἡ δὲ φύσις τόδε τι καὶ ἕξις τις εἰς ἣν[3]·
19 ἔτι τρίτη ἡ ἐκ τούτων ἡ καθ' ἕκαστα, οἷον Σωκράτης ἢ Καλλίας. ἐπὶ μὲν οὖν τινῶν τὸ τόδε τι
14 οὐκ ἔστι παρὰ τὴν συνθέτην οὐσίαν (οἷον οἰκίας τὸ
15 εἶδος, εἰ μὴ ἡ τέχνη· οὐδ' ἔστι γένεσις καὶ φθορὰ

[1] ἡ οὐσία A[b].

[2] οἷον . . . τελευταία hic ponenda uidit Alexander: habent codd. post τούτων 19 infra.

[3] καὶ ἕξις τις εἰς ἣν Bessarion, fort. Alexander: εἰς ἣν καὶ ἕξις τις codd.

[a] In natural reproduction the generative principle is obviously in the parent. But the offspring is in a sense a part of the parent, and so Aristotle identifies the two.

[b] *Cf.* XI. viii. 12 n.

[c] Aristotle is contrasting proximate with primary matter. Fire, the primary matter of a man, is a simple undifferentiated element which cannot be perceived as such, and has no individuality. The head, and the other parts of the body,

All change is of some subject by some agent into some object. The agent is the immediate mover; the subject is the matter; and the object is the form. Thus the process will go on to infinity if not only the bronze comes to be round, but also roundness or bronze comes to be; there must, then, be some stopping-point.

Proximate matter and form are not generated.

We must next observe that every substance is generated from something which has the same name ("substances" including not only natural but all other products). Things are generated either by art or by nature or by chance or spontaneously. Art is a generative principle in something else; nature is a generative principle in the subject itself[a] (for man begets man); the other causes are privations of these.[b] 2

Modes of generation.

There are three kinds of substance: (i.) matter, which exists individually in virtue of being apparent[c] (for everything which is characterized by contact and not by coalescence is matter and substrate; *e.g.* fire, flesh and head; these are all matter, and the last is the matter of a substance in the strictest sense); (ii.) the "nature"[d] (existing individually)—*i.e.* a kind of positive state which is the terminus of motion; and (iii.) the particular combination of these, *e.g.* Socrates or Callias. In some cases the individuality does not exist apart from the composite substance (*e.g.*, the form of a house does not exist separately, except as the art of building; nor are these forms liable to generation and destruction; there is a 3 4

Three kinds of substance: (1) matter, (4, 5) (2) individual nature, (3) their particular combination.

considered merely as in contact and not as forming an organic unity, are the proximate matter of a man; they are perceptible and individual. Flesh (in general) represents the matter in an intermediate stage.

[d] *i.e.*, form.

1070 a
τούτων, ἀλλ' ἄλλον τρόπον εἰσὶ καὶ οὐκ εἰσὶν οἰκία τε ἡ ἄνευ ὕλης καὶ ὑγίεια καὶ πᾶν τὸ κατὰ τέχνην), ἀλλ' εἴπερ, ἐπὶ τῶν φύσει· διὸ δὴ οὐ κακῶς Πλάτων[1] ἔφη ὅτι εἴδη ἐστὶν ὁπόσα φύσει, εἴπερ ἔστιν εἴδη ἄλλα τούτων. Τὰ μὲν οὖν κινοῦντα αἴτια ὡς προγεγενημένα ὄντα, τὰ δ' ὡς ὁ λόγος ἅμα. ὅτε γὰρ ὑγιαίνει ὁ ἄνθρωπος, τότε καὶ ἡ ὑγίεια ἔστιν, καὶ τὸ σχῆμα τῆς χαλκῆς σφαίρας ἅμα καὶ ἡ χαλκῆ σφαῖρα. εἰ δὲ καὶ ὕστερόν τι ὑπομένει, σκεπτέον· ἐπ' ἐνίων γὰρ οὐδὲν κωλύει, οἷον εἰ ἡ ψυχὴ τοιοῦτον (μὴ πᾶσα, ἀλλ' ὁ νοῦς· πᾶσαν γὰρ ἀδύνατον ἴσως). φανερὸν δὴ ὅτι οὐδὲν δεῖ διά γε ταῦτ' εἶναι τὰς ἰδέας· ἄνθρωπος γὰρ ἄνθρωπον γεννᾷ, ὁ καθ' ἕκαστον τὸν τινά. ὁμοίως δὲ καὶ ἐπὶ τῶν τεχνῶν· ἡ γὰρ ἰατρικὴ τέχνη ὁ λόγος τῆς ὑγιείας ἐστί.

IV. Τὰ δ' αἴτια καὶ αἱ ἀρχαὶ ἄλλα ἄλλων ἔστιν ὥς, ἔστι δ' ὡς, ἂν καθόλου λέγῃ τις καὶ κατ' ἀναλογίαν, ταὐτὰ πάντων. ἀπορήσειε γὰρ ἄν τις πότερον ἕτεραι ἢ αἱ αὐταὶ ἀρχαὶ καὶ στοιχεῖα τῶν οὐσιῶν καὶ τῶν πρός τι, καὶ καθ' ἑκάστην δὴ τῶν κατηγοριῶν ὁμοίως. ἀλλ' ἄτοπον εἰ ταὐτὰ πάντων· ἐκ τῶν αὐτῶν γὰρ ἔσται τὰ πρός τι καὶ ἡ
1070 b οὐσία. τί οὖν τοῦτ' ἔσται; παρὰ γὰρ τὴν οὐσίαν καὶ τἆλλα τὰ κατηγορούμενα οὐδέν ἐστι κοινόν·

[1] ὁ Πλάτων A[b].

[a] *i.e.*, in the mind of the architect or doctor.
[b] See Vol. I, Introd. p. xxi.
[c] *i.e.*, such as to survive after death.

distinct sense in which "house" and "health" and every artificial product, considered in the abstract, do or do not exist[a]); if it does so at all, it does so in the case of natural objects. Hence Plato was not far wrong in saying[b] that there are as many Forms as there are kinds of natural objects; that is if there are Forms distinct from the things of our world.

Moving causes are causes in the sense of pre- 5
existent things, but formal causes coexist with their effects. For it is when the man becomes healthy that health exists, and the shape of the bronze sphere comes into being simultaneously with the bronze sphere. Whether any form remains also afterwards 6
is another question. In some cases there is nothing to prevent this, *e.g.* the soul may be of this nature[c] (not all of it, but the intelligent part; for presumably all of it cannot be). Clearly then there is no need on these grounds for the Ideas to exist; for man begets man, the individual begetting the particular person. And the same is true of the arts, for the art of medicine is the formula of health.

IV. In one sense the causes and principles are different for different things; but in another, if one speaks generally and analogically, they are the same for all. For the question might be raised whether the principles and elements of substances and of relations are the same or different; and similarly with respect to each of the other categories. But it is absurd that they should be the same for all; for then relations and substance would have the same constituents. What then can their common con- 2
stituent be? For there is nothing common to and yet distinct from substance and the other predicable categories, yet the element is prior to that of which

Different things have different causes,

1070 b πρότερον δὲ τὸ στοιχεῖον ἢ ὢν[1] στοιχεῖον. ἀλλὰ μὴν οὐδ' ἡ οὐσία στοιχεῖον τῶν πρός τι, οὐδὲ τούτων οὐδὲν τῆς οὐσίας. ἔτι πῶς ἐνδέχεται πάν- 5 των εἶναι ταὐτὰ στοιχεῖα; οὐδὲν γὰρ οἷόν τ' εἶναι τῶν στοιχείων τῷ ἐκ[2] στοιχείων συγκειμένῳ τὸ αὐτό, οἷον τῷ BA τὸ B ἢ A (οὐδὲ δὴ τῶν νοητῶν στοιχεῖόν ἐστιν, οἷον τὸ ἓν ἢ τὸ ὄν· ὑπάρχει γὰρ ταῦτα ἑκάστῳ καὶ τῶν συνθέτων). οὐδὲν ἄρ' ἔσται αὐτῶν οὔτ' οὐσία οὔτε πρός τι· 10 ἀλλ' ἀναγκαῖον. οὐκ ἔστιν ἄρα πάντων ταὐτὰ στοιχεῖα.

Ἢ ὥσπερ λέγομεν, ἔστι μὲν ὡς, ἔστι δ' ὡς οὔ, οἷον ἴσως τῶν αἰσθητῶν σωμάτων ὡς μὲν εἶδος τὸ θερμὸν καὶ ἄλλον τρόπον τὸ ψυχρὸν ἡ στέρησις, ὕλη δὲ τὸ δυνάμει ταῦτα πρῶτον καθ' αὑτό, οὐσίαι δὲ ταῦτά τε καὶ τὰ ἐκ τούτων ὧν 15 ἀρχαὶ ταῦτα, ἢ εἴ τι ἐκ θερμοῦ καὶ ψυχροῦ γίγνεται ἕν, οἷον σὰρξ ἢ ὀστοῦν· ἕτερον γὰρ ἀνάγκη ἐκείνων εἶναι τὸ γενόμενον. τούτων μὲν οὖν ταὐτὰ στοιχεῖα καὶ ἀρχαί, ἄλλων δ' ἄλλα· πάντων δὲ οὕτω μὲν εἰπεῖν οὐκ ἔστιν, τῷ ἀνάλογον δέ, ὥσπερ εἴ τις εἴποι ὅτι ἀρχαί εἰσι τρεῖς, τὸ εἶδος καὶ ἡ στέρησις καὶ ἡ ὕλη. ἀλλ' ἕκαστον τούτων ἕτερον 20 περὶ ἕκαστον γένος ἐστίν, οἷον ἐν χρώματι λευκόν, μέλαν, ἐπιφάνεια· φῶς, σκότος, ἀήρ, ἐκ δὲ τούτων ἡμέρα καὶ νύξ. ἐπεὶ δὲ οὐ μόνον τὰ ἐνυπάρχοντα

[1] ὢν ἐστὶ τὸ EJ. [2] ἐκ τῶν EJ.

[a] Unity and being are called intelligibles as being the most universal predicates and as contrasted with particulars, which are sensible.

[b] This apparently refers to the elements; fire and air are hot matter, water and earth cold matter.

it is an element. Moreover substance is not an element of relations, nor is any of the latter an element of substance. Further, how can all the categories have the same elements? For no element 3 can be the same as that which is composed of elements; *e.g.*, neither B nor A can be the same as BA (nor indeed can any of the "intelligibles,"[a] *e.g.* Unity or Being, be an element; for these apply in every case, even to composite things); hence no element can be either substance or relation. But it must be one or the other. Therefore the categories have not all the same elements.

The truth is that, as we say, in one sense all things 4 have the same elements and in another they have not. *E.g.*, the elements of sensible bodies are, let us say, (1) as form, the hot, and in another sense the cold, which is the corresponding privation; as matter, that which directly and of its own nature is potentially hot or cold. And not only these are substances, but so are (2) the compounds[b] of which they are principles, and (3) any unity which is generated from hot and cold, *e.g.* flesh or bone; for the product of hot and cold must be distinct from them. These things, then, 5 have the same elements and principles, although specifically different things have specifically different elements; we cannot, however, say that all things have the same elements in this sense, but only by analogy: *i.e.*, one might say that there are three principles, form, privation and matter. But each of 6 these is different in respect of each class of things, *e.g.*, in the case of colour they are white, black, surface; or again there is light, darkness and air, of which day and night are composed. And since not only things which are inherent in an object are its

but analogically the causes are the same for all things.

1070 b αἴτια, ἀλλὰ καὶ τῶν ἐκτὸς οἷον τὸ κινοῦν, δῆλον ὅτι ἕτερον ἀρχὴ καὶ στοιχεῖον· αἴτια δ' ἄμφω· καὶ εἰς ταῦτα διαιρεῖται ἡ ἀρχή, τὸ δ' ὡς κινοῦν ἢ ἱστὰν ἀρχή τις καὶ οὐσία. ὥστε στοιχεῖα μὲν κατ' ἀναλογίαν τρία, αἰτίαι δὲ καὶ ἀρχαὶ τέτταρες· ἄλλο δ' ἐν ἄλλῳ, καὶ τὸ πρῶτον αἴτιον ὡς κινοῦν ἄλλο ἄλλῳ. ὑγίεια, νόσος, σῶμα· τὸ κινοῦν ἰατρική. εἶδος, ἀταξία τοιαδί, πλίνθοι· τὸ κινοῦν οἰκοδομική. [καὶ εἰς ταῦτα διαιρεῖται ἡ ἀρχή.][1] ἐπεὶ δὲ τὸ κινοῦν ἐν μὲν τοῖς φυσικοῖς ἀνθρώπῳ[2] ἄνθρωπος, ἐν δὲ τοῖς ἀπὸ διανοίας τὸ εἶδος ἢ τὸ ἐναντίον, τρόπον τινὰ τρία αἴτια ἂν εἴη, ὠδὶ δὲ τέτταρα. ὑγιεία γάρ πως ἡ ἰατρική, καὶ οἰκίας εἶδος ἡ οἰκοδομική, καὶ ἄνθρωπος ἄνθρωπον γεννᾷ· ἔτι παρὰ ταῦτα τὸ ὡς[3] πρῶτον πάντων κινοῦν πάντα.

V. Ἐπεὶ δ' ἐστὶ τὰ μὲν χωριστὰ τὰ δ' οὐ 1071 a χωριστά, οὐσίαι ἐκεῖνα. καὶ διὰ τοῦτο πάντων αἴτια ταὐτά,[4] ὅτι τῶν οὐσιῶν ἄνευ οὐκ ἔστι τὰ πάθη καὶ αἱ κινήσεις. ἔπειτα ἔσται ταῦτα ψυχὴ ἴσως καὶ σῶμα, ἢ νοῦς καὶ ὄρεξις καὶ σῶμα. ἔτι δ' ἄλλον τρόπον τῷ ἀνάλογον ἀρχαὶ αἱ αὐταί, οἷον b ἐνέργεια καὶ δύναμις· ἀλλὰ καὶ ταῦτα ἄλλα τε ἄλλοις καὶ ἄλλως. ἐν ἐνίοις μὲν γὰρ τὸ αὐτὸ ὁτὲ μὲν ἐνεργείᾳ ἐστὶν ὁτὲ δὲ δυνάμει, οἷον οἶνος ἢ

[1] καὶ . . . ἀρχή om. A[b] Alexander.
[2] ἀνθρώπῳ Zeller: ἀνθρώποις E Alexander: om. A[b]J.
[3] τὸ ὡς Bonitz: ὡς τὸ.
[4] ταὐτά Christ: ταῦτα.

[a] For the first time the ultimate efficient cause is distinguished from the proximate. Aristotle is leading up to the description of the Prime Mover which occupies the latter half of the book.
[b] See Vol. I. Introd. p. xxxii.

causes, but also certain external things, *e.g.* the moving cause, clearly "principle" and "element" are not the same; but both are causes. Principles are divided into these two kinds, and that which moves a thing or brings it to rest is a kind of principle and substance. Thus analogically there are three 7 elements and four causes or principles; but they are different in different cases, and the proximate moving cause is different in different cases. Health, disease, body; and the moving cause is the art of medicine. Form, a particular kind of disorder, bricks; and the moving cause is the art of building. And since in the 8 sphere of natural objects the moving cause of man is man, while in the sphere of objects of thought the moving cause is the form or its contrary, in one sense there are three causes and in another four. For in a sense the art of medicine is health, and the art of building is the form of a house, and man begets man; but besides these there is that which as first of all things moves all things.[a]

V. Now since some things can exist in separation and others cannot, it is the former that are substances. And therefore all things have the same causes, because without substance there can be no affections and motions. Next we shall see[b] that these causes are probably soul and body, or mind, appetite and body.[c] Again, there is another sense in which by analogy the principles are the same, viz. actuality and potentiality; but these are different for different things, and apply to them in different ways. For in some cases the same thing 2 exists now actually and now potentially; *e.g.* wine

Actuality and potentiality are causes common to all things.

[a] Aristotle is thinking of animals and human beings, which are substances in the truest sense.

1071 a σὰρξ ἢ ἄνθρωπος (πίπτει δὲ καὶ ταῦτα εἰς τὰ εἰρημένα αἴτια· ἐνεργείᾳ μὲν γὰρ τὸ εἶδος, ἐὰν ᾖ χωριστόν, καὶ τὸ ἐξ ἀμφοῖν, στέρησίς τε[1] οἷον σκότος ἢ κάμνον, δυνάμει δὲ ἡ ὕλη· τοῦτο γάρ ἐστι τὸ δυνάμενον γίγνεσθαι ἄμφω)· ἄλλως δ' ἐνεργείᾳ καὶ δυνάμει διαφέρει, ὧν μὴ ἔστιν ἡ αὐτὴ ὕλη, ὧν ⟨ἐνίων⟩[2] οὐκ ἔστι τὸ αὐτὸ εἶδος ἀλλ' ἕτερον, ὥσπερ ἀνθρώπου αἴτιον τά τε στοιχεῖα, πῦρ καὶ γῆ ὡς ὕλη καὶ τὸ ἴδιον εἶδος, καὶ ἔτι[3] τι ἄλλο ἔξω, οἷον ὁ πατήρ, καὶ παρὰ ταῦτα ὁ ἥλιος καὶ ὁ λοξὸς κύκλος, οὔτε ὕλη ὄντα οὔτ' εἶδος οὔτε στέρησις οὔτε ὁμοειδές, ἀλλὰ κινοῦντα. Ἔτι δὲ ὁρᾶν δεῖ ὅτι τὰ μὲν καθόλου ἔστιν εἰπεῖν, τὰ δ' οὔ. πάντων δὴ πρῶται ἀρχαὶ τὸ ἐνεργείᾳ πρῶτον τοδί[4] καὶ ἄλλο ὃ δυνάμει. ἐκεῖνα μὲν οὖν καθόλου[5] οὐκ ἔστιν· ἀρχὴ γὰρ τὸ καθ' ἕκαστον τῶν καθ' ἕκαστον· ἄνθρωπος μὲν γὰρ ἀνθρώπου καθόλου, ἀλλ' οὐκ ἔστιν οὐδείς, ἀλλὰ Πηλεὺς Ἀχιλλέως, σοῦ δὲ ὁ πατήρ, καὶ τοδὶ τὸ Β τουδὶ τοῦ ΒΑ, ὅλως δὲ τὸ Β τοῦ ἁπλῶς ΒΑ. ἔπειτα εἰ δὴ[6] τὰ τῶν οὐσιῶν, ἄλλα δὲ ἄλλων αἴτια καὶ στοιχεῖα, ὥσπερ ἐλέχθη, τῶν

[1] τε Ross: δὲ.
[2] ὧν ἐνίων Ross: ὧν codd. Alexander: καὶ ὧν γρ. E, Themistius: ἢ ὧν Zeller.
[3] εἰ EJ. [4] τῷ εἴδει A^b: τὸ εἶδει recc.
[5] καθόλου A^b: τὰ καθόλου EJ Alexander.
[6] εἰ δὴ Rolfes: εἴδη A^bJ^2 Alexander: ἤδη EJ^1: τὰ εἴδη Christ.

[a] *i.e.*, of acquiring either of the contrary qualities distinguished by the form and the privation.
[b] The sun, moving in the ecliptic, approaches nearer to the earth in summer, causing generation, and recedes farther from the earth in winter, causing destruction. *Cf.* ch. vi. 10 n., *De Gen. et Corr.* 336 a 32.
[c] *i.e.*, the proximate efficient cause and proximate matter.
[d] Ch. iv. 6.

or flesh or man (actuality and potentiality also fall under the causes as already described; for the form exists actually if it is separable, and so does the compound of form and matter, and the privation, *e.g.* darkness or disease; and the matter exists potentially, for it is this which has the potentiality of becoming both [a]); but the distinction in virtue 3
of actuality and potentiality applies in a different sense to cases where the matter of cause and effect is not the same, in some of which the form is not the same but different. *E.g.*, the cause of a man is (i) his elements: fire and earth as matter, and the particular form; (ii) some external formal cause, viz. his father; and besides these (iii) the sun and the ecliptic,[b] which are neither matter nor form nor privation nor identical in form with him, but cause motion.

Further, we must observe that some causes can be 4
stated universally, but others cannot. The proximate principles of all things are the proximate actual individual and another individual which exists potentially.[c] Therefore the proximate principles are not universal. For it is the particular that is the principle of particulars; "man" in general is the principle of "man" in general, but there is no such person as "man," whereas Peleus is the principle of Achilles and your father of you, and this particular B of this particular BA; but B in general is the principle of BA regarded absolutely. Again, 5
even if the causes of substances are universal, still, as has been said,[d] different things, *i.e.* things which

μὴ ἐν ταὐτῷ γένει, χρωμάτων, ψόφων, οὐσιῶν, ποσότητος, πλὴν τῷ ἀνάλογον· καὶ τῶν ἐν ταὐτῷ εἴδει ἕτερα, οὐκ εἴδει, ἀλλ' ὅτι τῶν καθ' ἕκαστον ἄλλο, ἥ τε σὴ ὕλη καὶ τὸ εἶδος καὶ τὸ κινῆσαν[1] καὶ ἡ ἐμή, τῷ καθόλου δὲ λόγῳ ταὐτά. Τὸ δὲ ζητεῖν τίνες ἀρχαὶ ἢ στοιχεῖα τῶν οὐσιῶν καὶ πρός τι καὶ ποιῶν, πότερον αἱ αὐταὶ ἢ ἕτεραι, δῆλον ὅτι πολλαχῶς γε[2] λεγομένων ἐστὶν ἑκάστου, διαιρεθέντων δὲ οὐ ταὐτὰ ἀλλ' ἕτερα, πλὴν ὠδὶ καὶ πάντων· ὠδὶ μὲν ταὐτὰ ἢ τὸ[3] ἀνάλογον, ὅτι ὕλη, εἶδος, στέρησις, τὸ κινοῦν, καὶ ὠδὶ τὰ τῶν οὐσιῶν αἴτια ὡς αἴτια πάντων, ὅτι ἀναιρεῖται ἀναιρουμένων· ἔτι τὸ πρῶτον ἐντελεχείᾳ· ὠδὶ δὲ ἕτερα πρῶτα ὅσα τὰ ἐναντία ἃ μήτε ὡς γένη λέγεται μήτε πολλαχῶς λέγεται· καὶ ἔτι αἱ ὗλαι. Τίνες μὲν οὖν αἱ ἀρχαὶ τῶν αἰσθητῶν καὶ πόσαι, καὶ πῶς αἱ αὐταὶ καὶ πῶς ἕτεραι, εἴρηται.

VI. Ἐπεὶ δ' ἦσαν τρεῖς οὐσίαι, δύο μὲν αἱ φυσικαί, μία δὲ ἡ ἀκίνητος, περὶ ταύτης λεκτέον,

[1] καὶ τὸ εἶδος καὶ τὸ κινῆσαν] καὶ τὸ κινῆσαν καὶ τὸ εἶδος A^b.
[2] γε Christ: τε. [3] τὸ Ross: τῷ.

[a] *i.e.*, the prime mover.
[b] *i.e.*, individual forms and privations of individual things.
[c] Ch. i. 3, 4.

are not in the same genus, as colours, sounds, substances and quantity, have different causes and elements, except in an analogical sense; and the causes of things which are in the same species are different, not in species, but because the causes of individuals are different: your matter and form and moving cause being different from mine, although in their universal formula they are the same.

6 As for the question what are the principles or elements of substances and relations and qualities, whether they are the same or different, it is evident that when the terms "principle" and "element" are used with several meanings they are the same for everything; but when the meanings are distinguished, they are not the same but different; except that in a certain sense they are the same for all. In a certain sense they are the same or analogous, because (*a*) everything has matter, form, privation and a moving cause; (*b*) the causes of substances may be regarded as the causes of all things, since if substances are destroyed everything is destroyed; and further (*c*) that which is first in complete reality [a] is the cause of all things. In another sense, however, 7 proximate causes are different; there are as many proximate causes as there are contraries which are predicated neither as genera nor with a variety of meanings [b]; and further the particular material causes are different.

Thus we have stated what the principles of sensible things are, and how many they are, and in what sense they are the same and in what sense different.

There must be an eternal immutable substance.

VI. Since we have seen [c] that there are three kinds of substance, two of which are natural and one immutable, we must now discuss the last named

1071 b
ὅτι ἀνάγκη εἶναι ἀΐδιον τινὰ[1] οὐσίαν ἀκίνητον. αἵ τε γὰρ οὐσίαι πρῶται τῶν ὄντων, καὶ εἰ πᾶσαι φθαρταί, πάντα φθαρτά. ἀλλ' ἀδύνατον κίνησιν ἢ γενέσθαι ἢ φθαρῆναι· ἀεὶ γὰρ ἦν· οὐδὲ χρόνον· οὐ γὰρ οἷόν τε τὸ πρότερον καὶ ὕστερον εἶναι μὴ ὄντος χρόνου. καὶ ἡ κίνησις ἄρα οὕτω συνεχὴς ὥσπερ καὶ ὁ χρόνος· ἢ γὰρ τὸ αὐτὸ ἢ κινήσεώς τι πάθος. κίνησις δ' οὐκ ἔστι συνεχὴς ἀλλ' ἢ ἡ κατὰ τόπον, καὶ ταύτης ἡ κύκλῳ. Ἀλλὰ μὴν εἰ ἔσται[2] κινητικὸν ἢ ποιητικόν, μὴ ἐνεργοῦν δέ τι, οὐκ ἔσται[3] κίνησις· ἐνδέχεται γὰρ τὸ δύναμιν ἔχον μὴ ἐνεργεῖν. οὐθὲν ἄρα ὄφελος οὐδ' ἐὰν οὐσίας ποιήσωμεν ἀϊδίους, ὥσπερ οἱ τὰ εἴδη, εἰ μή τις δυναμένη ἐνέσται ἀρχὴ μεταβάλλειν. οὐ τοίνυν οὐδ' αὕτη ἱκανή, οὐδ' ἄλλη οὐσία παρὰ τὰ εἴδη· εἰ γὰρ μὴ ἐνεργήσει, οὐκ ἔσται κίνησις. ἔτι οὐδ' εἰ ἐνεργήσει, ἡ δ' οὐσία αὐτῆς δύναμις· οὐ γὰρ ἔσται κίνησις ἀΐδιος· ἐνδέχεται γὰρ τὸ δυνάμει ὂν μὴ εἶναι. δεῖ ἄρα εἶναι ἀρχὴν τοιαύτην ἧς ἡ οὐσία ἐνέργεια. ἔτι τοίνυν ταύτας δεῖ τὰς οὐσίας εἶναι ἄνευ ὕλης· ἀϊδίους γὰρ δεῖ, εἴπερ γε καὶ ἄλλο τι ἀΐδιον. ἐνέργεια[4] ἄρα. Καίτοι ἀπορία· δοκεῖ

[1] ἀΐδιον τινὰ] τινα ἀΐδιον A^b.
[2] ἔσται A^b Alexander. [3] ἔσται EA^b.
[4] ἐνεργείᾳ ΕΓ.

[a] *Cf. Physics* VIII. i.-iii.
[b] The argument seems to be: If we assume that time was generated, it follows that before that there was no time; but the very term "before" implies time. The same applies to the destruction of time.
[c] *Cf.* XI. xii. 1 n.
[d] These statements are proved in *Physics* VIII. viii., ix.
[e] As there is not, according to Aristotle; *cf.* I. vii. 4.
[f] Aristotle is now thinking not only of the prime mover (God or Mind) but also of the movers of the celestial spheres. *Cf.* ch. viii. 14.

and show that there must be some substance which is eternal and immutable. Substances are the primary reality, and if they are all perishable, everything is perishable. But motion cannot be either generated or destroyed, for it always existed[a]; nor can time, because there can be no priority or posteriority if there is no time.[b] Hence as time 2
is continuous, so too is motion; for time is either identical with motion or an affection of it.[c] But there is no continuous motion except that which is spatial, and of spatial motion only that which is circular.[d]

The prime mover must be active, and its essence must be actuality.

But even if we are to suppose that there is something which is kinetic and productive although it does not actually move or produce, there will not necessarily be motion; for that which has a potentiality may not actualize it. Thus it will not help 3
matters if we posit eternal substances, as do the exponents of the Forms, unless there is in them some principle which can cause change.[e] And even this is not enough, nor is it enough if there is another substance besides the Forms; for unless it actually functions there will not be motion. And it will 4
still not be enough even if it does function, if its essence is potentiality; for there will not be eternal motion, since that which exists potentially may not exist. Therefore there must be a principle of this kind whose essence is actuality. Furthermore these substances[f] must be immaterial; for they must be eternal if anything is. Therefore they are actuality.

There is a difficulty, however; for it seems that 5

1071 b γὰρ τὸ μὲν ἐνεργοῦν πᾶν δύνασθαι, τὸ δὲ δυνάμενον οὐ πᾶν ἐνεργεῖν, ὥστε πρότερον εἶναι τὴν δύναμιν. ἀλλὰ μὴν εἰ τοῦτο, οὐθὲν ἔσται τῶν ὄντων· ἐνδέχεται γὰρ δύνασθαι μὲν εἶναι μήπω δ' εἶναι. καίτοι εἰ ὡς λέγουσιν οἱ θεολόγοι οἱ ἐκ νυκτὸς γενν ῶντες, ἢ ὡς οἱ φυσικοὶ "ἦν ὁμοῦ πάντα χρήματά" φασι, τὸ αὐτὸ ἀδύνατον. πῶς γὰρ κινηθήσεται, εἰ μὴ[1] ἔσται ἐνεργείᾳ τι[2] αἴτιον; οὐ γὰρ ἥ γε ὕλη κινήσει αὐτὴ ἑαυτήν, ἀλλὰ τεκτονική, οὐδὲ τὰ ἐπιμήνια οὐδ[3] ἡ γῆ, ἀλλὰ τὰ σπέρματα καὶ ἡ γονή. διὸ ἔνιοι ποιοῦσιν ἀεὶ ἐνέργειαν, οἷον Λεύκιππος καὶ Πλάτων· ἀεὶ γὰρ εἶναί φασι κίνησιν. ἀλλὰ διὰ τί καὶ τίνα οὐ λέγουσιν, οὐδ', ⟨εἰ⟩ ὧδὶ ἢ ὧδί,[3] τὴν αἰτίαν. οὐδὲν γὰρ ὡς ἔτυχε κινεῖται, ἀλλὰ δεῖ τι ἀεὶ ὑπάρχειν, ὥσπερ νῦν φύσει μὲν ὧδί, βίᾳ δὲ ἢ ὑπὸ νοῦ ἢ ἄλλου ὧδί. εἶτα ποία πρώτη; διαφέρει 1072 a γὰρ ἀμήχανον ὅσον. ἀλλὰ μὴν οὐδὲ Πλάτωνί γε οἷόν τε λέγειν ἣν οἴεται ἐνίοτε ἀρχὴν εἶναι, τὸ αὐτὸ ἑαυτὸ κινοῦν· ὕστερον γὰρ καὶ ἅμα τῷ οὐρανῷ ἡ ψυχή, ὡς φησίν. τὸ μὲν δὴ δύναμιν οἴεσθαι ἐνεργείας πρότερον ἔστι μὲν ὡς καλῶς, ἔστι δ' ὡς 5 οὔ· εἴρηται δὲ πῶς. ὅτι δ' ἐνέργεια πρότερον, μαρτυρεῖ Ἀναξαγόρας (ὁ γὰρ νοῦς ἐνέργεια[4]) καὶ

[1] μὴ] μηθὲν A^b. [2] τι om. A^b.
[3] οὐδ', εἰ ὧδὶ ἢ ὧδί Diels, Alexander (?): οὐδὲ ὧδὶ οὐδὲ.
[4] ἐνέργεια Τ Γ Alexander: ἐνεργείᾳ E A^b J.

[a] *Cf.* Hesiod, *Works and Days* 17, *Theogony* 116 *sqq.*
[b] *Cf.* ch. ii. 3.
[c] *Cf.* I. iv. 12, *De Caelo* 300 b 8, and see Burnet, *E.G.P.* § 178.
[d] *Cf. Timaeus* 30 A, and § 8 below.
[e] Aristotle refers to Plato's rather inconsistent account in *Timaeus* 30-34.

everything which actually functions has a potentiality, whereas not everything which has a potentiality actually functions; so that potentiality is prior. But if this is so, there need be no reality; for everything may be capable of existing, but not yet existent. Yet if we accept the statements of the cosmologists who generate everything from Night,[a] or the doctrine of the physicists that "all things were together,"[b] we have the same impossibility; for how can there be motion if there is no actual cause? Wood will not move itself—carpentry must act upon it; nor will the menses or the earth move themselves—the seeds must act upon the earth, and the semen on the menses. Hence some, *e.g.* Leucippus[c] and Plato,[d] posit an eternal actuality, for they say that there is always motion; but why there is, and what it is, they do not say; nor, if it moves in this or that particular way, what the cause is. For nothing is moved at haphazard, but in every case there must be some reason present; as in point of fact things are moved in one way by nature, and in another by force or mind or some other agent. And further, what kind of motion is primary? For this is an extremely important point. Again, Plato at least cannot even explain what it is that he sometimes thinks to be the source of motion, *i.e.*, that which moves itself; for according to him the soul is posterior to motion and coeval with the sensible universe.[e] Now to suppose that potentiality is prior to actuality is in one sense right and in another wrong; we have explained[f] the distinction. But that actuality is prior is testified by Anaxagoras (since mind is actuality), and by Empedocles with

It might seem that potentiality is prior to actuality; but on this view the universe cannot be explained.

[f] The reference is probably to § 5 above, but *cf.* IX. viii.

1072 a Ἐμπεδοκλῆς φιλίαν καὶ νεῖκος, καὶ οἱ ἀεὶ λέγοντες κίνησιν εἶναι, ὥσπερ Λεύκιππος. Ὥστ' οὐκ ἦν ἄπειρον χρόνον χάος ἢ νύξ, ἀλλὰ ταὐτὰ ἀεὶ ἢ περιόδῳ ἢ ἄλλως, εἴπερ πρότερον ἐνέργεια δυνάμεως. εἰ δὴ τὸ αὐτὸ ἀεὶ περιόδῳ, δεῖ τι ἀεὶ μένειν ὡσαύτως ἐνεργοῦν. εἰ δὲ μέλλει γένεσις καὶ φθορὰ εἶναι, ἄλλο δεῖ εἶναι ἀεὶ ἐνεργοῦν ἄλλως καὶ ἄλλως. ἀνάγκη ἄρα ὠδὶ μὲν καθ' αὑτὸ ἐνεργεῖν, ὠδὶ δὲ κατ' ἄλλο· ἤτοι ἄρα καθ' ἕτερον ἢ κατὰ τὸ πρῶτον. ἀνάγκη δὴ κατὰ τοῦτο· πάλιν γὰρ ἐκεῖνο αὐτῷ[1] τε αἴτιον κἀκείνῳ. οὐκοῦν βέλτιον τὸ πρῶτον· καὶ γὰρ αἴτιον ἦν ἐκεῖνο τοῦ ἀεὶ ὡσαύτως, τοῦ δ' ἄλλως ἕτερον· τοῦ δ' ἀεὶ ἄλλως ἄμφω δηλονότι. οὐκοῦν οὕτως καὶ ἔχουσιν αἱ κινήσεις. τί οὖν ἄλλας δεῖ ζητεῖν ἀρχάς;

VII. Ἐπεὶ δ' οὕτω τ' ἐνδέχεται, καὶ εἰ μὴ οὕτως, ἐκ νυκτὸς ἔσται καὶ ὁμοῦ πάντων καὶ ἐκ μὴ ὄντος, λύοιτ' ἂν ταῦτα, καὶ ἔστι τι ἀεὶ κινούμενον κίνησιν ἄπαυστον, αὕτη δ' ἡ κύκλῳ· καὶ τοῦτο οὐ λόγῳ μόνον ἀλλ' ἔργῳ δῆλον· ὥστε ἀΐδιος ἂν εἴη ὁ πρῶτος οὐρανός. ἔστι τοίνυν τι καὶ ὃ κινεῖ. ἐπεὶ δὲ τὸ κινούμενον καὶ κινοῦν [καὶ][2] μέσον, κινοῦν[3]

[1] αὐτῷ Γ Alexander: αὐτῷ codd.
[2] καὶ punctis notatum in A[b], om. Bessarion, Aldine.
[3] κινοῦν ci. Ross: τοίνυν.

[a] The sphere of the fixed stars, viii. 9; *cf. De Gen. et Corr.* 336 a 23 *sqq.*

[b] The sun, which has its own yearly orbit in the ecliptic, and a daily rotation round the earth, which is explained most economically with reference to the rotation of the sphere of the fixed stars. *Cf.* ch. v. 3 n., *De Gen. et Corr. loc. cit.*

[c] Ch. vi. 6. [d] Ch. ii. 2, 3.

his theory of Love and Strife, and by those who hold that motion is eternal, *e.g.* Leucippus.

Therefore Chaos or Night did not endure for an unlimited time, but the same things have always existed, either passing through a cycle or in accordance with some other principle—that is, if actuality is prior to potentiality. Now if there is a regular cycle, there must be something[a] which remains always active in the same way; but if there is to be generation and destruction, there must be something else[b] which is always active in two different ways. Therefore this must be active in one way independently, and in the other in virtue of something else, *i.e.* either of some third active principle or of the first. It must, then, be in virtue of the first; for this is in turn the cause both of the third and of the second. Therefore the first is preferable, since it was the cause of perpetual regular motion, and something else was the cause of variety; and obviously both together make up the cause of perpetual variety. Now this is just what actually characterizes motions; therefore why need we seek any further principles?

The theory of cyclic change fits all the facts.

VII. Since (*a*) this is a possible explanation, and (*b*) if it is not true, we shall have to regard everything as coming from "Night"[c] and "all things together" and "not-being,"[d] these difficulties may be considered to be solved. There is something which is eternally moved with an unceasing motion, and that circular motion. This is evident not merely in theory, but in fact. Therefore the "ultimate heaven" must be eternal. Then there is also something which moves it. And since that which is moved while it moves is intermediate, there is some-

The eternal motion of the outermost sphere presupposes an eternal prime mover.

1072 a
ἔστι τι ὃ οὐ κινούμενον κινεῖ, ἀΐδιον, καὶ οὐσία καὶ ἐνέργεια οὖσα. Κινεῖ δὲ ὧδε· τὸ ὀρεκτὸν καὶ τὸ νοητὸν κινεῖ οὐ κινούμενα. τούτων τὰ πρῶτα τὰ αὐτά. ἐπιθυμητὸν μὲν γὰρ τὸ φαινόμενον καλόν, βουλητὸν δὲ πρῶτον τὸ ὂν καλόν. ὀρεγόμεθα δὲ διότι δοκεῖ μᾶλλον ἢ δοκεῖ διότι ὀρεγόμεθα· ἀρχὴ γὰρ[1] ἡ νόησις. νοῦς δὲ ὑπὸ τοῦ νοητοῦ κινεῖται, νοητὴ δὲ ἡ ἑτέρα συστοιχία καθ' αὑτήν· καὶ ταύτης ἡ οὐσία πρώτη, καὶ ταύτης ἡ ἁπλῆ καὶ κατ' ἐνέργειαν (ἔστι δὲ τὸ ἓν καὶ τὸ ἁπλοῦν οὐ τὸ αὐτό· τὸ μὲν γὰρ ἓν μέτρον σημαίνει, τὸ δὲ ἁπλοῦν πὼς ἔχον αὐτό). ἀλλὰ μὴν καὶ τὸ καλὸν καὶ τὸ δι' αὐτὸ αἱρετὸν ἐν τῇ αὐτῇ
1072 b συστοιχίᾳ· καὶ ἔστιν ἄριστον ἀεὶ ἢ ἀνάλογον τὸ πρῶτον.

Ὅτι δ' ἔστι τὸ οὗ ἕνεκα ἐν τοῖς ἀκινήτοις, ἡ διαίρεσις δηλοῖ· ἔστι γὰρ τινὶ τὸ οὗ ἕνεκα ⟨καὶ⟩ τινός,[2] ὧν τὸ μὲν ἔστι τὸ δ' οὐκ ἔστι· κινεῖ δὲ ὡς ἐρώμενον, κινούμενα[3] δὲ τἆλλα κινεῖ. εἰ μὲν οὖν τι κινεῖται, ἐνδέχεται καὶ ἄλλως ἔχειν· ὥστ' εἰ [ἡ][4]

[1] γὰρ: δὲ A^b γρ. E.
[2] καὶ τινὸς Alexander apud Averroem, Christ: τινὸς A^b; om. cet.
[3] Ross: κινουμένῳ A^{b1}EJ: κινούμενον A^{b2} et fort. Alexander.
[4] Bonitz.

[a] This shows that desire in general (of which appetite and will are the irrational and rational aspects) has as its object the good.

[b] Aristotle himself recognizes two series, lists or columns of contraries, similar to those of the Pythagoreans (I. v. 6). One, the positive, contains being, unity, substance, etc.; the other is negative and contains not-being, plurality, non-substance, etc. The negative terms are intelligible only in reference to the positive. *Cf.* IV. ii. 21.

[c] *Cf.* V. vi. 17.

thing which moves without being moved; something eternal which is both substance and actuality.

How the prime mover causes motion.

Now it moves in the following manner. The object of desire and the object of thought move without being moved. The primary objects of desire and thought are the same. For it is the apparent good that is the object of appetite, and the real good that is the object of the rational will.[a] Desire is the result of opinion rather than opinion that of desire; it is the act of thinking that is the starting-point. Now thought is moved by the intelligible, 3 and one of the series of contraries[b] is essentially intelligible. In this series substance stands first, and of substance that which is simple and exists actually. (The one and the simple are not the same; for one signifies a measure,[c] whereas "simple" means that the subject itself is in a certain state.) But the Good, and that which is in itself desir- 4 able, are also in the same series; and that which is first in a class is always best or analogous to the best.

That the final cause may apply to immovable things is shown by the distinction of its meanings. For the final cause is not only "the good *for something*," but also "the good which is *the end of some action*." In the latter sense it applies to immovable things, although in the former it does not; and it causes motion as being an object of love, whereas all other things cause motion because they are themselves in motion. Now if a thing is moved, it can 5 be otherwise than it is. Therefore if the actuality

1072 b φορὰ πρώτη ἡ[1] ἐνέργειά ἐστιν, ᾗ κινεῖται ταύτῃ[2] γ'[3] ἐνδέχεται ἄλλως ἔχειν, κατὰ τόπον, καὶ εἰ μὴ κατ' οὐσίαν. ἐπεὶ δ' ἔστι τι κινοῦν αὐτὸ ἀκίνητον ὄν, ἐνεργείᾳ ὄν, τοῦτο οὐκ ἐνδέχεται ἄλλως ἔχειν οὐδαμῶς. φορὰ γὰρ ἡ πρώτη τῶν μεταβολῶν, ταύτης δὲ ἡ κύκλῳ· ταύτην δὲ τοῦτο κινεῖ. ἐξ ἀνάγκης ἄρα ἐστὶν ὄν· καὶ ᾗ ἀνάγκη, καλῶς, καὶ οὕτως ἀρχή. τὸ γὰρ ἀναγκαῖον τοσαυταχῶς, τὸ μὲν βίᾳ ὅτι παρὰ τὴν ὁρμήν, τὸ δὲ οὗ οὐκ ἄνευ τὸ εὖ, τὸ δὲ μὴ ἐνδεχόμενον ἄλλως ἀλλ' ἁπλῶς. Ἐκ τοιαύτης ἄρα ἀρχῆς ἤρτηται ὁ οὐρανὸς καὶ ἡ φύσις. διαγωγὴ δ' ἐστὶν οἵα ἡ ἀρίστη μικρὸν χρόνον ἡμῖν. οὕτω γὰρ ἀεὶ ἐκεῖνό ἐστιν (ἡμῖν μὲν γὰρ ἀδύνατον), ἐπεὶ καὶ ἡδονὴ ἡ[4] ἐνέργεια τούτου (καὶ διὰ τοῦτο ἐγρήγορσις αἴσθησις νόησις ἥδιστον, ἐλπίδες δὲ καὶ μνῆμαι διὰ ταῦτα). ἡ δὲ νόησις ἡ καθ' αὐτὴν τοῦ καθ' αὐτὸ ἀρίστου, καὶ ἡ μάλιστα τοῦ μάλιστα. αὐτὸν δὲ νοεῖ ὁ νοῦς κατὰ μετάληψιν τοῦ νοητοῦ· νοητὸς γὰρ γίγνεται θιγγάνων καὶ νοῶν, ὥστε ταὐτὸν νοῦς καὶ νοητόν. τὸ γὰρ

[1] ἡ ex Alexandro Ross: καὶ codd., incl. Bonitz.
[2] ταύτην A^b. [3] γ' ci. Bonitz: δὲ codd., secl. Bonitz.
[4] ἡδονὴ ἡ γρ. E Alexander Themistius Aldine: ἡ ἡδονὴ EA^bJ.

[a] Proved in *Physics* VIII. vii.
[b] *Ibid.* ch. ix.
[c] The argument is: X (the prime mover), since it imparts the primary motion, cannot be liable to motion (or change) of any kind. Therefore it exists of necessity, and must be good (*cf.* V. v. 6); and it is *qua* good, *i.e.*, the object of desire, that X is a first principle.
[d] *Cf.* V. v.
[e] For the relation of pleasure to actuality or activity see *Eth. Nic.* X. iv.

of "the heaven" is primary locomotion, then in so far as "the heaven" is moved, in this respect at least it is possible for it to be otherwise; *i.e.* in respect of place, even if not of substantiality. But since there is something—X—which moves while being itself unmoved, existing actually, X cannot be otherwise in any respect. For the primary kind of 6
change is locomotion,[a] and of locomotion circular locomotion[b]; and this is the motion which X induces. Thus X is necessarily existent; and *qua* necessary it is good, and is in this sense a first principle.[c] For the necessary has all these meanings: that which is by constraint because it is contrary to impulse; and that without which excellence is impossible; and that which cannot be otherwise, but is absolutely necessary.[d]

Such, then, is the first principle upon which depend the sensible universe and the world of nature. And 7
its life is like the best which we temporarily enjoy. It must be in that state always (which for us is impossible), since its actuality is also pleasure.[e] (And for this reason waking, sensation and thinking are most pleasant, and hopes and memories are pleasant because of them.) Now thinking in itself is concerned with that which is in itself best, and thinking in the highest sense with that which is in the highest sense best.[f] And thought thinks itself through participation 8
in the object of thought; for it becomes an object of thought by the act of apprehension and thinking, so that thought and the object of thought are the same, because that which is receptive of the object

The divine life of the prime mover, which is pure self-thinking thought, or God.

[f] Since the prime mover is pure actuality, and has or rather is the highest form of life, Aristotle identifies it with the highest activity—pure thinking.

1072 b δεκτικὸν τοῦ νοητοῦ καὶ τῆς οὐσίας νοῦς. ἐνεργεῖ δὲ ἔχων· ὥστε ἐκείνου μᾶλλον τοῦτο[1] ὃ δοκεῖ ὁ νοῦς θεῖον ἔχειν, καὶ ἡ θεωρία τὸ ἡδιστον καὶ
25 ἄριστον. εἰ οὖν οὕτως εὖ ἔχει, ὡς ἡμεῖς ποτέ, ὁ θεὸς ἀεί, θαυμαστόν· εἰ δὲ μᾶλλον, ἔτι θαυμασιώτερον. ἔχει δὲ ὧδε.[2] καὶ ζωὴ δέ γε ὑπάρχει· ἡ γὰρ νοῦ ἐνέργεια ζωή, ἐκεῖνος δὲ ἡ ἐνέργεια· ἐνέργεια δὲ ἡ καθ' αὑτὴν ἐκείνου ζωὴ ἀρίστη καὶ
30 ἀΐδιος. φαμὲν δὴ[3] τὸν θεὸν εἶναι ζῷον ἀΐδιον ἄριστον, ὥστε ζωὴ καὶ αἰὼν συνεχὴς καὶ ἀΐδιος ὑπάρχει τῷ θεῷ· τοῦτο γὰρ ὁ θεός. Ὅσοι δὲ ὑπολαμβάνουσιν, ὥσπερ οἱ Πυθαγόρειοι καὶ Σπεύσιππος, τὸ κάλλιστον καὶ ἄριστον μὴ ἐν ἀρχῇ
35 εἶναι, διὰ τὸ καὶ τῶν φυτῶν καὶ τῶν ζῴων τὰς ἀρχὰς αἴτια μὲν εἶναι, τὸ δὲ καλὸν καὶ τέλειον ἐν τοῖς ἐκ τούτων, οὐκ ὀρθῶς οἴονται. τὸ γὰρ σπέρμα ἐξ ἑτέρων ἐστὶ προτέρων τελείων, καὶ τὸ
1073 a πρῶτον οὐ σπέρμα ἐστίν, ἀλλὰ τὸ τέλειον· οἷον πρότερον ἄνθρωπον ἄν φαίη τις εἶναι τοῦ σπέρματος, οὐ τὸν ἐκ τούτου γενόμενον, ἀλλ' ἕτερον ἐξ οὗ τὸ σπέρμα. Ὅτι μὲν οὖν ἔστιν οὐσία τις
5 ἀΐδιος καὶ ἀκίνητος καὶ κεχωρισμένη τῶν αἰσθητῶν, φανερὸν ἐκ τῶν εἰρημένων. δέδεικται δὲ καὶ ὅτι μέγεθος οὐδὲν ἔχειν ἐνδέχεται ταύτην τὴν οὐσίαν, ἀλλ' ἀμερὴς καὶ ἀδιαίρετός ἐστιν (κινεῖ

[1] ἐκείνου μᾶλλον τοῦτο ex Alexandro Ross: ἐκεῖνο μᾶλλον τούτου codd.
[2] ὧδε Bekker: ὧδε ὧδε A^b.
[3] δὴ Themistius, ci. Bonitz: δὲ codd.

[a] In actualization the subject and object of thought (like those of perception, *De Anima* III. ii.) are identical.

of thought, *i.e.* essence, is thought. And it actually functions when it possesses this object.[a] Hence it is actuality rather than potentiality that is held to be the divine possession of rational thought, and its active contemplation is that which is most pleasant and best. If, then, the happiness which God always 9
enjoys is as great as that which we enjoy sometimes, it is marvellous; and if it is greater, this is still more marvellous. Nevertheless it is so. Moreover, life belongs to God. For the actuality of thought is life, and God is that actuality; and the essential actuality of God is life most good and eternal. We hold, then, that God is a living being, eternal, most good; and therefore life and a continuous eternal existence belong to God; for that is what God is.

Those who suppose, as do the Pythagoreans and 10
Speusippus,[b] that perfect beauty and goodness do not exist in the beginning (on the ground that whereas the first beginnings of plants and animals are causes, it is in the products of these that beauty and perfection are found) are mistaken in their views. For seed comes from prior creatures which are perfect, 11
and that which is first is not the seed but the perfect creature. *E.g.*, one might say that prior to the seed is the man—not he who is produced from the seed, but another man from whom the seed comes.[c]

Thus it is evident from the foregoing account that 12
there is some substance which is eternal and immovable and separate from sensible things; and it has also been shown that this substance can have no magnitude, but is impartible and indivisible (for it

[b] The view is referred to again in ch. x. 6, XIV. iv. 2, 3, v. 1.
[c] *Cf.* IX. viii. 4, 5.

1073 a γὰρ τὸν ἄπειρον χρόνον, οὐδὲν δ' ἔχει δύναμιν ἄπειρον πεπερασμένον· ἐπεὶ δὲ πᾶν μέγεθος ἢ ἄπειρον ἢ πεπερασμένον, πεπερασμένον μὲν διὰ τοῦτο οὐκ ἂν ἔχοι μέγεθος, ἄπειρον δ' ὅτι ὅλως οὐκ ἔστιν οὐδὲν ἄπειρον μέγεθος)· ἀλλὰ μὴν καὶ ὅτι ἀπαθὲς καὶ ἀναλλοίωτον· πᾶσαι γὰρ αἱ ἄλλαι κινήσεις ὕστεραι τῆς κατὰ τόπον. ταῦτα μὲν οὖν δῆλα διότι τοῦτον ἔχει τὸν τρόπον.

VIII. Πότερον δὲ μίαν θετέον τὴν τοιαύτην οὐσίαν ἢ πλείους, καὶ πόσας, δεῖ μὴ λανθάνειν, ἀλλὰ μεμνῆσθαι καὶ τὰς τῶν ἄλλων ἀποφάσεις, ὅτι περὶ πλήθους οὐθὲν εἰρήκασιν ὅ τι καὶ σαφὲς εἰπεῖν. ἡ μὲν γὰρ περὶ τὰς ἰδέας ὑπόληψις οὐδεμίαν ἔχει σκέψιν ἰδίαν· ἀριθμοὺς γὰρ λέγουσι τὰς ἰδέας οἱ λέγοντες ἰδέας, περὶ δὲ τῶν ἀριθμῶν ὁτὲ μὲν ὡς περὶ ἀπείρων λέγουσιν, ὁτὲ δὲ ὡς μέχρι τῆς δεκάδος ὡρισμένων· δι' ἣν δ' αἰτίαν τοσοῦτον τὸ πλῆθος τῶν ἀριθμῶν, οὐδὲν λέγεται μετὰ σπουδῆς ἀποδεικτικῆς. ἡμῖν δ' ἐκ τῶν ὑποκειμένων καὶ διωρισμένων λεκτέον. Ἡ μὲν γὰρ ἀρχὴ καὶ τὸ πρῶτον τῶν ὄντων ἀκίνητον καὶ καθ' αὑτὸ καὶ κατὰ συμβεβηκός, κινοῦν δὲ τὴν πρώτην ἀΐδιον καὶ μίαν κίνησιν. ἐπεὶ δὲ τὸ κινούμενον ἀνάγκη ὑπό τινος κινεῖσθαι, καὶ τὸ πρῶτον κινοῦν ἀκίνητον εἶναι καθ' αὑτό, καὶ τὴν ἀΐδιον κίνησιν ὑπὸ ἀϊδίου κινεῖσθαι καὶ τὴν μίαν ὑφ' ἑνός, ὁρῶμεν δὲ παρὰ τὴν τοῦ παντὸς τὴν ἁπλῆν φοράν, ἣν

[a] *Cf. Physics* 266 a 24-b 6.
[b] *Ibid.* III. v.
[c] *Cf.* XIII. viii. 17, 20. This was a Pythagorean survival, *cf.* Vol. I. Introd. xvi.
[d] *i.e.*, the (apparent) diurnal revolution of the heavens.

causes motion for infinite time, and nothing finite has an infinite potentiality [a]; and therefore since every magnitude is either finite or infinite, it cannot have finite magnitude, and it cannot have infinite magnitude because there is no such thing at all [b]); and moreover that it is impassive and unalterable; for all the other kinds of motion are posterior to spatial motion. Thus it is clear why this substance has these attributes. 13

The number of unmoved moving principles.

VIII. We must not disregard the question whether we should hold that there is one substance of this kind or more than one, and if more than one, how many; we must review the pronouncements of other thinkers and show that with regard to the number of the substances they have said nothing that can be clearly stated. The theory of the Ideas contains no peculiar treatment of the question; for the exponents of the theory call the Ideas numbers, and speak of the numbers now as though they were unlimited and now as though they were limited by the number 10 [c]; but as for why there should be just so many numbers, there is no explanation given with demonstrative accuracy. We, however, must discuss the question on the basis of the assumptions and distinctions which we have already made. 2 3

The motions of the heavenly bodies presuppose a plurality of unmoved movers.

The first principle and primary reality is immovable, both essentially and accidentally, but it excites the primary form of motion, which is one and eternal. Now since that which is moved must be moved by something, and the prime mover must be essentially immovable, and eternal motion must be excited by something eternal, and one motion by some one thing; and since we can see that besides the simple spatial motion of the universe [d] (which we hold to be 4

1073 a 30 κινεῖν φαμὲν τὴν πρώτην οὐσίαν καὶ ἀκίνητον, ἄλλας φορὰς οὔσας τὰς τῶν πλανήτων ἀΐδίους (ἀΐδιον γὰρ καὶ ἄστατον τὸ κύκλῳ σῶμα· δέδεικται δ' ἐν τοῖς φυσικοῖς περὶ τούτων), ἀνάγκη καὶ τούτων ἑκάστην τῶν φορῶν ὑπ' ἀκινήτου τε κινεῖσθαι καθ' αὑτὴν[1] καὶ ἀΐδίου οὐσίας. ἥ τε γὰρ τῶν ἄ- 35 στρων φύσις ἀΐδιος οὐσία τις οὖσα, καὶ τὸ κινοῦν ἀΐδιον καὶ πρότερον τοῦ κινουμένου, καὶ τὸ πρότερον οὐσίας οὐσίαν ἀναγκαῖον εἶναι. φανερὸν τοίνυν ὅτι τοσαύτας οὐσίας ἀναγκαῖον εἶναι τήν τε φύσιν ἀΐδιους καὶ ἀκινήτους καθ' αὑτὰς καὶ ἄνευ 1073 b μεγέθους, διὰ τὴν εἰρημένην αἰτίαν πρότερον. Ὅτι μὲν οὖν εἰσὶν οὐσίαι, καὶ τούτων τις[2] πρώτη καὶ δευτέρα κατὰ τὴν αὐτὴν τάξιν ταῖς φοραῖς τῶν ἄστρων, φανερόν. τὸ δὲ πλῆθος ἤδη τῶν φορῶν ἐκ τῆς οἰκειοτάτης φιλοσοφίᾳ[3] τῶν μαθηματικῶν 5 ἐπιστημῶν δεῖ σκοπεῖν, ἐκ τῆς ἀστρολογίας· αὕτη γὰρ περὶ οὐσίας αἰσθητῆς μὲν ἀϊδίου δὲ ποιεῖται τὴν θεωρίαν, αἱ δ' ἄλλαι περὶ οὐδεμιᾶς οὐσίας, οἷον ἥ τε περὶ τοὺς ἀριθμοὺς καὶ τὴν γεωμετρίαν. ὅτι μὲν οὖν πλείους τῶν φερομένων αἱ φοραί, φανερὸν τοῖς καὶ μετρίως ἡμμένοις· πλείους γὰρ 10 ἕκαστον φέρεται μιᾶς τῶν πλανωμένων ἄστρων. πόσαι δ' αὗται τυγχάνουσιν οὖσαι, νῦν μὲν ἡμεῖς ἃ λέγουσι τῶν μαθηματικῶν τινὲς ἐννοίας χάριν λέγομεν, ὅπως ᾖ τι τῇ διανοίᾳ πλῆθος ὡρισμένον

[1] αὑτὴν E Alexander: αὐτὸ A^{b}J γρ. Alexander, Simplicius.
[2] τις Alexander (?), Christ: τίς codd.
[3] φιλοσοφίᾳ Alexander, Themistius, Bonitz: φιλοσοφίας codd.

[a] *Physics* VIII. viii., ix., *De Caelo* I. ii., II. iii.-viii.
[b] Ch. vii. 12, 13.

excited by the primary immovable substance) there are other spatial motions—those of the planets—which are eternal (because a body which moves in a circle is eternal and is never at rest—this has been proved in our physical treatises [a]); then each of these spatial motions must also be excited by a substance which is essentially immovable and eternal. For 5 the nature of the heavenly bodies is eternal, being a kind of substance; and that which moves is eternal and prior to the moved; and that which is prior to a substance must be a substance. It is therefore clear that there must be an equal number of substances, in nature eternal, essentially immovable, and without magnitude; for the reason already stated.[b]

Thus it is clear that the movers are substances, 6 and that one of them is first and another second and so on in the same order as the spatial motions of the heavenly bodies. As regards the number of these 7 motions, we have now reached a question which must be investigated by the aid of that branch of mathematical science which is most akin to philosophy, *i.e.* astronomy; for this has as its object a substance which is sensible but eternal, whereas the other mathematical sciences, *e.g.* arithmetic and geometry, do not deal with any substance. That there are more spatial motions than there are bodies which move in space is obvious to those who have even a moderate grasp of the subject, since each of the non-fixed stars has more than one spatial motion. As 8 to how many these spatial motions actually are we shall now, to give some idea of the subject, quote what some of the mathematicians say, in order that there may be some definite number for the mind to

The number of these motions,

and of the movers which excite them, must be decided by astronomy.

1073 b ὑπολαβεῖν· τὸ δὲ λοιπὸν τὰ μὲν ζητοῦντας αὐτοὺς
δεῖ, τὰ δὲ πυνθανομένους παρὰ τῶν ζητούντων,
15 ἄν τι φαίνηται παρὰ τὰ νῦν εἰρημένα τοῖς ταῦτα
πραγματευομένοις, φιλεῖν μὲν ἀμφοτέρους, πείθε-
σθαι δὲ τοῖς ἀκριβεστέροις. Εὔδοξος μὲν οὖν
ἡλίου καὶ σελήνης ἑκατέρου τὴν φορὰν ἐν τρισὶν
ἐτίθετ' εἶναι σφαίραις, ὧν τὴν μὲν πρώτην τὴν τῶν
ἀπλανῶν ἄστρων εἶναι, τὴν δὲ δευτέραν κατὰ τὸν
20 διὰ μέσων τῶν ζῳδίων, τὴν δὲ τρίτην κατὰ τὸν
λελοξωμένον ἐν τῷ πλάτει τῶν ζῳδίων· ἐν μείζονι
δὲ πλάτει λελοξῶσθαι καθ' ὃν ἡ σελήνη φέρεται
ἢ καθ' ὃν ὁ ἥλιος. τῶν δὲ πλανωμένων ἄστρων ἐν
τέτταρσιν ἑκάστου σφαίραις, καὶ τούτων δὲ τὴν
25 μὲν πρώτην καὶ δευτέραν τὴν αὐτὴν εἶναι ἐκείναις
(τήν τε γὰρ τῶν ἀπλανῶν τὴν ἁπάσας φέρουσαν
εἶναι, καὶ τὴν ὑπὸ ταύτῃ[1] τεταγμένην καὶ κατὰ τὸν
διὰ μέσων τῶν ζῳδίων τὴν φορὰν ἔχουσαν κοινὴν
ἁπασῶν εἶναι), τῆς δὲ τρίτης ἁπάντων τοὺς πόλους
ἐν τῷ διὰ μέσων τῶν ζῳδίων εἶναι, τῆς δὲ τετάρ-
30 της τὴν φορὰν κατὰ τὸν λελοξωμένον πρὸς τὸν
μέσον ταύτης· εἶναι δὲ τῆς τρίτης σφαίρας τοὺς
πόλους τῶν μὲν ἄλλων ἰδίους, τοὺς δὲ τῆς Ἀφρο-
δίτης καὶ τοῦ Ἑρμοῦ τοὺς αὐτούς. Κάλλιππος
δὲ τὴν μὲν θέσιν τῶν σφαιρῶν τὴν αὐτὴν ἐτίθετο

[1] *ταύτην* recc.

[a] Of Cnidus (*circa* 408–355 B.C.). He was a pupil of Plato, and a distinguished mathematician.

[b] For a full discussion of the theories of Eudoxus and Callippus see Dreyer, *Planetary Systems* 87-114; Heath, *Aristarchus of Samos* 190-224.

[c] Not identical with that of the fixed stars, but having the same motion.

grasp; but for the rest we must partly investigate for ourselves and partly learn from other investigators, and if those who apply themselves to these matters come to some conclusion which clashes with what we have just stated, we must appreciate both views, but follow the more accurate.

Eudoxus[a] held that the motion of the sun and 9
moon involves in either case three spheres,[b] of which The theory of homocentric spheres according to (a) Eudoxus.
the outermost is that of the fixed stars,[c] the second revolves in the circle which bisects the zodiac,[d] and the third revolves in a circle which is inclined across the breadth of the zodiac[e]; but the circle in which the moon moves is inclined at a greater angle than that in which the sun moves. And he held that the 10
motion of the planets involved in each case four spheres; and that of these the first and second are the same[f] as before (for the sphere of the fixed stars is that which carries round all the other spheres, and the sphere next in order, which has its motion in the circle which bisects the zodiac, is common to all the planets); the third sphere of all the planets has its poles in the circle which bisects the zodiac; and the fourth sphere moves in the circle inclined to the equator of the third. In the case of the third sphere, while the other planets have their own peculiar poles, those of Venus and Mercury are the same.

Callippus[g] assumed the same arrangement of the 11

[d] *i.e.*, revolves with its equator in the ecliptic.

[e] *i.e.*, has the plane of its equator inclined to the plane of the ecliptic. This sphere carries the sun (or moon) fixed to a point in its equator.

[f] Not the same, but having the same motion.

[g] Of Cyzicus (*fl.* 330 B.C.). Simplicius says (493. 5-8) that he corrected and elaborated Eudoxus's theory with Aristotle's help while on a visit to him at Athens.

1073 b Εὐδόξῳ, τοῦτ' ἔστι τῶν ἀποστημάτων τὴν τάξιν, τὸ
35 δὲ πλῆθος τῷ μὲν τοῦ Διὸς καὶ τῷ τοῦ Κρόνου τὸ
αὐτὸ ἐκείνῳ ἀπεδίδου, τῷ δ' ἡλίῳ καὶ τῇ σελήνῃ[1]
δύο ᾤετο ἔτι προσθετέας εἶναι σφαίρας, τὰ φαινό-
μενα εἰ μέλλει τις ἀποδώσειν, τοῖς δὲ λοιποῖς τῶν
πλανητῶν ἑκάστῳ μίαν. Ἀναγκαῖον δέ, εἰ μέλ-
1074 a λουσι συντεθεῖσαι πᾶσαι τὰ φαινόμενα ἀποδώσειν,
καθ' ἕκαστον τῶν πλανωμένων ἑτέρας σφαίρας μιᾷ
ἐλάττονας εἶναι τὰς ἀνελιττούσας καὶ εἰς τὸ αὐτὸ
ἀποκαθιστάσας τῇ θέσει τὴν πρώτην σφαῖραν ἀεὶ
5 τοῦ ὑποκάτω τεταγμένου ἄστρου· οὕτω γὰρ μόνως
ἐνδέχεται τὴν τῶν πλανητῶν φορὰν ἅπαντα ποιεῖ-
σθαι. ἐπεὶ οὖν ἐν αἷς μὲν αὐτὰ φέρεται σφαίραις αἱ
μὲν ὀκτὼ αἱ δὲ πέντε καὶ εἴκοσίν εἰσιν, τούτων δὲ
μόνας οὐ δεῖ ἀνελιχθῆναι ἐν αἷς τὸ κατωτάτω
τεταγμένον φέρεται, αἱ μὲν τὰς τῶν πρώτων δύο
10 ἀνελίττουσαι ἓξ ἔσονται, αἱ δὲ τὰς τῶν ὕστερον
τεττάρων ἑκκαίδεκα, ὁ δὲ ἁπασῶν ἀριθμὸς τῶν τε
φερουσῶν καὶ τῶν ἀνελιττουσῶν ταύτας πεντήκον-
τά τε καὶ πέντε. εἰ δὲ τῇ σελήνῃ τε καὶ τῷ ἡλίῳ
μὴ προστιθείη τις ἃς εἴπομεν κινήσεις, αἱ πᾶσαι
σφαῖραι ἔσονται ἑπτά[2] τε καὶ τεσσαράκοντα. Τὸ
15 μὲν οὖν πλῆθος τῶν σφαιρῶν ἔστω τοσοῦτον, ὥστε
καὶ τὰς οὐσίας καὶ τὰς ἀρχὰς τὰς ἀκινήτους [καὶ
τὰς αἰσθητὰς][3] τοσαύτας εὔλογον ὑπολαβεῖν· τὸ
γὰρ ἀναγκαῖον ἀφείσθω τοῖς ἰσχυροτέροις λέγειν.

[1] ἡλίου καὶ τῷ σελήνης recc. [2] ἐννέα ci. Sosigenes.
[3] om. Alexander, secl. Goebel.

[a] Aristotle is trying to establish a mechanical relation between the spheres, which Eudoxus and Callippus did not attempt to do. [b] The moon. [c] In § 11.
[d] Either Aristotle has made a slip in his calculations, or we should read ἐννέα (Sosigenes) for ἑπτά; this would give

spheres as did Eudoxus (that is, with respect to the order of their intervals), but as regards their number, whereas he assigned to Jupiter and Saturn the same number of spheres as Eudoxus, he considered that two further spheres should be added both for the sun and for the moon, if the phenomena are to be accounted for, and one for each of the other planets. (b) Callippus,

But if all the spheres in combination are to account for the phenomena, there must be for each of the other planets other spheres, one less in number than those already mentioned, which counteract these and restore to the same position the first sphere of the star which in each case is next in order below.[a] In this way only can the combination of forces produce the motion of the planets. Therefore since the forces by which the planets themselves are moved are 8 for Jupiter and Saturn, and 25 for the others, and since of these the only ones which do not need to be counteracted are those by which the lowest planet[b] is moved, the counteracting spheres for the first two planets will be 6, and those of the remaining four will be 16; and the total number of spheres, both those which move the planets and those which counteract these, will be 55. If we do not invest the moon and the sun with the additional motions which we have mentioned,[c] there will be 47 (?) [d] spheres in all. (c) Aristotle 12 13 14

This, then, may be taken to be the number of the spheres; and thus it is reasonable to suppose that there are as many immovable substances and principles,[e]—the statement of logical necessity may be left to more competent thinkers.

49, which appears to be the correct total. For alternative explanations of an error in calculation see Ross *ad loc.*
[e] *i.e.*, the movers of the spheres.

1074 a

Εἰ δὲ μηδεμίαν οἷόν τ' εἶναι φορὰν μὴ συντείνουσαν πρὸς ἄστρου φοράν, ἔτι δὲ πᾶσαν φύσιν καὶ πᾶσαν οὐσίαν ἀπαθῆ καὶ καθ' αὑτὴν τοῦ ἀρίστου τετυχηκυῖαν τέλος[1] εἶναι δεῖ νομίζειν, οὐδεμία ἂν εἴη παρὰ ταύτας ἑτέρα φύσις, ἀλλὰ τοῦτον ἀνάγκη τὸν ἀριθμὸν εἶναι τῶν οὐσιῶν. εἴτε γὰρ εἰσὶν ἕτεραι, κινοῖεν ἂν ὡς τέλος οὖσαι φορᾶς. ἀλλ' εἶναί γε ἄλλας φορὰς ἀδύνατον παρὰ τὰς εἰρημένας. τοῦτο δ' εὔλογον ἐκ τῶν φερομένων ὑπολαβεῖν. εἰ γὰρ πᾶν τὸ φέρον τοῦ φερομένου χάριν πέφυκε καὶ φορὰ πᾶσα φερομένου τινός ἐστιν, οὐδεμία φορὰ αὐτῆς ἂν ἕνεκα εἴη οὐδ' ἄλλης φορᾶς, ἀλλὰ τῶν ἄστρων ἕνεκα. εἰ γὰρ ἔσται φορὰ φορᾶς ἕνεκα, καὶ ἐκείνην ἑτέρου δεήσει χάριν εἶναι· ὥστ' ἐπειδὴ οὐχ οἷόν τε εἰς ἄπειρον, τέλος ἔσται πάσης φορᾶς τῶν φερομένων τι θείων σωμάτων κατὰ τὸν οὐρανόν.

Ὅτι δὲ εἷς οὐρανός, φανερόν. εἰ γὰρ πλείους οὐρανοὶ ὥσπερ ἄνθρωποι, ἔσται εἴδει μία ἡ περὶ ἕκαστον ἀρχή, ἀριθμῷ δέ γε πολλαί. ἀλλ' ὅσα ἀριθμῷ πολλά, ὕλην ἔχει (εἷς γὰρ λόγος καὶ ὁ αὐτὸς πολλῶν, οἷον ἀνθρώπου, Σωκράτης δὲ εἷς)· τὸ δὲ τί ἦν εἶναι οὐκ ἔχει ὕλην τὸ πρῶτον· ἐντελέχεια γάρ. ἓν ἄρα καὶ λόγῳ καὶ ἀριθμῷ τὸ πρῶτον κινοῦν ἀκίνητον ὄν· καὶ τὸ κινούμενον ἄρα

[1] τέλος Γ γρ. E Alexander (?) Bonitz: τέλους codd.

[a] See previous note.

[b] This paragraph seems to belong to an earlier period of Aristotle's thought. At any rate the argument that plurality involves matter is inconsistent with the view that there are 55 immaterial movers.

[c] The definition or form is one and universal; it is the combination of form with matter that constitutes an individual. Thus a plurality of individuals is caused by the combination of the same form with different matter.

If there can be no spatial motion which is not conducive to the motion of a star, and if moreover every entity and every substance which is impassive and has in itself attained to the highest good should be regarded as an end, then there can be no other entity besides these,[a] and the number of the substances must be as we have said. For if there are other substances, they must move something, since they are the end of spatial motion. But there can be no other spatial motions besides those already mentioned. This is a reasonable inference from a general consideration of spatial motion. For if everything which moves exists for the sake of that which is moved, and every motion for the sake of something which is moved, no motion can exist for the sake of itself or of some other motion, but all motions must exist for the sake of the stars. For if we are to suppose that one motion is for the sake of another, the latter too must be for the sake of something else; and since the series cannot be infinite, the end of every motion must be one of the divine bodies which are moved through the heavens.

15 The unmoved movers (apart from the prime mover) must be equal in number to the spheres.

16

17

It is evident that there is only one heaven.[b] For if there is to be a plurality of heavens (as there is of men), the principle of each must be one in kind but many in number. But all things which are many in number have matter (for one and the same definition applies to many individuals, *e.g.* that of "man"; but Socrates is one[c]), but the primary essence has no matter, because it is complete reality. Therefore the prime mover, which is immovable, is one both in formula and in number; and therefore so also is that

There is only one "heaven" or universe.

18

1074 a ἀεὶ καὶ συνεχῶς[1]· εἷς ἄρα οὐρανὸς μόνος. Παρα-
1074 b δέδοται δὲ παρὰ τῶν ἀρχαίων καὶ παμπαλαίων ἐν
μύθου σχήματι καταλελειμμένα τοῖς ὕστερον ὅτι
θεοί τέ εἰσιν οὗτοι καὶ περιέχει τὸ θεῖον τὴν ὅλην
φύσιν. τὰ δὲ λοιπὰ μυθικῶς ἤδη προσῆκται πρὸς
5 τὴν πειθὼ τῶν πολλῶν καὶ πρὸς τὴν εἰς τοὺς
νόμους καὶ τὸ συμφέρον χρῆσιν· ἀνθρωποειδεῖς τε
γὰρ τούτους καὶ τῶν ἄλλων ζώων ὁμοίους τισὶ
λέγουσι, καὶ τούτοις ἕτερα ἀκόλουθα καὶ παραπλή-
σια τοῖς εἰρημένοις· ὧν εἴ τις χωρίσας αὐτὸ λάβοι
μόνον τὸ πρῶτον, ὅτι θεοὺς ᾠοντο τὰς πρώτας
10 οὐσίας εἶναι, θείως ἂν εἰρῆσθαι νομίσειεν, καὶ κατὰ
τὸ εἰκὸς πολλάκις εὑρημένης εἰς τὸ δυνατὸν ἑκάστης
καὶ τέχνης καὶ φιλοσοφίας καὶ πάλιν φθειρομένων
καὶ ταύτας τὰς δόξας ἐκείνων οἷον λείψανα περι-
σεσῶσθαι μέχρι τοῦ νῦν. ἡ μὲν οὖν πάτριος δόξα
καὶ ἡ παρὰ τῶν πρώτων ἐπὶ τοσοῦτον ἡμῖν φανερὰ
μόνον.

15 IX. Τὰ δὲ περὶ τὸν νοῦν ἔχει τινὰς ἀπορίας·
δοκεῖ μὲν γὰρ εἶναι τῶν φαινομένων θειότατον,
πῶς δ' ἔχων τοιοῦτος ἂν εἴη, ἔχει τινὰς δυσκολίας.
εἴτε γὰρ μηδὲν νοεῖ, τί ἂν εἴη τὸ σεμνόν; ἀλλ' ἔχει
ὥσπερ ἂν εἴη ὁ καθεύδων· εἴτε νοεῖ, τούτου δ'
ἄλλο κύριον, οὐ γάρ ἐστι τοῦτο ὅ ἐστιν αὐτοῦ ἡ

[1] *συνεχῶς ἓν μόνον* EJ.

[a] This statement is not literally true. The planets do not seem to have been associated with the gods of popular mythology until the fourth century B.C. (see Burnet, *E.G.P.* p. 23 n.). But Aristotle's general meaning seems to be that

which is eternally and continuously in motion. Therefore there is only one heaven.

A tradition has been handed down by the ancient thinkers of very early times, and bequeathed to posterity in the form of a myth, to the effect that these heavenly bodies are gods,[a] and that the Divine pervades the whole of nature. The rest of their tradition has been added later in a mythological form to influence the vulgar and as a constitutional and utilitarian expedient[b]; they say that these gods are human in shape or are like certain other animals,[c] and make other statements consequent upon and similar to those which we have mentioned. Now if we separate these statements and accept only the first, that they supposed the primary substances to be gods, we must regard it as an inspired saying; and reflect that whereas every art and philosophy has probably been repeatedly developed to the utmost and has perished again, these beliefs of theirs have been preserved as a relic of former knowledge. To this extent only, then, are the views of our forefathers and of the earliest thinkers intelligible to us.

19 The divine element in nature has been recognized since the earliest times.

20

21

IX. The subject of Mind involves certain difficulties. Mind is held to be of all phenomena the most supernatural; but the question of how we must regard it if it is to be of this nature involves certain difficulties. If Mind thinks nothing, where is its dignity? It is in just the same state as a man who is asleep. If it thinks, but something else determines its thinking, then since that which is its essence is not

Further discussion of the Divine Intelligence. Its activity must be self thinking.

the gods were identified with the primary natural forces; and this is substantially true.

[b] *Cf.* II. iii. 1.

[c] *e.g.* the Egyptian deities. Zoomorphism in Greek religion is a doubtful quantity.

1074 b
οὐσία νόησις ἀλλὰ δύναμις, οὐκ ἂν ἡ ἀρίστη οὐσία εἴη· διὰ γὰρ τοῦ νοεῖν τὸ τίμιον αὐτῷ ὑπάρχει. ἔτι δὲ εἴτε νοῦς ἡ οὐσία αὐτοῦ εἴτε νόησίς ἐστι, τί νοεῖ; ἢ γὰρ αὐτὸς αὑτὸν ἢ ἕτερόν τι. καὶ εἰ ἕτερόν τι, ἢ τὸ αὐτὸ ἀεὶ ἢ ἄλλο. πότερον οὖν διαφέρει τι ἢ οὐδὲν τὸ νοεῖν τὸ καλὸν ἢ τὸ τυχόν; ἢ καὶ ἄτοπον τὸ διανοεῖσθαι περὶ ἐνίων; δῆλον τοίνυν ὅτι τὸ θειότατον καὶ τιμιώτατον νοεῖ, καὶ οὐ μεταβάλλει· εἰς χεῖρον γὰρ ἡ μεταβολή, καὶ κίνησίς τις ἤδη τὸ τοιοῦτον. πρῶτον μὲν οὖν εἰ μὴ νόησίς ἐστιν ἀλλὰ δύναμις, εὔλογον ἐπίπονον εἶναι τὸ συνεχὲς αὐτῷ τῆς νοήσεως· ἔπειτα δῆλον ὅτι ἄλλο τι ἂν εἴη τὸ τιμιώτερον ἢ ὁ νοῦς, τὸ νοούμενον. καὶ γὰρ τὸ νοεῖν καὶ ἡ νόησις ὑπάρξει καὶ τὸ χείριστον νοοῦντι. ὥστ' εἰ φευκτὸν τοῦτο (καὶ γὰρ μὴ ὁρᾶν ἔνια κρεῖττον ἢ ὁρᾶν), οὐκ ἂν εἴη τὸ ἄριστον ἡ νόησις. αὐτὸν ἄρα νοεῖ, εἴπερ ἐστὶ τὸ κράτιστον, καὶ ἔστιν ἡ νόησις νοήσεως νόησις.

Φαίνεται δ' ἀεὶ ἄλλου ἡ ἐπιστήμη καὶ ἡ αἴσθησις καὶ ἡ δόξα καὶ ἡ διάνοια, αὑτῆς δ' ἐν παρέργῳ. ἔτι εἰ ἄλλο τὸ νοεῖν καὶ τὸ νοεῖσθαι, κατὰ πότερον αὐτῷ τὸ εὖ ὑπάρχει; οὐδὲ γὰρ ταὐτὸ τὸ εἶναι
1075 a νοήσει καὶ νοουμένῳ. ἢ ἐπ' ἐνίων ἡ ἐπιστήμη τὸ πρᾶγμα, ἐπὶ μὲν τῶν ποιητικῶν ἄνευ ὕλης ἡ

[a] *i.e.*, if its thinking is determined by something else, Mind is only a potentiality, and not (as described in ch. vii. 1-9) the highest actuality.

[b] *Cf.* IX. viii. 18.

[c] If Mind is a potentiality, since a potentiality is of contraries, Mind may think that which is worst.

thinking but potentiality,[a] it cannot be the best reality; because it derives its excellence from the act of thinking. Again, whether its essence is thought 2
or thinking, what does it think? It must think either itself or something else; and if something else, then it must think either the same thing always, or different things at different times. Then does it make any difference, or not, whether it thinks that which is good or thinks at random? Surely it would be 3
absurd for it to think about some subjects. Clearly, then, it thinks that which is most divine and estimable, and does not change; for the change would be for the worse, and anything of this kind would immediately imply some sort of motion. Therefore if Mind is not thinking but a potentiality, (*a*) it is reasonable to suppose that the continuity of its thinking is laborious[b]; (*b*) clearly there must be something else which is more excellent than Mind; *i.e.* the object of thought; for both thought and the act of thinking 4
will belong even to the thinker of the worst thoughts.[c] Therefore if this is to be avoided (as it is, since it is better not to see some things than to see them), thinking cannot be the supreme good. Therefore Mind thinks itself, if it is that which is best; and its thinking is a thinking of thinking.

Objections to this view answered.

Yet it seems that knowledge and perception and opinion and understanding are always of something 5
else, and only incidentally of themselves. And further, if to think is not the same as to be thought, in respect of which does goodness belong to thought? for the act of thinking and the object of thought have not the same essence. The answer is that in some cases the knowledge is the object. In the productive sciences, if we disregard the matter, the sub-

1075 a οὐσία καὶ τὸ τί ἦν εἶναι, ἐπὶ δὲ τῶν θεωρητικῶν ὁ λόγος τὸ πρᾶγμα καὶ ἡ νόησις; οὐχ ἑτέρου οὖν ὄντος τοῦ νοουμένου καὶ τοῦ νοῦ, ὅσα μὴ ὕλην ἔχει, τὸ αὐτὸ ἔσται, καὶ ἡ νόησις τῷ νοουμένῳ[1] μία.

Ἔτι δὴ λείπεται ἀπορία, εἰ σύνθετον τὸ νοούμενον· μεταβάλλοι γὰρ ἂν ἐν τοῖς μέρεσι τοῦ ὅλου. ἢ ἀδιαίρετον πᾶν τὸ μὴ ἔχον ὕλην· ὥσπερ ὁ ἀνθρώπινος νοῦς, ἢ ὅ γε τῶν συνθέτων ἔχει ἔν τινι χρόνῳ (οὐ γὰρ ἔχει τὸ εὖ ἐν τῳδὶ ἢ ἐν τῳδί, ἀλλ' ἐν ὅλῳ τινὶ τὸ ἄριστον, ὃν ἄλλο τι), οὕτως δ' ἔχει αὐτὴ αὑτῆς ἡ νόησις τὸν ἅπαντα αἰῶνα.

X. Ἐπισκεπτέον δὲ καὶ ποτέρως ἔχει ἡ τοῦ ὅλου φύσις τὸ ἀγαθὸν καὶ τὸ ἄριστον, πότερον κεχωρισμένον τι καὶ αὐτὸ καθ' αὑτό, ἢ τὴν τάξιν. ἢ ἀμφοτέρως, ὥσπερ στράτευμα; καὶ γὰρ ἐν τῇ τάξει τὸ εὖ καὶ ὁ στρατηγός, καὶ μᾶλλον οὗτος· οὐ γὰρ οὗτος διὰ τὴν τάξιν ἀλλ' ἐκείνη διὰ τοῦτόν ἐστιν. πάντα δὲ συντέτακταί πως, ἀλλ' οὐχ ὁμοίως, καὶ πλωτὰ καὶ πτηνὰ καὶ φυτά· καὶ οὐχ οὕτως ἔχει ὥστε μὴ εἶναι θατέρῳ πρὸς θάτερον μηδέν, ἀλλ' ἔστι τι. πρὸς μὲν γὰρ ἓν ἅπαντα συντέτακται, ἀλλ' ὥσπερ ἐν οἰκίᾳ τοῖς ἐλευθέροις ἥκιστα ἔξεστιν ὅ τι ἔτυχε ποιεῖν, ἀλλὰ πάντα ἢ

[1] τῷ νοουμένῳ Alexander, Bonitz: τοῦ νοουμένου.

[a] *i.e.*, beings composed of matter as well as form. Such beings are contrasted with the divine Mind, which is pure form.

[b] The meaning of this sentence is shown by the definition of Happiness in *Eth. Nic.* 1098 a 16-20. It takes the human mind a lifetime of the highest intellectual activity of which it is capable to attain to happiness; but the divine Mind is always happy. *Cf.* ch. vii. 9.

stance, *i.e.* the essence, is the object; but in the speculative sciences the formula or the act of thinking is the object. Therefore since thought and the object of thought are not different in the case of things which contain no matter, they will be the same, and the act of thinking will be one with the object of thought.

There still remains the question whether the object 6
of thought is composite; for if so, thought would change in passing from one part of the whole to another. The answer is that everything which contains no matter is indivisible. Just as the human mind, or rather the mind of composite beings,[a] is in a certain space of time[b] (for it does not possess the good at this or at that moment, but in the course of a certain whole period it attains to the supreme good, which is other than itself), so is absolute self-thought throughout all eternity.

X. We must also consider in which sense the nature of the universe contains the good or the supreme good; whether as something separate and independent, or as the orderly arrangement of its parts. Probably in both senses, as an army does; for the efficiency of an army consists partly in the order and partly in the general; but chiefly in the latter, because he does not depend upon the order, but the order depends upon him. All things, both fishes and birds and plants, are ordered together in some way, but not in the same way; and the system is not such that there is no relation between one thing and another; there is a definite connexion. Every- 3
thing is ordered together to one end; but the arrangement is like that in a household, where the free persons have the least liberty to act at random,

The good exists both as a separate substance and as the order of the universe. 2

1075 a τὰ πλεῖστα τέτακται, τοῖς δὲ ἀνδραπόδοις καὶ τοῖς θηρίοις μικρὸν τὸ εἰς τὸ κοινόν, τὸ δὲ πολὺ ὅ τι ἔτυχεν· τοιαύτη γὰρ ἑκάστου ἀρχὴ αὐτῶν ἡ φύσις ἐστίν. λέγω δ' οἷον εἴς γε τὸ διακριθῆναι ἀνάγκη ἅπασιν ἐλθεῖν, καὶ ἄλλα οὕτως ἔστιν ὧν 25 κοινωνεῖ ἅπαντα εἰς τὸ ὅλον. Ὅσα δὲ ἀδύνατα συμβαίνει ἢ ἄτοπα τοῖς ἄλλως λέγουσι, καὶ ποῖα οἱ χαριεστέρως λέγοντες, καὶ ἐπὶ ποίων ἐλάχισται ἀπορίαι, δεῖ μὴ λανθάνειν. πάντες γὰρ ἐξ ἐναντίων ποιοῦσι πάντα. οὔτε δὲ τὸ πάντα οὔτε τὸ ἐξ ἐναντίων ὀρθῶς, οὔτ' ἐν ὅσοις τὰ ἐναντία 30 ὑπάρχει, πῶς ἐκ τῶν ἐναντίων ἔσται, οὐ λέγουσιν· ἀπαθῆ γὰρ τὰ ἐναντία ὑπ' ἀλλήλων. ἡμῖν δὲ λύεται τοῦτο εὐλόγως τῷ τρίτον τι εἶναι. οἱ δὲ τὸ ἕτερον τῶν ἐναντίων ὕλην ποιοῦσιν, ὥσπερ οἱ τὸ ἄνισον τῷ ἴσῳ ἢ τῷ ἑνὶ τὰ πολλά. λύεται δὲ καὶ τοῦτο τὸν αὐτὸν τρόπον· ἡ γὰρ ὕλη ἡ μία 35 οὐδενὶ ἐναντίον. ἔτι ἅπαντα τοῦ φαύλου μεθέξει ἔξω τοῦ ἑνός· τὸ γὰρ κακὸν αὐτὸ θάτερον τῶν στοιχείων. οἱ δ' ἄλλοι οὐδ' ἀρχὰς τὸ ἀγαθὸν καὶ τὸ κακόν· καίτοι ἐν ἅπασι μάλιστα τὸ ἀγαθὸν ἀρχή. οἱ δὲ τοῦτο μὲν ὀρθῶς ὅτι ἀρχήν, ἀλλὰ

[a] The free persons correspond to the heavenly bodies, whose movements are fixed by necessity; the servile class to human beings. Each class acts in accordance with its nature, a principle which "produces obedience to duty in the higher creatures, caprice in the lower" (Ross).

[b] Because there is an eternal substance, which is not derived from contraries (ch. vi. 1).

[c] Things are derived from a substrate as well (ch. ii. 1).

and have all or most of their actions preordained for them, whereas the slaves and animals have little common responsibility and act for the most part at random; for the nature of each class is a principle such as we have described.[a] I mean, for example, 4 that everything must at least come to dissolution; and similarly there are other respects in which everything contributes to the good of the whole.

Difficulties in other views. (a) Platonists and Pythagoreans,

We must not fail to observe how many impossibilities and absurdities are involved by other theories, and what views the more enlightened thinkers hold, and what views entail the fewest difficulties. All 5 thinkers maintain that all things come from contraries; but they are wrong both in saying "all things"[b] and in saying that they come from contraries,[c] nor do they explain how things in which the contraries really are present come from the contraries; for the contraries cannot act upon each other. For us, however, this problem is satisfactorily solved by the fact that there is a third factor. Other thinkers make one of the two contraries matter; *e.g.*, this is done by those[d] who make the Unequal matter for the Equal, or the Many matter for the One. But this also is disposed of in 6 the same way; for the one matter of two contraries is contrary to nothing. Further, on their view everything except Unity itself will partake of evil; for "the Bad"[e] is itself one of the elements. The other school[f] does not even regard the Good and the Bad as principles; yet the Good is in the truest sense a principle in all things. The former school is

[d] See on XIV. i. 4.

[e] The "Bad" was identified with the unequal; *cf.* I. vi. 10.

[f] See ch. vii. 10.

1075 b πῶς τὸ ἀγαθὸν ἀρχὴ οὐ λέγουσιν, πότερον ὡς τέλος ἢ ὡς κινῆσαν ἢ ὡς εἶδος. Ἀτόπως δὲ καὶ Ἐμπεδοκλῆς· τὴν γὰρ φιλίαν ποιεῖ τὸ ἀγαθόν, αὕτη δ' ἀρχὴ καὶ ὡς κινοῦσα (συνάγει γάρ) καὶ ὡς ὕλη (μόριον γὰρ τοῦ μίγματος)· εἰ δὴ καὶ τῷ αὐτῷ συμβέβηκε καὶ ὡς ὕλῃ[1] ἀρχῇ εἶναι καὶ ὡς κινοῦντι, ἀλλὰ τό γ' εἶναι οὐ ταὐτό. κατὰ πότερον οὖν φιλία; ἄτοπον δὲ καὶ τὸ ἄφθαρτον εἶναι τὸ νεῖκος· τοῦτο δ' ἐστὶν αὐτὸ ἡ τοῦ κακοῦ φύσις.

Ἀναξαγόρας δὲ ὡς κινοῦν τὸ ἀγαθὸν ἀρχήν· ὁ γὰρ νοῦς κινεῖ, ἀλλὰ κινεῖ ἕνεκά τινος, ὥστε ἕτερον, πλὴν ὡς ἡμεῖς λέγομεν· ἡ γὰρ ἰατρικὴ ἐστί πως ἡ ὑγίεια. ἄτοπον δὲ καὶ τὸ ἐναντίον μὴ ποιῆσαι τῷ ἀγαθῷ καὶ τῷ νῷ. πάντες δ' οἱ τἀναντία λέγοντες οὐ χρῶνται τοῖς ἐναντίοις, ἐὰν μὴ ῥυθμίσῃ τις. καὶ διὰ τί τὰ μὲν φθαρτὰ τὰ δ' ἄφθαρτα, οὐδεὶς λέγει· πάντα γὰρ τὰ ὄντα ποιοῦσιν ἐκ τῶν αὐτῶν ἀρχῶν. ἔτι οἱ μὲν ἐκ τοῦ μὴ ὄντος ποιοῦσι τὰ ὄντα· οἱ δ' ἵνα μὴ τοῦτο ἀναγκασθῶσιν, ἓν πάντα ποιοῦσιν. ἔτι διὰ τί ἀεὶ ἔσται γένεσις καὶ τί αἴτιον γενέσεως, οὐδεὶς λέγει. Καὶ τοῖς δύο ἀρχὰς ποιοῦσιν ἄλλην ἀνάγκη ἀρχὴν κυριωτέραν εἶναι, καὶ τοῖς τὰ εἴδη [ὅτι[2] ἄλλη ἀρχὴ κυριωτέρα][3].

[1] καὶ ὡς ὕλῃ Bessarion Alexander Bonitz : ὡς ὕλη καὶ.
[2] ὅτι] ἔτι fort. Themistius, ci. Bonitz (uel ἔσται), Ross.
[3] Christ.

[a] *Cf.* I. iv. 3. [b] Fr. 17 (Diels), 18-20. [c] *Cf.* IX. ix. 3.
[d] Motion presupposes a final cause, which was not what Anaxagoras meant by "Mind." *Cf.* I. vii. 5.
[e] Aristotle identifies the efficient cause, in a sense, with the final cause. *Cf.* VII. ix. 3.
[f] In I. vi. 10 Aristotle describes Anaxagoras as recognizing contrary principles of good and evil. Moreover, on Aristotle's own showing, evil cannot be a principle (IX. ix. 3).

right in holding that the Good is a principle, but they do not explain how it is a principle—whether as an end or as a moving cause or as form.

Empedocles' theory is also absurd, for he identifies 7
the Good with Love.[a] This is a principle both as (*b*) Empedocles.
causing motion (since it combines) and as matter (since it is part of the mixture).[b] Now even if it so happens that the same thing is a principle both as matter and as causing motion, still the essence of the two principles is not the same. In which respect, then, is Love a principle? And it is also absurd that Strife should be imperishable; strife is the very essence of evil.[c]

Anaxagoras makes the Good a principle as causing 8
motion; for Mind moves things, but moves them (*c*) Anaxagoras.
for some end, and therefore there must be some other Good[d]—unless it is as we say; for on our view the art of medicine is in a sense health.[e] It is absurd also not to provide a contrary for the Good, *i.e.* for Mind.[f] But all those who recognize the contraries fail to make use of the contraries, unless General
we systematize their theories. And none of them 9
explains why some things are perishable and others criticisms of previous theories.
imperishable; for they make all existing things come from the same first principles.[g] Again, some[h] make existing things come from not-being, while others,[i] to avoid this necessity, make all things one. Again, no one explains why there must always be generation, and what the cause of generation is.

Moreover, those who posit two principles must 10
admit another superior principle,[f] and so must the exponents of the Forms; for what made or makes

[g] *Cf.* III. iv. 11-20. [h] *Cf.* ch. ii. 2, 3.
[i] The Eleatics. *Cf.* I. v. 10-13. [f] *i.e.*, an efficient cause.

1075 b
διὰ τί γὰρ μετέσχεν ἢ μετέχει; καὶ τοῖς μὲν ἄλλοις ἀνάγκη τῇ σοφίᾳ καὶ τῇ τιμιωτάτῃ ἐπιστήμῃ εἶναί τι ἐναντίον, ἡμῖν δ' οὔ. οὐ γάρ ἐστιν ἐναντίον τῷ πρώτῳ οὐδέν· πάντα γὰρ τὰ ἐναντία ὕλην ἔχει, καὶ δυνάμει ταῦτα[1] ἔστιν· ἡ δὲ ἐναντία ἄγνοια εἰς τὸ ἐναντίον, τῷ δὲ πρώτῳ ἐναντίον οὐδέν.

Εἴ τε[2] μὴ ἔσται παρὰ τὰ αἰσθητὰ ἄλλα, οὐκ ἔσται ἀρχὴ καὶ τάξις καὶ γένεσις καὶ τὰ οὐράνια, ἀλλ' ἀεὶ τῆς ἀρχῆς ἀρχή, ὥσπερ τοῖς θεολόγοις καὶ τοῖς φυσικοῖς πᾶσιν. εἰ δ' ἔσται τὰ εἴδη ἢ ⟨οἱ⟩[3] ἀριθμοί, οὐδενὸς αἴτια· εἰ δὲ μή, οὔτι κινήσεώς γε. Ἔτι πῶς ἔσται ἐξ ἀμεγεθῶν μέγεθος καὶ συνεχές; ὁ γὰρ ἀριθμὸς οὐ ποιήσει συνεχές, οὔτε ὡς κινοῦν οὔτε ὡς εἶδος. ἀλλὰ μὴν οὐδέν γ' ἔσται τῶν ἐναντίων ὅπερ καὶ ποιητικὸν καὶ κινητικόν· ἐνδέχοιτο γὰρ ἂν μὴ εἶναι. ἀλλὰ μὴν ὕστερόν γε τὸ ποιεῖν δυνάμεως. οὐκ ἄρα ἀΐδια τὰ ὄντα. ἀλλ' ἔστιν· ἀναιρετέον ἄρα τούτων τι. τοῦτο δ' εἴρηται πῶς.[4] Ἔτι τίνι οἱ ἀριθμοὶ ἓν ἢ ἡ ψυχὴ καὶ τὸ σῶμα καὶ ὅλως τὸ εἶδος καὶ τὸ πρᾶγμα, οὐδὲν λέγει οὐδείς· οὐδ' ἐνδέχεται εἰπεῖν, ἐὰν μὴ ὡς ἡμεῖς εἴπῃ, ὡς τὸ κινοῦν ποιεῖ.

[1] ταῦτα JΓ: ταὐτὰ EA[b] Themistius.
[2] εἴ τε Christ: εἴτε. [3] ex Alexandro Bonitz.
[4] πῶς Bonitz: ὡς.

[a] If there is nothing but what is sensible or potential, there can be no prime mover (which is actuality) to excite motion in the universe, and no teleology in causation. For the cosmologists on causation see III. iii. 11-13.
[b] By assuming an eternal actual mover (ch. vi. 4).

particulars participate in the Forms? And on all other views it follows necessarily that there must be something which is contrary to Wisdom or supreme knowledge, but on ours it does not. For there is no contrary to that which is primary, since all contraries 11
involve matter, and that which has matter exists potentially; and the ignorance which is contrary to Wisdom would tend towards the contrary of the object of Wisdom; but that which is primary has no contrary.

Further, if there is to be nothing else besides sensible things, there will be no first principle, no order, no generation, and no celestial motions, but every principle will be based upon another,[a] as in the accounts of all the cosmologists and physicists. And if the Forms or numbers are to exist, they will 12
be causes of nothing; or if not of nothing, at least not of motion.

Further, how can extension, *i.e.* a continuum, be produced from that which is unextended? Number cannot, either as a moving or as a formal cause, produce a continuum. Moreover, no contrary can be essentially productive and kinetic, for then it would be possible for it not to exist; and further, 13
the act of production would in any case be posterior to the potentiality. Therefore the world of reality is not eternal. But there are real objects which are eternal. Therefore one of these premisses must be rejected. We have described how this may be done.[b]

Further, in virtue of what the numbers, or soul and body, or in general the form and the object, are one, no one attempts to explain; nor is it possible to do so except on our theory, that it is the moving

1075 b οἱ δὲ λέγοντες τὸν ἀριθμὸν πρῶτον τὸν μαθηματικὸν καὶ οὕτως ἀεὶ ἄλλην ἐχομένην οὐσίαν καὶ
1076 a ἀρχὰς ἑκάστης ἄλλας, ἐπεισοδιώδη τὴν τοῦ παντὸς οὐσίαν ποιοῦσιν (οὐδὲν γὰρ ἡ ἑτέρα τῇ ἑτέρᾳ συμβάλλεται οὖσα ἢ μὴ οὖσα) καὶ ἀρχὰς πολλάς· τὰ δὲ ὄντα οὐ βούλεται πολιτεύεσθαι κακῶς.

οὐκ ἀγαθὸν πολυκοιρανίη· εἷς κοίρανος ἔστω.

[a] *Cf.* VIII. vi.
[b] Speusippus and his followers; *cf.* VII. ii. 4, XIV. iii. 6.
[c] Homer, *Iliad* ii. 204.

cause that makes them one.[a] As for those[b] who main- 14
tain that mathematical number is the primary reality, and so go on generating one substance after another and finding different principles for each one, they make the substance of the universe incoherent (for one substance in no way affects another by its existence or non-existence) and give us a great many governing principles. But the world must not be governed badly:

The rule of many is not good; let one be the ruler.[c]

M

1076 a

I. Περὶ μὲν οὖν τῆς τῶν αἰσθητῶν οὐσίας εἴρηται τίς ἐστιν, ἐν μὲν τῇ μεθόδῳ τῇ τῶν φυσικῶν περὶ τῆς ὕλης, ὕστερον δὲ περὶ τῆς κατ' ἐνέργειαν. ἐπεὶ δ' ἡ σκέψις ἐστὶ πότερόν ἔστι τις παρὰ τὰς αἰσθητὰς οὐσίας ἀκίνητος καὶ ἀΐδιος ἢ οὐκ ἔστι, καὶ εἴ ἐστι τίς ἐστι, πρῶτον τὰ παρὰ τῶν ἄλλων λεγόμενα θεωρητέον, ὅπως εἴτε τι μὴ καλῶς λέγουσι, μὴ τοῖς αὐτοῖς ἔνοχοι ὦμεν, καὶ εἴ τι δόγμα κοινὸν ἡμῖν κἀκείνοις, τοῦτ' ἰδίᾳ μὴ καθ' ἡμῶν δυσχεραίνωμεν· ἀγαπητὸν γὰρ εἴ τις τὰ μὲν κάλλιον λέγοι, τὰ δὲ μὴ χεῖρον. Δύο δ' εἰσὶ δόξαι περὶ τούτων· τά τε γὰρ μαθηματικὰ φασιν οὐσίας εἶναί τινες, οἷον ἀριθμοὺς καὶ γραμμὰς καὶ τὰ συγγενῆ τούτοις, καὶ πάλιν τὰς ἰδέας. ἐπεὶ δὲ οἱ μὲν δύο ταῦτα γένη ποιοῦσι, τάς τε ἰδέας καὶ τοὺς μαθηματικοὺς ἀριθμούς, οἱ δὲ μίαν φύσιν ἀμφοτέρων, ἕτεροι δέ τινες τὰς μαθηματικὰς μόνον οὐσίας εἶναί φασι, σκεπτέον πρῶτον μὲν περὶ τῶν μαθηματικῶν, μηδεμίαν προστιθέντας φύσιν ἄλλην αὐτοῖς, οἷον πότερον ἰδέαι τυγχάνουσιν οὖσαι ἢ οὔ,

[a] The reference is presumably to *Physics* I.
[b] In Books VII.-IX.
[c] This was the orthodox Platonist view; *cf.* I. vi. 4.
[d] Xenocrates and his followers.

BOOK XIII

Book XIII. Mathematical objects,

I. We have already explained what the substance of sensible things is, dealing in our treatise on physics[a] with the material substrate, and subsequently with substance as actuality.[b] Now since we are inquiring whether there is or is not some immutable and eternal substance besides sensible substances, and if there is, what it is, we must first examine the statements of other thinkers, so that if they have been mistaken in any respect, we may not be liable to the same mistakes; and if there is any view which is common to them and us, we may not feel any private self-irritation on this score. For we must be content if we state some points better than they have done, and others no worse.

2 Ideas and numbers. Necessity of discussing other views about non sensible substance.

There are two views on this subject. Some say 3 that mathematical objects, *i.e.* numbers and lines, etc., are substances; and others again that the Ideas are substances. Now since some[c] recognize 4 these as two classes—the Ideas and the mathematical numbers—and others[d] regard both as having one nature, and yet others[e] hold that only the mathematical substances are substances, we must first consider the mathematical objects, without imputing to them any other characteristic—*e.g.* by asking whether they are really Ideas or not, or whether

[e] The Pythagoreans and Speusippus.

καὶ πότερον ἀρχαὶ καὶ οὐσίαι τῶν ὄντων ἢ οὔ, ἀλλ' ὡς περὶ μαθηματικῶν μόνον εἴτ' εἰσὶν εἴτε μή εἰσι, καὶ εἰ εἰσὶ πῶς εἰσίν· ἔπειτα μετὰ ταῦτα χωρὶς περὶ τῶν ἰδεῶν αὐτῶν ἁπλῶς καὶ ὅσον νόμου χάριν· τεθρύληται γὰρ τὰ πολλὰ καὶ ὑπὸ τῶν ἐξωτερικῶν λόγων. ἔτι δὲ πρὸς ἐκείνην δεῖ τὴν σκέψιν ἁπάντων τὸν πλείω λόγον, ὅταν ἐπισκοπῶμεν εἰ αἱ οὐσίαι καὶ αἱ ἀρχαὶ τῶν ὄντων ἀριθμοὶ καὶ ἰδέαι εἰσίν· μετὰ γὰρ τὰς ἰδέας αὕτη λείπεται τρίτη σκέψις. Ἀνάγκη δ', εἴπερ ἔστι τὰ μαθηματικά, ἢ ἐν τοῖς αἰσθητοῖς εἶναι αὐτά, καθάπερ λέγουσί τινες, ἢ κεχωρισμένα τῶν αἰσθητῶν (λέγουσι δὲ καὶ οὕτω τινές)· ἢ εἰ μηδετέρως, ἢ οὐκ εἰσὶν ἢ ἄλλον τρόπον εἰσίν. ὥσθ' ἡ ἀμφισβήτησις ἡμῖν ἔσται οὐ περὶ τοῦ εἶναι ἀλλὰ περὶ τοῦ τρόπου.

II. Ὅτι μὲν τοίνυν ἔν γε τοῖς αἰσθητοῖς ἀδύνατον εἶναι καὶ ἅμα πλασματίας ὁ λόγος, εἴρηται μὲν καὶ ἐν τοῖς διαπορήμασιν ὅτι δύο ἅμα στερεὰ εἶναι ἀδύνατον, ἔτι δὲ καὶ ὅτι τοῦ αὐτοῦ λόγου καὶ τὰς ἄλλας δυνάμεις καὶ φύσεις ἐν τοῖς αἰσθητοῖς εἶναι καὶ μηδεμίαν κεχωρισμένην—ταῦτα μὲν οὖν εἴρηται πρότερον· ἀλλὰ πρὸς τούτοις φανερὸν ὅτι ἀδύνατον διαιρεθῆναι ὁτιοῦν σῶμα· κατ' ἐπίπεδον γὰρ διαιρεθήσεται, καὶ τοῦτο κατὰ γραμμήν, καὶ αὕτη κατὰ στιγμήν, ὥστ' εἰ τὴν στιγμὴν διελεῖν ἀδύνατον, καὶ τὴν γραμμήν, εἰ δὲ ταύτην, καὶ

[a] *Cf.* III. ii. 23-30.

they are principles and substances of existing things or not—and merely inquire whether as mathematical objects they exist or not, and if they do, in what sense; then after this we must separately consider the Ideas themselves, simply and in so far as the accepted procedure requires; for most of the arguments have been made familiar already by the criticisms of other thinkers. And further, the greater part of our discussion must bear directly upon this second question—viz. when we are considering whether the substances and first principles of existing things are numbers and Ideas; for after we have dealt with the Ideas there remains this third question.

Now if the objects of mathematics exist, they must be either in sensible things, as some hold; or separate from them (there are some also who hold this view); or if they are neither the one nor the other, either they do not exist at all, or they exist in some other way. Thus the point which we shall have to discuss is concerned not with their existence, but with the mode of their existence.

The objects of mathematics.

II. That the objects of mathematics cannot be in sensible things, and that moreover the theory that they are is a fabrication, has been observed already in our discussion of difficulties [a]—the reasons being (*a*) that two solids cannot occupy the same space, and (*b*) that on this same theory all other potentialities and characteristics would exist in sensible things, and none of them would exist separately. This, then, has been already stated; but in addition to this it is clearly impossible on this theory for any body to be divided. For it must be divided in a plane, and the plane in a line, and the line at a point; and therefore if the point is indi-

They are not in sensible things.

1076 b τἆλλα. τί οὖν διαφέρει ἢ ταύτας εἶναι τοιαύτας φύσεις, ἢ αὐτὰς μὲν μή, εἶναι δ' ἐν αὐταῖς τοιαύτας φύσεις; τὸ αὐτὸ γὰρ συμβήσεται· διαιρουμένων γὰρ τῶν αἰσθητῶν διαιρεθήσονται, ἢ οὐδὲ αἱ αἰσθηταί.

Ἀλλὰ μὴν οὐδὲ κεχωρισμένας γ' εἶναι φύσεις τοιαύτας δυνατόν. εἰ γὰρ ἔσται στερεὰ παρὰ τὰ αἰσθητὰ κεχωρισμένα τούτων ἕτερα καὶ πρότερα τῶν αἰσθητῶν, δῆλον ὅτι καὶ παρὰ τὰ ἐπίπεδα ἕτερα ἀναγκαῖον εἶναι ἐπίπεδα κεχωρισμένα, καὶ στιγμὰς καὶ γραμμάς· τοῦ γὰρ αὐτοῦ λόγου. εἰ δὲ ταῦτα, πάλιν παρὰ τὰ τοῦ στερεοῦ τοῦ μαθηματικοῦ ἐπίπεδα καὶ γραμμὰς καὶ στιγμὰς ἕτερα κεχωρισμένα· πρότερα γὰρ τῶν συγκειμένων ἐστὶ τὰ ἀσύνθετα· καὶ εἴπερ τῶν αἰσθητῶν πρότερα σώματα μὴ αἰσθητά, τῷ αὐτῷ λόγῳ καὶ τῶν ἐπιπέδων τῶν ἐν τοῖς ἀκινήτοις στερεοῖς τὰ αὐτὰ καθ' αὑτά. ὥστε ἕτερα ταῦτα ἐπίπεδα καὶ γραμμαὶ τῶν ἅμα τοῖς στερεοῖς τοῖς κεχωρισμένοις· τὰ μὲν γὰρ ἅμα τοῖς μαθηματικοῖς στερεοῖς, τὰ δὲ πρότερα τῶν μαθηματικῶν στερεῶν. πάλιν τοίνυν τούτων τῶν ἐπιπέδων ἔσονται γραμμαί, ὧν πρότερον δεήσει ἑτέρας γραμμὰς καὶ στιγμὰς εἶναι διὰ τὸν αὐτὸν λόγον· καὶ τούτων ⟨τῶν⟩[1] ἐν ταῖς προτέραις γραμμαῖς ἑτέρας προτέρας στιγμάς, ὧν οὐκέτι πρότεραι ἕτεραι. ἄτοπός τε δὴ γίγνεται ἡ σώρευσις· συμβαίνει γὰρ στερεὰ μὲν μοναχὰ παρὰ τὰ αἰσθητά, ἐπίπεδα δὲ τριττὰ παρὰ τὰ αἰσθητά, τά τε παρὰ τὰ αἰσθητὰ καὶ τὰ ἐν τοῖς

[1] Christ.

visible, so is the line, and so on. For what difference 3
does it make whether entities of this kind are sensible objects, or while not being the objects themselves, are yet present in them? the consequence will be the same, for either they must be divided when the sensible objects are divided, or else not even the sensible objects can be divided.

Nor again can entities of this kind exist separately. For if besides sensible solids there are to be other 4
solids which are separate from them and prior to sensible solids, clearly besides sensible planes there must be other separate planes, and so too with points and lines; for the same argument applies. And if these exist, again besides the planes, lines and points of the mathematical solid, there must be others which are separate; for the incomposite is 5
prior to the composite, and if prior to sensible bodies there are other non-sensible bodies, then by the same argument the planes which exist independently must be prior to those which are present in the immovable solids. Therefore there will be planes and lines distinct from those which coexist with the separately-existent solids; for the latter coexist with the mathematical solids, but the former are prior to the mathematical solids. Again, in these 6
planes there will be lines, and by the same argument there must be other lines prior to these; and prior to the points which are in the prior lines there must be other points, although there will be no other points prior to these. Now the accumulation be- 7
comes absurd; because whereas we get only one class of solids besides sensible solids, we get three classes of planes besides sensible planes—those which exist separately from sensible planes, those

nor can they exist separately
First proof

1076 b μαθηματικοῖς στερεοῖς καὶ (τὰ)[1] παρὰ τὰ ἐν τούτοις, γραμμαὶ δὲ τετραξαί, στιγμαὶ δὲ πενταξαί· ὥστε περὶ ποῖα αἱ ἐπιστῆμαι ἔσονται αἱ μαθηματικαὶ τούτων; οὐ γὰρ δὴ περὶ τὰ ἐν τῷ στερεῷ τῷ ἀκινήτῳ ἐπίπεδα καὶ γραμμὰς καὶ στιγμάς· ἀεὶ γὰρ περὶ τὰ πρότερα ἡ ἐπιστήμη. ὁ δ' αὐτὸς λόγος καὶ περὶ τῶν ἀριθμῶν· παρ' ἑκάστας γὰρ τὰς στιγμὰς ἕτεραι ἔσονται μονάδες, καὶ παρ' ἕκαστα τὰ ὄντα, (τὰ)[2] αἰσθητά, εἶτα τὰ νοητά, ὥστ' ἔσται γένη ἄπειρα τῶν μαθηματικῶν ἀριθμῶν.

1077 a Ἔτι ἆρ' ἐν τοῖς ἀπορήμασιν ἐπήλθομεν πῶς ἐνδέχεται λύειν; περὶ ἃ γὰρ ἡ ἀστρολογία ἐστίν, ὁμοίως ἔσται[3] παρὰ τὰ αἰσθητά, καὶ περὶ ἃ ἡ γεωμετρία· εἶναι δ' οὐρανὸν καὶ τὰ μόρια αὐτοῦ πῶς δυνατόν, ἢ ἄλλο ὁτιοῦν ἔχον κίνησιν; ὁμοίως δὲ καὶ τὰ ὀπτικὰ καὶ τὰ ἁρμονικά· ἔσται γὰρ φωνή τε καὶ ὄψις παρὰ τὰ αἰσθητὰ καὶ τὰ καθ' ἕκαστα· ὥστε δῆλον ὅτι καὶ αἱ ἄλλαι αἰσθήσεις καὶ τὰ ἄλλα αἰσθητά (τί γὰρ μᾶλλον τάδε ἢ τάδε;)· εἰ δὲ ταῦτα, καὶ ζῷα ἔσονται, εἴπερ καὶ αἰσθήσεις. Ἔτι γράφεται ἕνια καθόλου ὑπὸ τῶν μαθηματικῶν παρὰ ταύτας τὰς οὐσίας. ἔσται οὖν καὶ αὕτη τις ἄλλη οὐσία μεταξὺ κεχωρισμένη τῶν τ' ἰδεῶν καὶ τῶν μεταξύ, ἣ οὔτε ἀριθμός ἐστιν οὔτε στιγμαὶ οὔτε μέγεθος οὔτε χρόνος. εἰ δὲ τοῦτο ἀδύνατον, δῆλον

[1] Bessarion, Alexander.
[2] Ross.
[3] ἔσται Alexander (?) Bonitz : ἐστι.

[a] III. ii. 23-27.

which exist in the mathematical solids, and those which exist separately from those in the mathematical solids—four classes of lines, and five of points; with which of these, then, will the mathematical 8 sciences deal? Not, surely, with the planes, lines and points in the immovable solid; for knowledge is always concerned with that which is prior. And the same argument applies to numbers; for there will be other units besides each class of points, and besides each class of existing things, first the sensible and then the intelligible; so that there will be an infinite number of kinds of mathematical numbers.

Again, there are the problems which we enumer- 9 ated in our discussion of difficulties [a]: how can they Second proof. be solved? For the objects of astronomy will similarly be distinct from sensible things, and so will those of geometry; but how can a heaven and its parts (or anything else which has motion) exist apart from the sensible heaven? And similarly the objects of optics and of harmonics will be distinct, for there will be sound and sight apart from the sensible and particular objects. Hence clearly 10 the other senses and objects of sense will exist separately; for why should one class of objects do so rather than another? And if this is so, animals too will exist separately, inasmuch as the senses will.

Again, there are certain general mathematical Third proof theorems which are not restricted to these substances. Here, then, we shall have yet another 11 kind of substance intermediate between and distinct from the Ideas and the intermediates, which is neither number nor points nor spatial magnitude nor time. And if this is impossible, clearly it is

1077 a ὅτι κἀκεῖνα ἀδύνατον εἶναι κεχωρισμένα τῶν αἰσθητῶν.

Ὅλως δὲ τοὐναντίον συμβαίνει καὶ τοῦ ἀληθοῦς καὶ τοῦ εἰωθότος ὑπολαμβάνεσθαι, εἴ τις θήσει οὕτως εἶναι τὰ μαθηματικὰ ὡς κεχωρισμένας τινὰς φύσεις. ἀνάγκη γὰρ διὰ τὸ μὲν οὕτως εἶναι αὐτὰς προτέρας εἶναι τῶν αἰσθητῶν μεγεθῶν, κατὰ τὸ ἀληθὲς δὲ ὑστέρας· τὸ γὰρ ἀτελὲς μέγεθος γενέσει μὲν πρότερόν ἐστι, τῇ οὐσίᾳ δ' ὕστερον, οἷον ἄψυχον ἐμψύχου. Ἔτι τίνι καὶ ποτ'[1] ἔσται ἓν τὰ μαθηματικὰ μεγέθη; τὰ μὲν γὰρ ἐνταῦθα ψυχῇ ἢ μέρει ψυχῆς ἢ ἄλλῳ τινὶ εὐλόγως[2]· εἰ δὲ μή, πολλά, καὶ διαλύεται· ἐκείνοις δὲ διαιρετοῖς καὶ ποσοῖς οὖσι τί αἴτιον τοῦ ἓν εἶναι καὶ συμμένειν; Ἔτι αἱ γενέσεις δηλοῦσιν· πρῶτον μὲν γὰρ ἐπὶ μῆκος γίγνεται, εἶτα ἐπὶ πλάτος, τελευταῖον δ' εἰς βάθος, καὶ τέλος ἔσχεν. εἰ οὖν τὸ τῇ γενέσει ὕστερον τῇ οὐσίᾳ πρότερον, τὸ σῶμα πρότερον ἂν εἴη ἐπιπέδου καὶ μήκους, καὶ ταύτῃ καὶ τέλειον καὶ ὅλον μᾶλλον, ὅτι ἔμψυχον γίγνεται· γραμμὴ δὲ ἔμψυχος ἢ ἐπίπεδον πῶς ἂν εἴη; ὑπὲρ γὰρ τὰς αἰσθήσεις τὰς ἡμετέρας ἂν εἴη τὸ ἀξίωμα.

Ἔτι τὸ μὲν σῶμα οὐσία τις[3]· ἤδη γὰρ ἔχει πως τὸ τέλειον· αἱ δὲ γραμμαὶ πῶς οὐσίαι; οὔτε γὰρ ὡς

[1] καί ποτ' Bonitz: καὶ πότ'.
[2] εὐλόγως ci. Ross: εὔλογον Jaeger: εὐλόγῳ codd.
[3] τις Γ Bessarion Alexander: τίς.

[a] *i.e.*, in the natural order of development. Thus "generation" (γένεσις) is used in two different senses in this argument, which therefore becomes invalid (Bonitz).

also impossible that the aforesaid substances should exist separately from sensible objects.

In general, consequences result which are contrary both to the truth and to received opinion if we thus posit the objects of mathematics as definite separately-existent entities. For if they exist in this way, they must be prior to sensible spatial magnitudes, whereas in truth they must be posterior to them; for the incomplete spatial magnitude is in point of generation prior, but in point of substantiality posterior, as the inanimate is to the animate. 12 Fourth proof.

Again, in virtue of what can we possibly regard mathematical magnitudes as one? Things in this world of ours may be reasonably supposed to be one in virtue of soul or part of the soul, or some other influence; apart from this they are a plurality and are disintegrated. But inasmuch as the former are divisible and quantitative, what is the cause of their unity and cohesion? 13 Fifth proof

Again, the ways in which the objects of mathematics are generated prove our point; for they are generated first in the dimension of length, then in that of breadth, and finally in that of depth, whereupon the process is complete. Thus if that which is posterior in generation[a] is prior in substantiality, body will be prior to plane and line, and in this sense it will also be more truly complete and whole, because it can become animate; whereas how could a line or plane be animate? The supposition is beyond our powers of apprehension. 14 Sixth proof

Further, body is a kind of substance, since it already in some sense possesses completeness; but in what sense are lines substances? Neither as being a kind 15 Seventh proof.

1077 a εἶδος καὶ μορφή τις, οἷον εἰ ἄρα ἡ ψυχὴ τοιοῦτον,
οὔτε ὡς ἡ ὕλη, οἷον τὸ σῶμα· οὐθὲν γὰρ ἐκ γραμ-
35 μῶν οὐδ' ἐπιπέδων οὐδὲ στιγμῶν φαίνεται συν-
ίστασθαι δυνάμενον· εἰ δ' ἦν οὐσία τις ὑλική, τοῦτ'
1077 b ἂν ἐφαίνετο δυνάμενα πάσχειν. Τῷ μὲν οὖν
λόγῳ ἔστω πρότερα· ἀλλ' οὐ πάντα ὅσα τῷ λόγῳ
πρότερα καὶ τῇ οὐσίᾳ πρότερα. τῇ μὲν γὰρ οὐσίᾳ
πρότερα ὅσα χωριζόμενα τῷ εἶναι ὑπερβάλλει, τῷ
λόγῳ δὲ ὅσων οἱ λόγοι ἐκ τῶν λόγων· ταῦτα δὲ
5 οὐχ ἅμα ὑπάρχει. εἰ γὰρ μὴ ἔστι τὰ πάθη παρὰ
τὰς οὐσίας, οἷον κινούμενόν τι ἢ λευκόν, τοῦ λευκοῦ
ἀνθρώπου τὸ λευκὸν πρότερον κατὰ τὸν λόγον, ἀλλ'
οὐ κατὰ τὴν οὐσίαν· οὐ γὰρ ἐνδέχεται εἶναι κεχωρι-
σμένον, ἀλλ' ἀεὶ ἅμα τῷ συνόλῳ ἐστίν· σύνολον δὲ
10 λέγω τὸν ἄνθρωπον τὸν λευκόν. ὥστε φανερὸν ὅτι
οὔτε τὸ ἐξ ἀφαιρέσεως πρότερον οὔτε τὸ ἐκ προσ-
θέσεως ὕστερον· ἐκ προσθέσεως γὰρ τῷ λευκῷ ὁ
λευκὸς ἄνθρωπος λέγεται. Ὅτι μὲν οὖν οὔτε
οὐσίαι μᾶλλον τῶν σωμάτων εἰσίν, οὔτε πρότερα τῷ
εἶναι τῶν αἰσθητῶν, ἀλλὰ τῷ λόγῳ μόνον, οὔτε
κεχωρισμένα που εἶναι δυνατόν, εἴρηται ἱκανῶς.
15 ἐπεὶ δ' οὐδ' ἐν τοῖς αἰσθητοῖς ἐνεδέχετο αὐτὰ εἶναι,
φανερὸν ὅτι ἢ ὅλως οὐκ ἔστιν ἢ τρόπον τινὰ ἔστι καὶ
διὰ τοῦτο οὐχ ἁπλῶς ἔστιν· πολλαχῶς γὰρ τὸ εἶναι
λέγομεν.

III. Ὥσπερ γὰρ καὶ τὰ καθόλου ἐν τοῖς μαθή-

[a] §§ 1-3 *supra*.

of form or shape, as perhaps the soul is, nor as being matter, like the body; for it does not appear that anything can be composed either of lines or of planes or of points, whereas if they were a kind of material 16
substance it would be apparent that things can be so composed.

Let it be granted that they are prior in formula; yet not everything which is prior in formula is also prior in substantiality. Things are prior in substantiality which when separated have a superior power of existence; things are prior in formula from whose formulae the formulae of other things are compounded. And these characteristics are not indissociable. For if attributes, such as "moving" 17
or "white," do not exist apart from their substances, "white" will be prior in formula to "white man," but not in substantiality; for it cannot exist in separation, but always exists conjointly with the concrete whole—by which I mean "white man." Thus it is obvious that neither is the result 18
of abstraction prior, nor the result of adding a determinant posterior—for the expression "white man" is the result of adding a determinant to "white."

Thus we have sufficiently shown (*a*) that the objects Summary
of mathematics are not more substantial than corporeal objects; (*b*) that they are not prior in point of existence to sensible things, but only in formula; and (*c*) that they cannot in any way exist in separation. And since we have seen[a] that they cannot 19
exist in sensible things, it is clear that either they do not exist at all, or they exist only in a certain way, and therefore not absolutely; for "exist" has several senses.

III. The general propositions in mathematics are Mathematics

1077 b μασιν οὐ περὶ κεχωρισμένων ἐστὶ παρὰ τὰ μεγέθη καὶ τοὺς ἀριθμούς, ἀλλὰ περὶ τούτων μέν, οὐχ ᾗ δὲ τοιαῦτα οἷα ἔχειν μέγεθος ἢ εἶναι διαιρετά, δῆλον ὅτι ἐνδέχεται καὶ περὶ τῶν αἰσθητῶν μεγεθῶν εἶναι καὶ λόγους καὶ ἀποδείξεις, μὴ ᾗ δὲ αἰσθητά, ἀλλ' ᾗ τοιαδί. ὥσπερ γὰρ καὶ ᾗ κινούμενα μόνον πολλοὶ λόγοι εἰσί, χωρὶς τοῦ τί ἕκαστόν ἐστι τῶν τοιούτων καὶ τῶν συμβεβηκότων αὐτοῖς, καὶ οὐκ ἀνάγκη διὰ ταῦτα ἢ κεχωρισμένον τι εἶναι κινούμενον τῶν αἰσθητῶν ἢ ἐν τούτοις τινὰ φύσιν εἶναι ἀφωρισμένην, οὕτω καὶ ἐπὶ τῶν κινουμένων ἔσονται λόγοι καὶ ἐπιστῆμαι, οὐχ ᾗ κινούμενα δὲ ἀλλ' ᾗ σώματα μόνον, καὶ πάλιν ᾗ ἐπίπεδα μόνον καὶ ᾗ μήκη μόνον, καὶ ᾗ διαιρετὰ καὶ ᾗ ἀδιαίρετα ἔχοντα δὲ θέσιν, καὶ ᾗ ἀδιαίρετα μόνον. ὥστ' ἐπεὶ ἁπλῶς λέγειν ἀληθὲς μὴ μόνον τὰ χωριστὰ εἶναι ἀλλὰ καὶ τὰ μὴ χωριστά, οἷον κινούμενα εἶναι, καὶ τὰ μαθηματικὰ ὅτι ἔστιν ἁπλῶς ἀληθὲς εἰπεῖν, καὶ τοιαῦτά γε οἷα λέγουσιν. καὶ ὥσπερ καὶ τὰς ἄλλας ἐπιστήμας ἁπλῶς ἀληθὲς εἰπεῖν τούτου εἶναι, οὐχὶ τοῦ συμβεβηκότος, οἷον ὅτι λευκοῦ εἰ τὸ ὑγιεινὸν λευκόν, ᾗ[1] δ' ἔστιν ὑγιεινοῦ,[2] ἀλλ'
1078 a ἐκείνου οὗ ἐστιν ἑκάστη, εἰ ⟨ᾗ⟩[3] ὑγιεινὸν ὑγιεινοῦ, εἰ δ' ᾗ ἄνθρωπος ἀνθρώπου, οὕτω καὶ τὴν γεωμετρίαν· οὐκ εἰ συμβέβηκεν αἰσθητὰ εἶναι ὧν ἐστί,

[1] ᾗ Bonitz: ᾗ.
[2] ὑγιεινοῦ γρ. E, Alexander: ὑγιεινόν.
[3] Bonitz.

not concerned with objects which exist separately apart from magnitudes and numbers; they are concerned with magnitudes and numbers, but not with them as possessing magnitude or being divisible. It is clearly possible that in the same way propositions and logical proofs may apply to sensible magnitudes; not *qua* sensible, but *qua* having certain characteristics. For just as there can be many propositions about things merely *qua* movable, without any reference to the essential nature of each one or to their attributes, and it does not necessarily follow from this either that there is something movable which exists in separation from sensible things or that there is a distinct movable nature in sensible things; so too there will be propositions and sciences which apply to movable things, not *qua* movable but *qua* corporeal only; and again *qua* planes only and *qua* lines only, and *qua* divisible, and *qua* indivisible but having position, and *qua* indivisible only. Therefore since it is true to say in a general sense not only that things which are separable but that things which are inseparable exist, *e.g.*, that movable things exist, it is also true to say in a general sense that mathematical objects exist, and in such a form as mathematicians describe them. And just as it is true to say generally of the other sciences that they deal with a particular subject—not with that which is accidental to it (*e.g.* not with "white" if "the healthy" is white, and the subject of the science is "the healthy"), but with that which is the subject of the particular science; with the healthy if it treats of things *qua* healthy, and with man if *qua* man—so this is also true of geometry. If the things of which it treats

studies objects as having certain characteristics.

1 2 3 4

1078 a μὴ ἔστι δὲ ἡ αἰσθητά, οὐ τῶν αἰσθητῶν ἔσονται αἱ μαθηματικαὶ ἐπιστῆμαι, οὐ μέντοι οὐδὲ παρὰ
5 ταῦτα ἄλλων κεχωρισμένων. Πολλὰ δὲ συμβέβηκε καθ' αὑτὰ τοῖς πράγμασιν ἢ ἕκαστον ὑπάρχει τῶν τοιούτων, ἐπεὶ καὶ ἡ θῆλυ τὸ ζῷον καὶ ἡ ἄρρεν, ἴδια πάθη ἐστίν, καίτοι οὐκ ἔστι τι θῆλυ οὐδ' ἄρρεν κεχωρισμένον τῶν ζώων· ὥστε καὶ ἡ μήκη μόνον καὶ ἡ ἐπίπεδα. καὶ ὅσῳ δὴ ἂν περὶ
10 προτέρων τῷ λόγῳ καὶ ἁπλουστέρων, τοσούτῳ μᾶλλον ἔχει τὸ ἀκριβές (τοῦτο δὲ τὸ ἁπλοῦν ἐστίν)· ὥστε ἄνευ τε μεγέθους μᾶλλον ἢ μετὰ μεγέθους, καὶ μάλιστα ἄνευ κινήσεως· ἐὰν δὲ κίνησιν, μάλιστα τὴν πρώτην· ἁπλουστάτη γάρ, καὶ ταύτης ἡ ὁμαλή. Ὁ δ' αὐτὸς λόγος καὶ περὶ ἁρμονικῆς
15 καὶ ὀπτικῆς· οὐδετέρα γὰρ ᾗ ὄψις ἢ ᾗ φωνὴ θεωρεῖ, ἀλλ' ᾗ γραμμαὶ καὶ ἀριθμοί· οἰκεῖα μέντοι ταῦτα πάθη ἐκείνων· καὶ ἡ μηχανικὴ δὲ ὡσαύτως. Ὥστ' εἴ τις θέμενος κεχωρισμένα τῶν συμβεβηκότων σκοπεῖ τι περὶ τούτων ἢ τοιαῦτα, οὐθὲν διὰ τοῦτο ψεῦδος ψεύσεται, ὥσπερ οὐδ' ὅταν ἐν τῇ γῇ γράφῃ
20 καὶ ποδιαίαν φῇ τὴν[1] μὴ ποδιαίαν· οὐ γὰρ ἐν ταῖς προτάσεσι τὸ ψεῦδος. ἄριστα δ' ἂν οὕτω θεωρηθείη ἕκαστον, εἴ τις τὸ μὴ κεχωρισμένον θείη χωρίσας, ὅπερ ὁ ἀριθμητικὸς ποιεῖ καὶ ὁ γεω-

[1] ποδιαίαν φῇ τὴν Bessarion Alexander Bonitz: τὴν ποδιαίαν φῇ.

[a] XII. vii. 6.

[b] Optics studies lines and harmonics numbers because these sciences are subordinate to geometry and arithmetic (*An. Post.* 75 b 15).

[c] *Cf.* XIV ii. 9, 10.

are accidentally sensible although it does not treat of them *qua* sensible, it does not follow that the mathematical sciences treat of sensible things—nor, on the other hand, that they treat of other things which exist independently apart from these.

Many attributes are essential properties of things 5
as possessing a particular characteristic; *e.g.*, there are attributes peculiar to an animal *qua* female or *qua* male, although there is no such thing as female or male in separation from animals. Hence there are also attributes which are peculiar to things merely *qua* lines or planes. And in proportion as the 6
things which we are considering are prior in formula and simpler, they admit of greater exactness; for simplicity implies exactness. Hence we find greater exactness where there is no magnitude, and the greatest exactness where there is no motion; or if motion is involved, where it is primary, because this is the simplest kind; and the simplest kind of primary motion is uniform motion.[a]

The same principle applies to both harmonics and 7
optics, for neither of these sciences studies objects *qua* sight or *qua* sound, but *qua* lines and numbers[b]; yet the latter are affections peculiar to the former. The same is also true of mechanics.

Thus if we regard objects independently of their 8
attributes and investigate any aspect of them as so regarded, we shall not be guilty of any error on this account, any more than when we draw a diagram on the ground and say that a line is a foot long when it is not; because the error is not in the premisses.[c] The best way to conduct an investigation in every case is to take that which does not exist in separation and consider it separately; which is just what the

It is quite proper to regard as potentially separable that which is not actually separable

μέτρης. ἓν μὲν γὰρ καὶ ἀδιαίρετον ὁ ἄνθρωπος ᾗ ἄνθρωπος· ὁ δ' ἔθετο ἓν ἀδιαίρετον, εἶτ' ἐθεώρησεν εἴ τι τῷ ἀνθρώπῳ συμβέβηκεν ᾗ ἀδιαίρετος. ὁ δὲ γεωμέτρης οὔθ' ᾗ ἄνθρωπος οὔθ' ᾗ ἀδιαίρετος, ἀλλ' ᾗ στερεόν. ἃ γὰρ κἂν εἰ μή που ἦν ἀδιαίρετος ὑπῆρχεν αὐτῷ, δῆλον ὅτι καὶ ἄνευ τούτων ἐνδέχεται αὐτῷ ὑπάρχειν [τὸ δυνατόν][1]· ὥστε διὰ τοῦτο ὀρθῶς οἱ γεωμέτραι λέγουσιν, καὶ περὶ ὄντων διαλέγονται, καὶ ὄντα ἐστίν· διττὸν γὰρ τὸ ὄν, τὸ μὲν ἐντελεχείᾳ τὸ δ' ὑλικῶς. Ἐπεὶ δὲ τὸ ἀγαθὸν καὶ τὸ καλὸν ἕτερον (τὸ μὲν γὰρ ἀεὶ ἐν πράξει, τὸ δὲ καλὸν καὶ ἐν τοῖς ἀκινήτοις), οἱ φάσκοντες οὐδὲν λέγειν τὰς μαθηματικὰς ἐπιστήμας περὶ καλοῦ ἢ ἀγαθοῦ ψεύδονται· λέγουσι γὰρ καὶ δεικνύουσι μάλιστα· οὐ γὰρ εἰ μὴ ὀνομάζουσι, τὰ δ' ἔργα καὶ τοὺς λόγους δεικνύουσιν, οὐ λέγουσι περὶ αὐτῶν. τοῦ δὲ καλοῦ μέγιστα εἴδη τάξις καὶ συμμετρία καὶ τὸ ὡρισμένον, ἃ μάλιστα δεικνύουσιν αἱ μαθηματικαὶ ἐπιστῆμαι. καὶ ἐπεί γε πολλῶν αἴτια φαίνεται ταῦτα (λέγω δ' οἷον ἡ τάξις καὶ τὸ ὡρισμένον), δῆλον ὅτι λέγοιεν ἂν καὶ τὴν τοιαύτην αἰτίαν τὴν ὡς τὸ καλὸν αἴτιον τρόπον τινά. μᾶλλον δὲ γνωρίμως ἐν ἄλλοις περὶ αὐτῶν ἐροῦμεν.

IV. Περὶ μὲν οὖν τῶν μαθηματικῶν, ὅτι τε ὄντα

[1] om. Γ: habent codd.

[a] *i.e.*, potentially. [b] *Cf.* III. ii. 4.
[c] There is no obvious fulfilment of this promise.

arithmetician or the geometrician does. For man, *qua* man, is one indivisible thing; and the arithmetician assumes man to be one indivisible thing, and then considers whether there is any attribute of man *qua* indivisible. And the geometrician considers man neither *qua* man nor *qua* indivisible, but *qua* something solid. For clearly the attributes which would have belonged to "man" even if man were somehow not indivisible can belong to man irrespectively of his humanity or indivisibility. Hence for this reason the geometricians are right in what they maintain, and treat of what really exists; *i.e.*, the objects of geometry really exist. For things can exist in two ways, either in complete reality or as matter.[a]

And since goodness is distinct from beauty (for it is always in actions that goodness is present, whereas beauty is also in immovable things), they[b] are in error who assert that the mathematical sciences tell us nothing about beauty or goodness; for they describe and manifest these qualities in the highest degree, since it does not follow, because they manifest the effects and principles of beauty and goodness without naming them, that they do not treat of these qualities. The main species of beauty are orderly arrangement, proportion, and definiteness; and these are especially manifested by the mathematical sciences. And inasmuch as it is evident that these (I mean, *e.g.*, orderly arrangement and definiteness) are causes of many things, obviously they must also to some extent treat of the cause in this sense, *i.e.* the cause in the sense of the Beautiful. But we shall deal with this subject more explicitly elsewhere.[c]

Mathematics does not ignore the principle of beauty.

IV. As regards the objects of mathematics, then, The Ideal theory.

1078 b ἐστὶ καὶ πῶς ὄντα, καὶ πῶς πρότερα καὶ πῶς οὐ πρότερα, τοσαῦτα εἰρήσθω. περὶ δὲ τῶν ἰδεῶν πρῶτον αὐτὴν τὴν κατὰ τὴν ἰδέαν δόξαν ἐπισκεπτέον, μηθὲν συνάπτοντας πρὸς τὴν τῶν ἀριθμῶν φύσιν, ἀλλ' ὡς ὑπέλαβον ἐξ ἀρχῆς οἱ πρῶτοι τὰς ἰδέας φήσαντες εἶναι. Συνέβη δ' ἡ περὶ τῶν εἰδῶν δόξα τοῖς εἰποῦσι διὰ τὸ πεισθῆναι περὶ τῆς ἀληθείας τοῖς Ἡρακλειτείοις λόγοις ὡς πάντων τῶν αἰσθητῶν ἀεὶ ῥεόντων, ὥστ' εἴπερ ἐπιστήμη τινὸς ἔσται καὶ φρόνησις, ἑτέρας δεῖν τινὰς φύσεις εἶναι παρὰ τὰς αἰσθητὰς μενούσας· οὐ γὰρ εἶναι τῶν ῥεόντων ἐπιστήμην. Σωκράτους δὲ περὶ τὰς ἠθικὰς ἀρετὰς πραγματευομένου καὶ περὶ τούτων ὁρίζεσθαι καθόλου ζητοῦντος πρώτου (τῶν μὲν γὰρ φυσικῶν ἐπὶ μικρὸν Δημόκριτος ἥψατο μόνον καὶ ὡρίσατό πως τὸ θερμὸν καὶ τὸ ψυχρόν· οἱ δὲ Πυθαγόρειοι πρότερον περί τινων ὀλίγων, ὧν τοὺς λόγους εἰς τοὺς ἀριθμοὺς ἀνῆπτον, οἷον τί ἐστι καιρὸς ἢ τὸ δίκαιον ἢ γάμος), ἐκεῖνος δ'[1] εὐλόγως ἐζήτει τὸ τί ἐστι. συλλογίζεσθαι γὰρ ἐζήτει, ἀρχὴ δὲ τῶν συλλογισμῶν τὸ τί ἐστιν· διαλεκτικὴ γὰρ ἰσχὺς οὔπω τότ' ἦν ὥστε δύνασθαι καὶ χωρὶς τοῦ τί ἐστι τἀναντία ἐπισκοπεῖν, καὶ τῶν ἐναντίων εἰ

[1] δ' om. recc.

[a] It seems quite obvious that Aristotle intends this vague phrase to refer to Plato. *Cf.* I. vi. 1-3, with which the following sections 2-5 should be compared. On the whole subject see Vol. I. Introd. pp. xx ff.

the foregoing account may be taken as sufficient to show that they exist, and in what sense they exist, and in what sense they are prior and in what they are not. But as regards the Ideas we must first consider the actual theory in relation to the Idea, without connecting it in any way with the nature of numbers, but approaching it in the form in which it was originally propounded by the first exponents[a] of the Ideas.

The theory of Forms occurred to those who enunci- 2
ated it because they were convinced as to the true nature of reality by the doctrine of Heraclitus, that all sensible things are always in a state of flux; so that if there is to be any knowledge or thought about anything, there must be certain other entities, besides sensible ones, which persist. For there can be no knowledge of that which is in flux. Now Socrates 3
devoted his attention to the moral virtues, and was the first to seek a general definition of these (for of the Physicists Democritus gained only a superficial grasp of the subject[b] and defined, after a fashion, "the hot" and "the cold"; while the Pythagoreans[c] at an earlier date had arrived at definitions of some few things—whose formulae they connected with numbers—*e.g.*, what "opportunity" is, or "justice" or "marriage"); and he naturally inquired into the essence of things; for he was trying 4
to reason logically, and the starting-point of all logical reasoning is the essence. At that time there was as yet no such proficiency in Dialectic that men could study contraries independently of the essence, and consider whether both contraries come under the

Origin of the theory

[b] *Cf. Physics* 194 a 20, *De Part. Anim.* 642 a 24.
[c] *Cf.* I. v. 2, 16.

1078 b ἡ αὐτὴ ἐπιστήμη. δύο γάρ ἐστιν ἃ τις ἂν ἀποδοίη Σωκράτει δικαίως, τούς τ' ἐπακτικοὺς λόγους καὶ τὸ ὁρίζεσθαι καθόλου· ταῦτα γάρ ἐστιν ἄμφω περὶ ἀρχὴν ἐπιστήμης. Ἀλλ' ὁ μὲν Σωκράτης τὰ καθόλου οὐ χωριστὰ ἐποίει οὐδὲ τοὺς ὁρισμούς· οἱ δ' ἐχώρισαν, καὶ τὰ τοιαῦτα τῶν ὄντων ἰδέας προσηγόρευσαν. ὥστε συνέβαινεν αὐτοῖς σχεδὸν τῷ αὐτῷ λόγῳ πάντων ἰδέας εἶναι τῶν καθόλου λεγομένων, καὶ παραπλήσιον ὥσπερ ἂν εἴ τις ἀριθμῆσαι βουλόμενος ἐλαττόνων μὲν ὄντων οἴοιτο μὴ δύνασθαι, πλείω δὲ ποιήσας ἀριθμοίη· πλείω 1079 a γάρ ἐστι τῶν καθ' ἕκαστα αἰσθητῶν ὡς εἰπεῖν τὰ εἴδη, περὶ ὧν ζητοῦντες τὰς αἰτίας ἐκ τούτων ἐκεῖ προῆλθον· καθ' ἕκαστόν τε γὰρ ὁμώνυμον ἔστι καὶ παρὰ τὰς οὐσίας, τῶν τε ἄλλων ἓν ἔστιν ἐπὶ πολλῶν, καὶ ἐπὶ τοῖσδε καὶ ἐπὶ τοῖς ἀϊδίοις. Ἔτι 6 καθ' οὓς τρόπους δείκνυται ὅτι ἔστι τὰ εἴδη, κατ' οὐθένα φαίνεται τούτων· ἐξ ἐνίων μὲν γὰρ οὐκ ἀνάγκη γίγνεσθαι συλλογισμόν, ἐξ ἐνίων δὲ καὶ οὐχ ὧν οἴονται τούτων εἴδη γίγνεται. κατά τε γὰρ τοὺς λόγους τοὺς ἐκ τῶν ἐπιστημῶν ἔσται εἴδη πάντων ὅσων ἐπιστῆμαι εἰσίν, καὶ κατὰ τὸ ἓν ἐπὶ 10 πολλῶν καὶ τῶν ἀποφάσεων, κατὰ δὲ τὸ νοεῖν τι

[a] This is perhaps too strong a word. What Aristotle means is that Socrates was the first thinker who attached importance to general definitions and systematically used arguments from analogy in order to arrive at them. The Greeks as a whole were only too readily impressed by analogy; Socrates merely developed an already prevalent tendency. For an example of his method see the reference at V. xxix. 5.

[b] *Cf.* Vol. I. Introd. p. xxi.

[c] With §§ 6-13 *cf.* I. ix. 1-8, which are almost verbally the same. On the relation of Book XIII. to Book I. see Vol. I. Introd. p. xxxii.

same science. There are two innovations [a] which 5
may fairly be ascribed to Socrates: inductive reasoning and general definition. Both of these are associated with the starting-point of scientific knowledge.

Arguments against the Ideal Theory. (a) The assumption

But whereas Socrates regarded neither universals nor definitions as existing in separation, the Idealists gave them a separate existence, and to these universals and definitions of existing things they gave the name of Ideas.[b] Hence on their view it followed 6
by virtually the same argument that there are Ideas of all terms which are predicated universally [c]; and the result was very nearly the same as if a man who wishes to count a number of things were to suppose that he could not do so when they are few, and yet were to try to count them when he has added to them. For it is hardly an exaggeration to say that there are more Forms than there are particular sensible things (in seeking for whose causes these thinkers were led on from particulars to Ideas); because corresponding to each thing there is a synonymous entity, apart from the substances (and in the case of non-substantial things there is a One over the Many) both in our everyday world and in the realm of eternal entities.

of the Ideas doubles the number of things to be explained.

Again, not one of the ways in which it is attempted 7
to prove that the Forms exist demonstrates their point; from some of them no necessary conclusion follows, and from others it follows that there are Forms of things of which they hold that there are no Forms. For according to the arguments from the sciences 8
there will be Forms of all things of which there are sciences; and according to the "One-over-Many" argument, of negations too; and according to the argument that "we have some conception of what

(b) The arguments supposed to support the theory prove either nothing, or too much; or else they imply consequences inconsistent

1079 a φθαρέντος τῶν φθαρτῶν· φάντασμα γάρ τι τούτων ἔστιν. ἔτι δὲ οἱ ἀκριβέστατοι τῶν λόγων οἱ μὲν τῶν πρός τι ποιοῦσιν ἰδέας, ὧν οὔ φασιν εἶναι καθ' αὐτὸ γένος, οἱ δὲ τὸν τρίτον ἄνθρωπον λέγουσιν. ὅλως τε ἀναιροῦσιν οἱ περὶ τῶν εἰδῶν λόγοι ἃ μᾶλλον βούλονται εἶναι οἱ λέγοντες εἴδη τοῦ τὰς ἰδέας εἶναι· συμβαίνει γὰρ μὴ εἶναι πρῶτον τὴν δυάδα ἀλλὰ τὸν ἀριθμόν, καὶ τούτου τὸ πρός τι καὶ τοῦτο τοῦ καθ' αὑτό, καὶ πάνθ' ὅσα τινὲς ἀκολουθήσαντες ταῖς περὶ τῶν εἰδῶν δόξαις ἠναντιώθησαν ταῖς ἀρχαῖς. Ἔτι κατὰ μὲν τὴν ὑπόληψιν καθ' ἣν φασιν εἶναι τὰς ἰδέας οὐ μόνον τῶν οὐσιῶν ἔσονται εἴδη ἀλλὰ καὶ ἄλλων πολλῶν (τὸ γὰρ νόημα ἓν οὐ μόνον περὶ τὰς οὐσίας ἀλλὰ καὶ κατὰ μὴ οὐσιῶν ἐστί,[1] καὶ[2] ἐπιστῆμαι οὐ μόνον τῆς οὐσίας ἔσονται· συμβαίνει δὲ καὶ ἄλλα μυρία τοιαῦτα)· κατὰ δὲ τὸ ἀναγκαῖον καὶ τὰς δόξας τὰς περὶ αὐτῶν, εἰ ἔστι μεθεκτὰ τὰ εἴδη, τῶν οὐσιῶν ἀναγκαῖον ἰδέας εἶναι μόνον· οὐ γὰρ κατὰ συμβεβηκὸς μετέχονται, ἀλλὰ δεῖ ταύτῃ ἑκάστου μετέχειν ᾗ μὴ καθ' ὑποκειμένου λέγεται. λέγω δ' οἷον εἴ τι αὐτοῦ διπλασίου μετέχει, τοῦτο καὶ ἀϊδίου μετέχει, ἀλλὰ κατὰ συμβεβηκός· συμβέβηκε γὰρ τῷ διπλασίῳ ἀϊδίῳ εἶναι. ὥστε ἔσται οὐσία τὰ εἴδη. ταῦτα δ' ἐνταῦθα οὐσίαν σημαίνει κἀκεῖ·

[1] ἐστί] ἔσται Syrianus, fecit E, Bekker.
[2] καὶ J, A (E Alexander): καὶ αἱ EA[b] Syrianus, A (A[b]).

has perished" there will be Forms of perishable things, because we have a mental picture of these things. Further, of the most exact arguments some establish Ideas of relations, of which the Idealists deny that there is a separate genus, and others state the "Third Man." And in general the arguments for the Forms do away with things which are more important to the exponents of the Forms than the existence of the Ideas; for they imply that it is not the Dyad that is primary, but Number; and that the relative is prior to number, and therefore to the absolute; and all the other conclusions in respect of which certain persons by following up the views held about the Forms have gone against the principles of the theory. 9 with the principles of the theory.

Again, according to the assumption by which they hold that the Ideas exist, there will be Forms not only of substances but of many other things (since the concept is one not only in the case of substances but in the case of non-substantial things as well; and there can be sciences not only of substances but also of other things; and there are a thousand other similar consequences); but it follows necessarily from the views generally held about them that if the Forms are participated in, there can only be Ideas of substances, because they are not participated in accidentally; things can only participate in a Form in so far as it is not predicated of a subject. I mean, *e.g.*, that if a thing participates in absolute doubleness, it participates also in something eternal, but only accidentally; because it is an accident of "doubleness" to be eternal. Thus the Ideas will be substance. But the same terms denote substance in the 10 (c) It is a fundamental implication of the theory that there are Ideas of other things besides substances; but this is illogical and contrary to practice. 11 12

1078 a ἢ τί ἔσται τὸ εἶναι φάναι τι παρὰ ταῦτα, τὸ ἓν ἐπὶ πολλῶν; καὶ εἰ μὲν ταὐτὸ εἶδος τῶν ἰδεῶν καὶ
3 τῶν μετεχόντων, ἔσται τι κοινόν· τί γὰρ μᾶλλον ἐπὶ τῶν φθαρτῶν δυάδων, καὶ τῶν δυάδων τῶν πολλῶν
1079 b μὲν ἀϊδίων δέ, τὸ δυὰς ἓν καὶ ταὐτόν, ἢ ἐπί τ'[1] αὐτῆς καὶ τῆς τινός; εἰ δὲ μὴ τὸ αὐτὸ εἶδος, ὁμώνυμα
ἂν εἴη, καὶ ὅμοιον ὥσπερ ἂν εἴ τις καλοῖ ἄνθρωπον τόν τε Καλλίαν καὶ τὸ ξύλον, μηδεμίαν κοινωνίαν
ἐπιβλέψας αὐτῶν. Εἰ δὲ τὰ μὲν ἄλλα τοὺς κοινοὺς λόγους ἐφαρμόττειν θήσομεν τοῖς εἴδεσιν,
5 οἷον ἐπ' αὐτὸν τὸν κύκλον σχῆμα ἐπίπεδον καὶ τὰ λοιπὰ μέρη τοῦ λόγου, τὸ δ' οὗ ἐστὶ προστεθήσεται,
σκοπεῖν δεῖ μὴ κενὸν ᾖ τοῦτο παντελῶς. τίνι τε γὰρ προστεθήσεται; τῷ μέσῳ ἢ τῷ ἐπιπέδῳ ἢ
πᾶσιν; πάντα γὰρ τὰ ἐν τῇ οὐσίᾳ ἰδέαι, οἷον τὸ ζῷον καὶ τὸ δίπουν. ἔτι δῆλον ὅτι ἀνάγκη αὐτὸ
10 εἶναί τι, ὥσπερ τὸ ἐπίπεδον φύσιν τινὰ ἢ πᾶσιν ἐνυπάρξει τοῖς εἴδεσιν ὡς γένος.

V. Πάντων δὲ μάλιστα διαπορήσειεν ἄν τις τί ποτε συμβάλλονται τὰ εἴδη ἢ τοῖς ἀϊδίοις τῶν
αἰσθητῶν ἢ τοῖς γιγνομένοις καὶ [τοῖς][2] φθειρο-
15 μένοις· οὔτε γὰρ κινήσεώς ἐστιν οὔτε μεταβολῆς οὐδεμιᾶς αἴτια αὐτοῖς. ἀλλὰ μὴν οὔτε[3] πρὸς τὴν

[1] ἐπί τ' Bonitz: ἐπ'.
[2] om. Syrianus, A (A[b] Alexander).
[3] Bonitz: οὐδέ.

[a] §§ 14, 15 have no counterpart in Book I.
[b] The suggestion is that the definition of an Ideal circle is the same as that of a particular circle, except that it must have added to it the statement of what particular the Idea is an Idea.
[c] *sc.* in the definition or essence of "Ideal man."

sensible as in the Ideal world; otherwise what meaning will there be in saying that something exists besides the particulars, *i.e.* the unity comprising their multiplicity? If the form of the Ideas and of the 13
things which participate in them is the same, they will have something in common (for why should duality mean one and the same thing in the case of perishable 2's and the 2's which are many but eternal, and not in the case of absolute duality and a particular 2?). But if the form is not the same, they will simply be homonyms; just as though one were to call both Callias and a piece of wood "man," without remarking any property common to them.

[a] And if we profess that in all other respects the 14
common definitions apply to the Forms, *e.g.* that (a) Difficulty of regarding Ideas and particulars
"plane figure" and the other parts of the definition apply to the Ideal circle, only that we must also state of what the Form is a Form, we must beware lest this is a quite meaningless statement.[b] For to what 15
element of the definition must the addition be made? as related in definition.
to "centre," or "plane" or all of them? For all the elements in the essence of an Idea are Ideas; *e.g.* "animal" and "two-footed."[c] Further, it is obvious that "being an Idea," just like "plane," must be a definite characteristic which belongs as genus to all its species.[d]

V. [e]Above all we might examine the question what (e) What do the Ideas contribute to sensible things?
on earth the Ideas contribute to sensible things, whether eternal or subject to generation and decay; for they are not the cause of any motion or change They are
in them. Moreover they are no help towards the 2

[d] *i.e.*, "being an Idea" will be a characteristic common to all Ideas, and so must be itself an Idea.
[e] This chapter corresponds almost verbally to I. ix. 9-15. *Cf.* note on ch. iv. 6.

1079 b ἐπιστήμην οὐθὲν βοηθεῖ τὴν τῶν ἄλλων (οὐδὲ[1] γὰρ οὐσία ἐκεῖνα τούτων· ἐν τούτοις γὰρ ἂν ἦν), οὔτ' εἰς τὸ εἶναι, μὴ ἐνυπάρχοντά γε τοῖς μετέχουσιν· οὕτω μὲν γὰρ ἴσως αἴτια δόξειεν ἂν εἶναι ὡς τὸ
20 λευκὸν μεμιγμένον τῷ λευκῷ. ἀλλ' οὗτος μὲν ὁ λόγος λίαν εὐκίνητος, ὃν Ἀναξαγόρας μὲν πρότερος Εὔδοξος δ' ὕστερος ἔλεγε διαπορῶν καὶ ἕτεροί τινες· ῥᾴδιον γὰρ πολλὰ συναγαγεῖν καὶ ἀδύνατα πρὸς τὴν τοιαύτην δόξαν. ἀλλὰ μὴν οὐδ' ἐκ τῶν εἰδῶν ἔστι τἆλλα κατ' οὐθένα τρόπον τῶν εἰωθότων
25 λέγεσθαι. τὸ δὲ λέγειν παραδείγματα εἶναι καὶ μετέχειν αὐτῶν τὰ ἄλλα κενολογεῖν ἐστὶ καὶ μεταφορὰς λέγειν ποιητικάς. τί γάρ ἐστι τὸ ἐργαζόμενον πρὸς τὰς ἰδέας ἀποβλέπον; ἐνδέχεται τε καὶ εἶναι καὶ γίγνεσθαι ὁτιοῦν καὶ μὴ εἰκαζόμενον, ὥστε καὶ ὄντος Σωκράτους καὶ μὴ ὄντος γένοιτ' ἂν
30 οἷος[2] Σωκράτης (ὁμοίως δὲ δῆλον ὅτι κἂν εἰ ἦν[3] ὁ Σωκράτης ἀΐδιος). ἔσται τε πλείω παραδείγματα τοῦ αὐτοῦ, ὥστε καὶ εἴδη, οἷον τοῦ ἀνθρώπου τὸ ζῷον καὶ τὸ δίπουν, ἅμα δὲ καὶ αὐτοάνθρωπος. ἔτι οὐ μόνον τῶν αἰσθητῶν παραδείγματα τὰ εἴδη, ἀλλὰ καὶ αὐτῶν,[4] οἷον τὸ γένος τῶν ὡς γένους
35 εἰδῶν· ὥστε τὸ αὐτὸ ἔσται παράδειγμα καὶ εἰκών. ἔτι δόξειεν ἂν ἀδύνατον χωρὶς εἶναι τὴν οὐσίαν καὶ
1080 a οὗ ἡ οὐσία· ὥστε πῶς ἂν αἱ ἰδέαι οὐσίαι τῶν πραγμάτων οὖσαι χωρὶς εἶεν; Ἐν δὲ τῷ Φαίδωνι

[1] Bonitz: *οὔτε*.
[2] *οἷος* A (A^b Alexander): *οἷον* codd.
[3] *εἰ ἦν* Bessarion, A: *εἴη* codd.
[4] *αὐτῶν*] *αὐτῶν* Bekker.

knowledge of other things (for they are not the substance of particulars, otherwise they would be *in* particulars) or to their existence (since they are not present in the things which participate in them. If they were, they might perhaps seem to be causes, in the sense in which the admixture of white causes a thing to be white. But this theory, which was 3
stated first by Anaxagoras and later by Eudoxus in his discussion of difficulties, and by others also, is very readily refuted; for it is easy to adduce plenty of impossibilities against such a view). Again, other things are not in any accepted sense derived from the Forms. To say that the Forms are patterns, 4
and that other things participate in them, is to use empty phrases and poetical metaphors; for what is it that fashions things on the model of the Ideas? Besides, anything may both be and come to be without being imitated from something else; thus a man may become like Socrates whether Socrates exists or not, and even if Socrates were eternal, 5
clearly the case would be the same. Also there will be several "patterns" (and therefore Forms) of the same thing; *e.g.*, "animal" and "two-footed" will be patterns of "man," and so too will the Idea of man. Further, the Forms will be patterns not 6
only of sensible things but of Ideas; *e.g.* the genus will be the pattern of its species; hence the same thing will be pattern and copy. Further, it would seem impossible for the substance and that of which it is the substance to exist in separation; then how can the Ideas, if they are the substances of things, exist in separation from them?

In the *Phaedo*[a] this statement is made: that the

[a] Plato, *Phaedo* 100 D.

not causes; they do not help our knowledge; they do not explain the existence of things.

To say that the Ideas are "patterns" does not help the theory.

it only raises further difficulties.

Plato describes the Ideas as

1080 a τοῦτον λέγεται τὸν τρόπον, ὡς καὶ τοῦ εἶναι καὶ τοῦ γίγνεσθαι αἴτια τὰ εἴδη ἐστίν. καίτοι τῶν εἰδῶν ὄντων ὅμως οὐ γίγνεται, ἂν μὴ ᾖ τὸ κινῆσον, καὶ πολλὰ γίγνεται ἕτερα, οἷον οἰκία καὶ δακτύλιος, ὧν οὔ φασιν εἶναι εἴδη. ὥστε δῆλον ὅτι ἐνδέχεται κἀκεῖνα ὧν φασὶν ἰδέας εἶναι, καὶ εἶναι καὶ γίγνεσθαι διὰ τοιαύτας αἰτίας οἵας καὶ τὰ ῥηθέντα νῦν, ἀλλ' οὐ διὰ τὰ εἴδη. ἀλλὰ περὶ μὲν τῶν ἰδεῶν καὶ τοῦτον τὸν τρόπον καὶ διὰ λογικωτέρων καὶ ἀκριβεστέρων λόγων ἔστι πολλὰ συναγαγεῖν ὅμοια τοῖς τεθεωρημένοις.

VI. Ἐπεὶ δὲ διώρισται περὶ τούτων, καλῶς ἔχει πάλιν θεωρῆσαι τὰ περὶ τοὺς ἀριθμοὺς συμβαίνοντα τοῖς λέγουσιν οὐσίας αὐτοὺς εἶναι χωριστὰς καὶ τῶν ὄντων αἰτίας πρώτας. ἀνάγκη δ', εἴπερ ἐστὶν ὁ ἀριθμὸς φύσις τις καὶ μὴ ἄλλη τίς ἐστιν αὐτοῦ ἡ οὐσία ἀλλὰ τοῦτ' αὐτό, ὥσπερ φασί τινες, ἤτοι εἶναι τὸ μὲν πρῶτόν τι αὐτοῦ τὸ δ' ἐχόμενον ἕτερον ὂν τῷ εἴδει ἕκαστον—καὶ τοῦτο ἢ ἐπὶ τῶν μονάδων εὐθὺς ὑπάρχει καὶ ἔστιν ἀσύμβλητος ὁποιαοῦν μονὰς ὁποιαοῦν μονάδι, ἢ εὐθὺς ἐφεξῆς πᾶσαι καὶ συμβληταὶ ὁποιαιοῦν ὁποιαισοῦν, οἷον λέγουσιν εἶναι τὸν μαθηματικὸν ἀριθμόν (ἐν γὰρ τῷ μαθηματικῷ οὐδὲν διαφέρει οὐδεμία μονὰς ἑτέρα ἑτέρας)· ἢ τὰς μὲν συμβλητὰς τὰς δὲ μή (οἷον εἰ ἔστι μετὰ τὸ ἓν πρώτη ἡ δυάς, ἔπειτα ἡ τριὰς

[a] This statement seems to bear two meanings, which Aristotle confuses: (i) There must be more than one number-series, each series being different in kind from every other series; (ii) All numbers are different in kind, and inaddible. Confusion (or textual inaccuracy) is further suggested by the fact that Aristotle offers no alternative statement of the nature of number in general, such as we should expect from his language. In any case the classification is arbitrary and incomplete.

causing existence and generation; but this cannot be true.

Forms are causes both of being and of generation. Yet assuming that the Forms exist, still there is no generation unless there is something to impart motion; and many other things are generated (*e.g.* house and ring) of which the Idealists say that there are no Forms. Thus it is clearly possible that 7 those things of which they say that there are Ideas may also exist and be generated through the same kind of causes as those of the things which we have just mentioned, and not because of the Forms. Indeed, as regards the Ideas, we can collect against them plenty of evidence similar to that which we have now considered; not only by the foregoing methods, but by means of more abstract and exact reasoning.

Different forms of the theory that numbers are substances.

VI. Now that we have dealt with the problems concerning the Ideas, we had better re-investigate the problems connected with numbers that follow from the theory that numbers are separate substances and primary causes of existing things. Now if number is a kind of entity, and has nothing else as its substance, but only number itself, as some maintain; then either (*a*) there must be some one part of number which is primary, and some other part next in succession, and so on, each part being specifically different [a]—and this applies directly to 2 units, and any given unit is inaddible to any other given unit; or (*b*) they [b] are all directly successive, and any units can be added to any other units, as is held of mathematical number; for in mathematical number no one unit differs in any way from another. Or (*c*) some units must be addible and others not. 3 *E.g.*, 2 is first after 1, and then 3, and so on with the

If there are different kinds of number,

either (*a*) all units are inaddible, or (*b*) all units are addible,

or (*c*) some

[b] The units.

1080 a
καὶ οὕτω δὴ ὁ ἄλλος ἀριθμός, εἰσὶ δὲ συμβληταὶ αἱ ἐν ἑκάστῳ ἀριθμῷ μονάδες, οἷον αἱ ἐν τῇ δυάδι τῇ πρώτῃ αὐταῖς, καὶ ἐν τῇ τριάδι τῇ πρώτῃ αὐταῖς, καὶ οὕτω δὴ ἐπὶ τῶν ἄλλων ἀριθμῶν· αἱ δ' ἐν τῇ δυάδι αὐτῇ πρὸς τὰς ἐν τῇ τριάδι αὐτῇ ἀσύμβλητοι, ὁμοίως δὲ καὶ ἐπὶ τῶν ἄλλων τῶν ἐφεξῆς ἀριθμῶν. διὸ καὶ ὁ μὲν μαθηματικὸς ἀριθμεῖται μετὰ τὸ ἓν δύο, πρὸς τῷ ἔμπροσθεν ἑνὶ ἄλλο ἕν, καὶ τὰ τρία πρὸς τοῖς δυσὶ τούτοις ἄλλο ἕν, καὶ ὁ λοιπὸς δὲ ὡσαύτως· οὗτος δὲ μετὰ τὸ ἓν δύο ἕτερα ἄνευ τοῦ ἑνὸς τοῦ πρώτου, καὶ ἡ τριὰς ἄνευ τῆς δυάδος, ὁμοίως δὲ καὶ ὁ ἄλλος ἀριθμός)· ἢ τὸν μὲν εἶναι τῶν ἀριθμῶν οἷον ὁ πρῶτος ἐλέχθη, τὸν δ' οἷον οἱ μαθηματικοί λέγουσι, τρίτον δὲ τὸν ῥηθέντα τελευταῖον. Ἔτι τούτους ἢ χωριστοὺς εἶναι
1080 b τοὺς ἀριθμοὺς τῶν πραγμάτων, ἢ οὐ χωριστοὺς ἀλλ' ἐν τοῖς αἰσθητοῖς, οὐχ οὕτως δ' ὡς τὸ πρῶτον ἐπεσκοποῦμεν, ἀλλ' ὡς ἐκ τῶν ἀριθμῶν ἐνυπαρχόντων ὄντα τὰ αἰσθητά· ἢ τὸν μὲν αὐτῶν εἶναι
5 τὸν δὲ μή, ἢ πάντας εἶναι. οἱ μὲν οὖν τρόποι καθ' οὓς ἐνδέχεται αὐτοὺς εἶναι οὗτοί εἰσιν ἐξ ἀνάγκης μόνοι. σχεδὸν δὲ καὶ οἱ λέγοντες τὸ ἓν ἀρχὴν εἶναι καὶ οὐσίαν καὶ στοιχεῖον πάντων, καὶ ἐκ τούτου καὶ ἄλλου τινὸς εἶναι τὸν ἀριθμόν, ἕκαστος τούτων τινὰ τῶν τρόπων εἴρηκε, πλὴν τοῦ πάσας τὰς μονάδας εἶναι ἀσυμβλήτους. καὶ τοῦτο συμ-
10 βέβηκεν εὐλόγως· οὐ γὰρ ἐνδέχεται ἔτι ἄλλον τρόπον εἶναι παρὰ τοὺς εἰρημένους. οἱ μὲν οὖν

[a] *i.e.*, Ideal or natural.
[b] In ch. ii. 1-3.
[c] The Pythagorean number-atomist view; see Vol. I. Introd. p. xvii.

other numbers; and the units in each number are addible, *e.g.* the units in the first [a] 2 are addible to one another, and those in the first 3 to one another, and so on in the case of the other numbers; but the units in the Ideal 2 are inaddible to those in the Ideal 3; and similarly in the case of the other successive numbers. Hence whereas mathematical number is counted thus: after 1, 2 (which consists of another 1 added to the former) and 3 (which consists of another 1 added to these two) and the other numbers in the same way, Ideal number is counted like this: after 1, a distinct 2 not including the original 1; and a 3 not including the 2, and the rest of the numbers similarly. Or (*d*) one kind of number must be such as we first described, and another such as the mathematicians maintain, and that which we have last described must be a third kind. 5

Again, these numbers must exist either in separation from things, or not in separation, but in sensible things (not, however, in the way which we first considered,[b] but in the sense that sensible things are composed of numbers which are present in them [c])—either some of them and not others, or all of them.[d] 6 These are of necessity the only ways in which the numbers can exist. Now of those who say that unity is the beginning and substance and element of all things, and that number is derived from it and something else, almost every one has described number in one of these ways (except that no one has maintained that all units are inaddible [c]); and this is 7 natural enough, because there can be no other way apart from those which we have mentioned. Some

units are addible and some inaddible,

or (*d*) all three alternatives may be held, each of a different number-series. Numbers, as substances, must either exist separately or as immanent in things.

[a] *i.e.*, either all numbers are material elements of things, or some are and others are not.
[b] *Cf.* § 2.

1080 b ἀμφοτέρους φασὶν εἶναι τοὺς ἀριθμούς, τὸν μὲν ἔχοντα τὸ πρότερον καὶ ὕστερον τὰς ἰδέας, τὸν δὲ μαθηματικὸν παρὰ τὰς ἰδέας καὶ τὰ αἰσθητά, καὶ χωριστοὺς ἀμφοτέρους τῶν αἰσθητῶν· οἱ δὲ τὸν μαθηματικὸν μόνον ἀριθμὸν εἶναι τὸν πρῶτον τῶν ὄντων κεχωρισμένον τῶν αἰσθητῶν. Καὶ οἱ Πυθαγόρειοι δ' ἕνα, τὸν μαθηματικόν, πλὴν οὐ κεχωρισμένον ἀλλ' ἐκ τούτου τὰς αἰσθητὰς οὐσίας συνεστάναι φασίν· τὸν γὰρ ὅλον οὐρανὸν κατασκευάζουσιν ἐξ ἀριθμῶν, πλὴν οὐ μοναδικῶν, ἀλλὰ τὰς μονάδας ὑπολαμβάνουσιν ἔχειν μέγεθος· ὅπως δὲ τὸ πρῶτον ἓν συνέστη ἔχον μέγεθος, ἀπορεῖν ἐοίκασιν. Ἄλλος δέ τις τὸν πρῶτον ἀριθμὸν τὸν τῶν εἰδῶν ἕνα εἶναι, ἔνιοι δὲ καὶ τὸν μαθηματικὸν τὸν αὐτὸν τοῦτον εἶναι. Ὁμοίως δὲ καὶ περὶ τὰ μήκη καὶ περὶ τὰ ἐπίπεδα καὶ περὶ τὰ στερεά. οἱ μὲν γὰρ ἕτερα τὰ μαθηματικὰ καὶ τὰ μετὰ τὰς ἰδέας· τῶν δ' ἄλλως λεγόντων οἱ μὲν τὰ μαθηματικὰ καὶ μαθηματικῶς λέγουσιν, ὅσοι μὴ ποιοῦσι τὰς ἰδέας ἀριθμοὺς μηδὲ εἶναί φασιν ἰδέας, οἱ δὲ τὰ μαθηματικά, οὐ μαθηματικῶς δέ· οὐ γὰρ τέμνεσθαι οὔτε μέγεθος πᾶν εἰς μεγέθη, οὔθ' ὁποιασοῦν μονάδας δυάδα εἶναι. μοναδικοὺς δὲ τοὺς ἀριθμοὺς εἶναι πάντες τιθέασι, πλὴν τῶν Πυθαγορείων, ὅσοι

[a] *Cf.* I. vi. 4. [b] *Cf.* XII. x. 14.
[c] *Cf.* ch. viii. 9, 10, XIV. iii. 15, v. 7, and see Vol. I. Introd. p. xvii.
[d] *Cf.* § 10 *ad fin.*, ch. i. 4. [e] Plato.
[f] *i.e.*, the (semi-)Ideal lines, planes, etc. *Cf.* I. ix. 30.
[g] Speusippus; *cf.* § 7 above.

hold that both kinds of number exist, that which involves priority and posteriority being identical with the Ideas, and mathematical number being distinct from Ideas and sensible things, and both kinds being separable from sensible things [a]; others hold that mathematical number alone exists,[b] being the primary reality and separate from sensible things. (1) Plato. (2) Speusippus.

The Pythagoreans also believe in one kind of 8 number—the mathematical; only they maintain that it is not separate, but that sensible substances are composed of it. For they construct the whole universe of numbers, but not of numbers consisting of abstract units; they suppose the units to be extended—but as for how the first extended unit was formed they appear to be at a loss.[c] 8) Pythagoreans.

Another thinker holds that primary or Ideal num- 9 ber alone exists; and some [d] identify this with mathematical number. (4) Some Platonist.

The same applies in the case of lines, planes and solids. Some [e] distinguish mathematical objects 10 from those which "come after the Ideas" [f]; and of those who treat the subject in a different manner some [g] speak of the mathematical objects and in a mathematical way—viz. those who do not regard the Ideas as numbers, nor indeed hold that the Ideas exist—and others [h] speak of the mathematical objects, but not in a mathematical way; for they deny that every spatial magnitude is divisible into extended magnitudes, or that any two given units make 2. But all who hold that Unity is an element 11 and principle of existing things regard numbers as (5) Xenocrates. Similar views about geometrical objects.

[h] Xenocrates. For his belief in indivisible lines see Ritter and Preller 362. Aristotle ascribes the doctrine to Plato in I. ix. 25.

1080 b τὸ ἓν στοιχεῖον καὶ ἀρχὴν φασιν εἶναι τῶν ὄντων· ἐκεῖνοι δ' ἔχοντα μέγεθος, καθάπερ εἴρηται πρότερον.

Ὅσαχῶς μὲν οὖν ἐνδέχεται λεχθῆναι περὶ αὐτῶν, καὶ ὅτι πάντες εἰσὶν εἰρημένοι οἱ τρόποι, φανερὸν ἐκ τούτων· ἔστι δὲ πάντα μὲν ἀδύνατα, μᾶλλον δ' ἴσως θάτερα τῶν ἑτέρων.

VII. Πρῶτον μὲν οὖν σκεπτέον εἰ συμβληταὶ 1081 a αἱ μονάδες ἢ ἀσύμβλητοι, καὶ εἰ ἀσύμβλητοι, ποτέρως ὥσπερ διείλομεν. ἔστι μὲν γὰρ ὁποιανοῦν εἶναι ὁποιαοῦν μονάδα ἀσύμβλητον, ἔστι δὲ τὰς ἐν αὐτῇ τῇ δυάδι πρὸς τὰς ἐν αὐτῇ τῇ τριάδι, καὶ οὕτως δὴ ἀσυμβλήτους εἶναι τὰς ἐν ἑκάστῳ τῷ 5 πρώτῳ ἀριθμῷ πρὸς ἀλλήλας. Εἰ μὲν οὖν πᾶσαι συμβληταὶ καὶ ἀδιάφοροι αἱ μονάδες, ὁ μαθηματικὸς γίγνεται ἀριθμὸς καὶ εἷς μόνος, καὶ τὰς ἰδέας οὐκ ἐνδέχεται εἶναι τοὺς ἀριθμούς. ποῖος γὰρ ἔσται ἀριθμὸς αὐτὸ ἄνθρωπος ἢ ζῷον ἢ ἄλλο ὁτιοῦν τῶν εἰδῶν; ἰδέα μὲν γὰρ μία ἑκάστου, οἷον 10 αὐτοῦ ἀνθρώπου μία, καὶ αὐτοῦ ζῴου ἄλλη μία· οἱ δ' ὅμοιοι καὶ ἀδιάφοροι ἄπειροι, ὥστ' οὐθὲν μᾶλλον ἥδε ἡ τριὰς αὐτοάνθρωπος ἢ ὁποιαοῦν. εἰ δὲ μή εἰσιν ἀριθμοὶ αἱ ἰδέαι, οὐδ' ὅλως οἷόν τε αὐτὰς εἶναι. ἐκ τίνων γὰρ ἔσονται ἀρχῶν αἱ ἰδέαι; ὁ γὰρ 15 ἀριθμός ἐστιν ἐκ τοῦ ἑνὸς καὶ τῆς δυάδος τῆς ἀορίστου, καὶ αἱ ἀρχαὶ καὶ τὰ στοιχεῖα λέγονται τοῦ ἀριθμοῦ εἶναι, τάξαι τε οὔτε προτέρας ἐνδέχεται

consisting of abstract units, except the Pythagoreans; and they regard number as having spatial magnitude, as has been previously stated.[a]

It is clear from the foregoing account (i.) in how many ways it is possible to speak of numbers, and (ii.) that all the ways have been described. They are all impossible, but doubtless some[b] are more so than others.

Plato's view of number criticized.

VII. First, then, we must inquire whether the units are addible or inaddible; and if inaddible, in which of the two ways which we have distinguished.[c] For it is possible either (*a*) that any one unit is inaddible to any other, or (*b*) that the units in the Ideal 2 are inaddible to those in the Ideal 3, and thus that the units in each Ideal number are inaddible to those in the other Ideal numbers.

If all units are addible, the Ideas cannot exist.

Now if all units are addible and do not differ in kind, we get one type of number only, the mathematical, and the Ideas cannot be the numbers thus produced; for how can we regard the Idea of Man or Animal, or any other Form, as a number? There is one Idea of each kind of thing: *e.g.* one of Humanity and another one of Animality; but the numbers which are similar and do not differ in kind are infinitely many, so that this 3 is no more the Idea of Man than any other 3 is. But if the Ideas are not numbers, they cannot exist at all; for from what principles can the Ideas be derived? Number is derived from Unity and the indeterminate dyad, and the principles and elements are said to be the principles and elements of number, and the Ideas

[a] § 8.
[b] *sc.* the view of Xenocrates (*cf.* ch. viii. 8).
[c] Ch. vi. 2, 3.

1081 a τῶν ἀριθμῶν αὐτὰς οὔθ' ὑστέρας. Εἰ δ' ἀσύμβλητοι αἱ μονάδες, καὶ οὕτως ἀσύμβλητοι ὥστε ἡτισοῦν ἡτινιοῦν, οὔτε τὸν μαθηματικὸν ἐνδέχεται εἶναι τοῦτον τὸν ἀριθμὸν (ὁ μὲν γὰρ μαθηματικὸς ἐξ ἀδιαφόρων, καὶ τὰ δεικνύμενα κατ' αὐτοῦ ὡς ἐπὶ τοιούτου ἁρμόττει) οὔτε τὸν τῶν εἰδῶν· οὐ γὰρ ἔσται ἡ δυὰς πρώτη ἐκ τοῦ ἑνὸς καὶ τῆς ἀορίστου δυάδος, ἔπειτα οἱ ἑξῆς ἀριθμοί, ὡς λέγεται δυάς, τριάς, τετράς—ἅμα γὰρ αἱ ἐν τῇ δυάδι τῇ πρώτῃ μονάδες γεννῶνται, εἴτε ὥσπερ ὁ πρῶτος εἰπὼν ἐξ ἀνίσων (ἰσασθέντων γὰρ ἐγένοντο) εἴτε ἄλλως—, ἐπεὶ[1] εἰ ἔσται ἡ ἑτέρα μονὰς τῆς ἑτέρας προτέρα, καὶ τῆς δυάδος τῆς ἐκ τούτων ἔσται προτέρα· ὅταν γὰρ ᾖ τι τὸ μὲν πρότερον τὸ δ' ὕστερον, καὶ τὸ ἐκ τούτων τοῦ μὲν ἔσται πρότερον τοῦ δ' ὕστερον. Ἔτι ἐπειδὴ ἔστι πρῶτον μὲν αὐτὸ τὸ ἕν, ἔπειτα τῶν ἄλλων ἔστι τι πρῶτον ἕν, δεύ-

[1] Ross: ἔπειτα codd.

[a] Since the only principles which Plato recognizes are Unity and the Dyad, which are numerical (Aristotle insists on regarding them as a kind of 1 and 2), and therefore clearly principles of number; and the Ideas can only be derived from these principles if they (the Ideas) are (*a*) numbers (which has been proved impossible) or (*b*) prior or posterior to numbers (*i.e.*, causes or effects of numbers, which they cannot be if they are composed of a different kind of units); then the Ideas are not derived from any principle at all, and therefore do not exist.

[b] The Platonists.

[c] This was the orthodox Platonic view of the generation of Ideal numbers; or at least Aristotle is intending to describe the orthodox view. Plato should not have regarded the Ideal numbers as composed of units at all, and there is no real reason to suppose that he did (see Vol. I. Introd. pp. xxi-xxiii). But Aristotle infers from the fact that the Ideal 2 is

cannot be placed either as prior or as posterior to numbers.[a]

But if the units are inaddible in the sense that any one unit is inaddible to any other, the number so composed can be neither mathematical number (since mathematical number consists of units which do not differ, and the facts demonstrated of it fit in with this character) nor Ideal number. For on this view 2 will not be the first number generated from Unity and the indeterminate dyad, and then the other numbers in succession, as they [b] say 2, 3, 4—because the units in the primary 2 are generated at the same time,[c] whether, as the originator of the theory held, from unequals [d] (coming into being when these were equalized), or otherwise—since if we regard the one unit as prior to the other,[e] it will be prior also to the 2 which is composed of them; because whenever one thing is prior and another posterior, their compound will be prior to the latter and posterior to the former.[f] 5 6

If all units are inaddible, (1) the Ideal 2 is not the first number generated.

Further, since the Ideal 1 is first, and then comes a particular 1 which is first of the other 1's but second 7

(2) The units

the first number generated (and then the other Ideal numbers in the natural order) that the units of the Ideal 2 are generated simultaneously, and then goes on to show that this is incompatible with the theory of inaddible units.

[d] *i.e.*, the Great-and-Small, which Aristotle wrongly understands as two unequal things. It is practically certain that Plato used the term (as he did that of "Indeterminate Dyad") to describe indeterminate quantity. See Vol. I. Introd. p. xxii.

[e] This is a necessary implication of the theory of inaddible units (*cf.* ch. vi. 1, 2).

[f] So the order of generation will be: (i) Unity (ungenerated); (ii) first unit in 2; (iii) second unit in 2; and the Ideal 2 will come between (ii) and (iii).

1081 a τερον δὲ μετ' ἐκεῖνο καὶ πάλιν τρίτον, τὸ δεύτερον μὲν μετὰ τὸ δεύτερον, τρίτον δὲ μετὰ τὸ πρῶτον ἕν· ὥστε πρότεραι ἂν εἶεν αἱ μονάδες ἢ οἱ ἀριθμοὶ ἐξ ὧν λέγονται[1]· οἷον ἐν τῇ δυάδι τρίτη μονὰς ἔσται πρὶν τὰ τρία εἶναι, καὶ ἐν τῇ τριάδι τετάρτη καὶ [ἡ][2] πέμπτη πρὶν τοὺς ἀριθμοὺς τούτους. Οὐδεὶς μὲν οὖν τὸν τρόπον τοῦτον εἴρηκεν αὐτῶν τὰς μονάδας ἀσυμβλήτους, ἔστι δὲ κατὰ μὲν τὰς ἐκείνων 1081 b ἀρχὰς εὔλογον καὶ οὕτως, κατὰ μέντοι τὴν ἀλήθειαν ἀδύνατον. τάς τε γὰρ μονάδας προτέρας καὶ ὑστέρας εἶναι εὔλογον, εἴπερ καὶ πρώτη τις ἔστι μονὰς καὶ ἓν πρῶτον, ὁμοίως δὲ καὶ δυάδας, εἴπερ καὶ δυὰς πρώτη ἔστιν· μετὰ γὰρ τὸ πρῶτον 5 εὔλογον καὶ ἀναγκαῖον δεύτερόν τι εἶναι, καὶ εἰ δεύτερον, τρίτον, καὶ οὕτω δὴ τὰ ἄλλα ἐφεξῆς· ἅμα δ' ἀμφότερα λέγειν, μονάδα τε μετὰ τὸ ἓν πρώτην εἶναι καὶ δευτέραν, καὶ δυάδα πρώτην, ἀδύνατον. οἱ δὲ ποιοῦσι μονάδα μὲν καὶ ἓν πρῶτον, δεύτερον 10 δὲ καὶ τρίτον οὐκέτι, καὶ δυάδα πρώτην, δευτέραν δὲ καὶ τρίτην οὐκέτι. Φανερὸν δὲ καὶ ὅτι οὐκ ἐνδέχεται, εἰ ἀσύμβλητοι πᾶσαι αἱ μονάδες, δυάδα εἶναι αὐτὴν καὶ τριάδα καὶ οὕτω τοὺς ἄλλους ἀριθμούς. ἅν τε γὰρ ὦσιν ἀδιάφοροι αἱ μονάδες ἄν τε διαφέρουσαι ἑκάστη ἑκάστης, ἀνάγκη ἀριθμεῖσθαι τὸν ἀριθμὸν κατὰ πρόσθεσιν, οἷον τὴν 15 δυάδα πρὸς τῷ ἑνὶ ἄλλου ἑνὸς προστεθέντος, καὶ τὴν τριάδα ἄλλου ἑνὸς πρὸς τοῖς δυσὶ προστεθέντος, καὶ τὴν τετράδα ὡσαύτως. τούτων δὲ ὄντων ἀδύνατον τὴν γένεσιν εἶναι τῶν ἀριθμῶν, ὡς γεννῶσιν

[1] πλέκονται $A^bJ^aΓ$ Alexander. [2] Jaeger.

after the Ideal 1, and then a third 1 which is next after the second but third after the first 1, it follows that the units will be prior to the numbers after which they are called; *e.g.*, there will be a third unit in 2 before 3 exists, and a fourth and fifth in 3 before these numbers exist.[a] will be prior to the numbers after which they are called.

It is true that nobody has represented the units 8 of numbers as inaddible in this way; but according to the principles held by these thinkers even this view is quite reasonable, although in actual fact it is untenable. For assuming that there is a first unit 9 or first 1,[b] it is reasonable that the units should be prior and posterior; and similarly in the case of 2's, if there is a first 2. For it is reasonable and indeed necessary that after the first there should be a second; and if a second, a third; and so on with the rest in sequence. But the two statements, that there is 10 after 1 a first and a second unit, and that there is a first 2, are incompatible. These thinkers, however, recognize a first unit and first 1, but not a second and third; and they recognize a first 2, but not a second and third.

It is also evident that if all units are inaddible, there cannot be an Ideal 2 and 3, and similarly with the other numbers; for whether the units are 11 indistinguishable or each is different in kind from every other, numbers must be produced by addition; *e.g.* 2 by adding 1 to another 1, and 3 by adding another 1 to the 2, and 4 similarly.[c] This being 12 so, numbers cannot be generated as these thinkers (3) The numbers cannot be generated as the Platonists hold, for they must be generated

[a] This is a corollary to the previous argument, and depends upon an identification of "ones" (including the Ideal One or Unity) with units.

[b] *i.e.*, the Ideal One.

[c] This is of course not true of the natural numbers.

1081 b ἐκ τῆς δυάδος καὶ τοῦ ἑνός· μόριον γὰρ γίγνεται ἡ
20 δυὰς τῆς τριάδος καὶ αὕτη τῆς τετράδος· τὸν αὐτὸν
. δὲ τρόπον συμβαίνει καὶ ἐπὶ τῶν ἐχομένων. ἀλλ'
ἐκ τῆς δυάδος τῆς πρώτης καὶ τῆς ἀορίστου δυάδος
ἐγίγνετο ἡ τετράς, δύο δυάδες παρ' αὐτὴν τὴν
δυάδα· εἰ δὲ μή, μόριον ἔσται αὐτῆ[1] ἡ δυάς, ἑτέρα
δὲ προσέσται μία δυάς, καὶ ἡ δυὰς ἔσται ἐκ τοῦ
25 ἑνὸς αὐτοῦ καὶ ἄλλου ἑνός. εἰ δὲ τοῦτο, οὐχ οἷόν
τ' εἶναι τὸ ἕτερον στοιχεῖον δυάδα ἀόριστον· μονάδα
γὰρ μίαν γεννᾷ, ἀλλ' οὐ δυάδα ὡρισμένην.

Ἔτι παρ' αὐτὴν τὴν τριάδα καὶ αὐτὴν τὴν δυάδα
πῶς ἔσονται ἄλλαι τριάδες καὶ δυάδες; καὶ τίνα
τρόπον ἐκ προτέρων μονάδων καὶ ὑστέρων σύγκειν-
30 ται; πάντα γὰρ ταῦτ' ⟨ἄτοπά⟩[2] ἐστι καὶ πλασματώδη, καὶ ἀδύνατον εἶναι πρώτην δυάδα, εἶτ' αὐτὴν
τριάδα. ἀνάγκη δ', ἐπείπερ ἔσται τὸ ἓν καὶ ἡ
ἀόριστος δυὰς στοιχεῖα. εἰ δ' ἀδύνατα τὰ συμβαίνοντα, καὶ τὰς ἀρχὰς εἶναι ταύτας ἀδύνατον.

Εἰ μὲν οὖν διάφοροι αἱ μονάδες ὁποιαιοῦν ὁποιαισ-
35 οῦν, ταῦτα καὶ τοιαῦθ' ἕτερα συμβαίνει ἐξ ἀνάγκης. εἰ δ' αἱ μὲν ἐν ἄλλῳ διάφοροι, αἱ δ' ἐν τῷ
αὐτῷ ἀριθμῷ ἀδιάφοροι ἀλλήλαις μόναι, καὶ οὕτως
1082 a οὐθὲν ἐλάττω συμβαίνει τὰ δυσχερῆ. οἷον γὰρ ἐν
τῇ δεκάδι αὐτῇ ἔνεισι δέκα μονάδες, σύγκειται δὲ
καὶ ἐκ τούτων καὶ ἐκ δύο πεντάδων ἡ δεκάς.

[1] αὐτῆ] αὕτη EJ. [2] Jaeger.

try to generate them, from Unity and the dyad; because 2 becomes a part of 3,[a] and 3 of 4, and the same applies to the following numbers. But according to them 4 was generated from the first 2 and the indeterminate dyad, thus consisting of two 2's apart from the Ideal 2.[b] Otherwise 4 will consist of the Ideal 2 and another 2 added to it, and the Ideal 2 will consist of the Ideal 1 and another 1; and if this is so the other element cannot be the indeterminate dyad, because it produces one unit and not a definite 2.[c] by successive additions of 1. 13

Again, how can there be other 3's and 2's besides the Ideal numbers 3 and 2, and in what way can they be composed of prior and posterior units? All these theories are absurd and fictitious, and there can be no primary 2 and Ideal 3. Yet there must be, if we are to regard Unity and the indeterminate dyad as elements.[d] But if the consequences are impossible, the principles cannot be of this nature. 14 General criticism of the theory. 15

If, then, any one unit differs in kind from any other, these and other similar consequences necessarily follow. If, on the other hand, while the units in different numbers are different, those which are in the same number are alone indistinguishable from one another, even so the consequences which follow are no less difficult. For example, in the Ideal number 10 there are ten units, and 10 is composed both of these and of two 5's. Now since the Ideal 16 If the units in the same number are addible, but units in different numbers are inaddible, the conse-

[a] *i.e.*, 3 is produced by adding 1 to 2. [b] *Cf.* § 18.

[c] The general argument is: Numbers are produced by addition; but this is incompatible with the belief in the Indeterminate Dyad as a generative principle, because, being duplicative, it cannot produce single units.

[d] *i.e.*, if numbers are not generated by addition, there must be Ideal (or natural) numbers.

1082 a ἐπεὶ δ' οὐχ ὁ τυχὼν ἀριθμὸς αὐτὴ[1] ἡ δεκὰς οὐδὲ σύγκειται ἐκ τῶν τυχουσῶν πεντάδων, ὥσπερ οὐδὲ μονάδων, ἀνάγκη διαφέρειν τὰς μονάδας τὰς ἐν τῇ δεκάδι ταύτῃ. ἂν γὰρ μὴ διαφέρωσιν, οὐδ' αἱ πεντάδες διοίσουσιν ἐξ ὧν ἐστὶν ἡ δεκάς· ἐπεὶ δὲ διαφέρουσι, καὶ αἱ μονάδες διοίσουσιν. εἰ δὲ διαφέρουσι, πότερον οὐκ ἐνέσονται πεντάδες ἄλλαι ἀλλὰ μόνον αὗται αἱ δύο, ἢ ἔσονται; εἶτε δὲ μὴ ἐνέσονται, ἄτοπον· εἶτ' ἐνέσονται, ποία ἔσται δεκὰς ἐξ ἐκείνων; οὐ γὰρ ἔστιν ἑτέρα δεκὰς ἐν τῇ δεκάδι παρ' αὐτήν. Ἀλλὰ μὴν καὶ ἀνάγκη γε μὴ ἐκ τῶν τυχουσῶν δυάδων τὴν τετράδα συγκεῖσθαι· ἡ γὰρ ἀόριστος δυάς, ὥς φασι, λαβοῦσα τὴν ὡρισμένην δυάδα δύο δυάδας ἐποίησεν· τοῦ γὰρ λη- φθέντος ἦν δυοποιός. Ἔτι τὸ εἶναι παρὰ τὰς δύο μονάδας τὴν δυάδα φύσιν τινά, καὶ τὴν τριάδα παρὰ τὰς τρεῖς μονάδας, πῶς ἐνδέχεται; ἢ γὰρ μεθέξει θατέρου θατέρου,[2] ὥσπερ λευκὸς ἄνθρωπος παρὰ λευκὸν καὶ ἄνθρωπον (μετέχει γὰρ τούτων), ἢ ὅταν ᾖ θατέρου θάτερον διαφορά τις, ὥσπερ ὁ ἄνθρωπος παρὰ ζῷον καὶ δίπουν. Ἔτι τὰ μὲν ἁφῇ ἐστὶν ἕν, τὰ δὲ μίξει, τὰ δὲ θέσει· ὧν οὐδὲν ἐνδέχεται ὑπάρχειν ταῖς μονάσιν ἐξ ὧν ἡ δυὰς καὶ ἡ τριάς· ἀλλ' ὥσπερ οἱ δύο ἄνθρωποι οὐχ ἕν τι παρὰ ἀμφοτέρους, οὕτως ἀνάγκη καὶ τὰς μονάδας. καὶ οὐχ ὅτι ἀδιαίρετοι, διοίσουσι διὰ τοῦτο· καὶ γὰρ αἱ

[1] αὐτὴ E. [2] θατέρου Christ: θάτερον.

[a] I think Ross's interpretation of this passage must be right. The Ideal 10 is a unique number, and the numbers contained in it must be ideal and unique; therefore the

10 is not a chance number,[a] and is not composed of chance 5's, any more than of chance units, the units in this number 10 must be different; for if they are not different, the 5's of which the 10 is composed will not be different; but since these are different, the units must be different too. Now if the units are different, will there or will there not be other 5's in this 10, and not only the two? If there are not, the thing is absurd [b]; whereas if there are, what sort of 10 will be composed of them? for there is no other 10 in 10 besides the 10 itself. 17

Absurd consequences are just as absurd.

Again, it must also be true that 4 is not composed of chance 2's. For according to them the indeterminate dyad, receiving the determinate dyad, made two dyads; for it was capable of duplicating that which it received.[c] 18

Again, how is it possible that 2 can be a definite entity existing besides the two units, and 3 besides the three units? Either by participation of the one in the other, as "white man" exists besides "white" and "man," because it partakes of these concepts; or when the one is a differentia of the other, as "man" exists besides "animal" and "two-footed." 19

Again, some things are one by contact, others by mixture, and others by position; but none of these alternatives can possibly apply to the units of which 2 and 3 consist. Just as two men do not constitute any one thing distinct from both of them, so it must be with the units. The fact that the units are indivisible will make no difference; because points 20 21

two 5's must be specifically different, and so must their units —which contradicts the view under discussion.

[b] *i.e.*, it is only reasonable to suppose that other 5's might be made up out of different combinations of the units.

[c] *Cf.* Vol. I. Introd. pp. xxii f.

1082 a στιγμαὶ ἀδιαίρετοι, ἀλλ' ὅμως παρὰ τὰς δύο οὐθὲν ἕτερον ἡ δυὰς αὐτῶν. Ἀλλὰ μὴν οὐδὲ τοῦτο δεῖ λανθάνειν, ὅτι συμβαίνει προτέρας καὶ ὑστέρας εἶναι δυάδας, ὁμοίως δὲ καὶ τοὺς ἄλλους ἀριθμούς. αἱ μὲν γὰρ ἐν τῇ τετράδι δυάδες ἔστωσαν ἀλλήλαις ἅμα· ἀλλ' αὗται τῶν ἐν τῇ ὀκτάδι πρότεραί εἰσι, καὶ ἐγέννησαν, ὥσπερ ἡ δυὰς ταύτας, αὗται τὰς τετράδας τὰς ἐν τῇ ὀκτάδι αὐτῇ. ὥστε εἰ καὶ ἡ πρώτη δυὰς ἰδέα, καὶ αὗται ἰδέαι τινὲς ἔσονται. ὁ δ' αὐτὸς λόγος καὶ ἐπὶ τῶν μονάδων· αἱ γὰρ ἐν τῇ δυάδι τῇ πρώτῃ μονάδες γεννῶσι τὰς τέτταρας τὰς ἐν τῇ τετράδι, ὥστε πᾶσαι αἱ μονάδες ἰδέαι γίγνονται καὶ συγκείσεται ἰδέα ἐξ ἰδεῶν· ὥστε δῆλον ὅτι κἀκεῖνα, ὧν ἰδέαι αὗται τυγχάνουσιν 1082 b οὖσαι, συγκείμενα ἔσται, οἷον εἰ τὰ ζῷα φαίη τις συγκεῖσθαι ἐκ ζώων, εἰ τούτων ἰδέαι εἰσίν. Ὅλως δὲ τὸ ποιεῖν τὰς μονάδας διαφόρους ὁπωσοῦν ἄτοπον καὶ πλασματῶδες (λέγω δὲ πλασματῶδες τὸ πρὸς ὑπόθεσιν βεβιασμένον)· οὔτε γὰρ κατὰ τὸ 5 ποσὸν οὔτε κατὰ τὸ ποιὸν ὁρῶμεν διαφέρουσαν μονάδα μονάδος, ἀνάγκη τε ἢ ἴσον ἢ ἄνισον εἶναι ἀριθμόν, πάντα μὲν ἀλλὰ μάλιστα τὸν μοναδικόν· ὥστε εἰ μήτε πλείων μήτ' ἐλάττων, ἴσος· τὰ δὲ ἴσα καὶ ὅλως ἀδιάφορα ταὐτὰ ὑπολαμβάνομεν ἐν τοῖς ἀριθμοῖς. εἰ δὲ μή, οὐδ' αἱ ἐν αὐτῇ[1] τῇ δεκάδι 10 δυάδες ἀδιάφοροι ἔσονται ἴσαι οὖσαι· τίνα γὰρ αἰτίαν ἕξει λέγειν ὁ φάσκων ἀδιαφόρους εἶναι;

Ἔτι εἰ ἅπασα μονὰς καὶ μονὰς ἄλλη δύο, ἡ [δ'][2] ἐκ

[1] Alexander (?), Schwegler: ταύτῃ.
[2] om. A[b] Alexander (?).

are indivisible also, but nevertheless a pair of points is not anything distinct from the two single points.

Moreover we must not fail to realize this: that on this theory it follows that 2's are prior and posterior, and the other numbers similarly. Let it 22 be granted that the 2's in 4 are contemporaneous; yet they are prior to those in 8, and just as the ⟨determinate⟩ 2 produced the 2's in 4, so [a] they produced the 4's in 8. Hence if the original 2 is an Idea, these 2's will also be Ideas of a sort. And the same 23 argument applies to the units, because the units in the original 2 produce the four units in 4; and so all the units become Ideas, and an Idea will be composed of Ideas. Hence clearly those things also of which these things are Ideas will be composite; *e.g.*, one might say that animals are composed of animals, if there are Ideas of animals.

In general, to regard units as different in any way 24 whatsoever is absurd and fictitious (by "fictitious" I mean "dragged in to support a hypothesis"). For we can see that one unit differs from another neither in quantity nor in quality; and a number must be either equal or unequal—this applies to all numbers, but especially to numbers consisting of abstract units. Thus if a number is neither more nor less, it is equal; 25 and things which are equal and entirely without difference we assume, in the sphere of number, to be identical. Otherwise even the 2's in the Ideal 10 will be different, although they are equal; for if anyone maintains that they are not different, what reason will he be able to allege?

Again, if every unit plus another unit makes 2, a 26

[a] In each case the other factor is the indeterminate dyad (*cf.* § 18).

1082 b τῆς δυάδος αὐτῆς μονὰς καὶ ἡ ἐκ τῆς τριάδος αὐτῆς δυὰς ἔσται ἐκ διαφερουσῶν τε, καὶ πότερον προτέρα τῆς τριάδος ἢ ὑστέρα; μᾶλλον γὰρ ἔοικε προτέραν ἀναγκαῖον εἶναι· ἡ μὲν γὰρ ἅμα τῇ τριάδι, ἡ δ' ἅμα τῇ δυάδι τῶν μονάδων. καὶ ἡμεῖς μὲν ὑπολαμβάνομεν ὅλως ἓν καὶ ἕν, καὶ ἐὰν ᾖ ἴσα ἢ ἄνισα, δύο εἶναι, οἷον τὸ ἀγαθὸν καὶ τὸ κακόν, καὶ ἄνθρωπον καὶ ἵππον· οἱ δ' οὕτως λέγοντες οὐδὲ τὰς μονάδας.

Εἴτε δὲ μή ἐστι πλείων ἀριθμὸς ὁ τῆς τριάδος αὐτῆς ἢ ὁ τῆς δυάδος, θαυμαστόν· εἴτε ἐστὶ πλείων, δῆλον ὅτι καὶ ἴσος ἔνεστι τῇ δυάδι, ὥστε οὗτος ἀδιάφορος αὐτῇ τῇ δυάδι. ἀλλ' οὐκ ἐνδέχεται, εἰ πρῶτός τις ἔστιν ἀριθμὸς καὶ δεύτερος· οὐδὲ ἔσονται αἱ ἰδέαι ἀριθμοί. τοῦτο μὲν γὰρ αὐτὸ ὀρθῶς λέγουσιν οἱ διαφόρους τὰς μονάδας ἀξιοῦντες εἶναι, εἴπερ ἰδέαι ἔσονται, ὥσπερ εἴρηται πρότερον· ἓν γὰρ τὸ εἶδος, αἱ δὲ μονάδες εἰ ἀδιάφοροι, καὶ αἱ δυάδες καὶ αἱ τριάδες ἔσονται ἀδιάφοροι. διὸ καὶ τὸ ἀριθμεῖσθαι οὕτως, ἓν δύο, μὴ προσλαμβανομένου πρὸς τῷ ὑπάρχοντι ἀναγκαῖον αὐτοῖς λέγειν· οὔτε γὰρ ἡ γένεσις ἔσται ἐκ τῆς ἀορίστου δυάδος, οὔτ' ἰδέαν ἐνδέχεται εἶναι· ἐνυπάρξει γὰρ ἑτέρα ἰδέα ἐν ἑτέρᾳ, καὶ πάντα τὰ εἴδη ἑνὸς μέρη. διὸ πρὸς μὲν τὴν ὑπόθεσιν ὀρθῶς λέγουσιν, ὅλως δ' οὐκ ὀρθῶς· πολλὰ γὰρ ἀναιροῦσιν, ἐπεὶ τοῦτό γ' αὐτὸ ἔχειν τινὰ φήσουσιν ἀπορίαν, πότερον, ὅταν ἀριθμῶμεν καὶ εἴπωμεν ἓν δύο τρία, προσλαμβά-

[a] Which conflicts with the view under discussion.
[b] The implication seems to be, as Ross says, that the

unit from the Ideal 2 plus one from the Ideal 3 will make 2—a 2 composed of different units[a]; will this be prior or posterior to 3? It rather seems that it must be prior, because one of the units is contemporaneous with 3, and the other with 2.[b] We assume that in 27 general 1 and 1, whether the things are equal or unequal, make 2; *e.g.* good and bad, or man and horse; but the supporters of this theory say that not even two units make 2.

If the number of the Ideal 3 is not greater than that of the Ideal 2, it is strange; and if it is greater, then clearly there is a number in it equal to the 2, so that this number is not different from the Ideal 2. But 28 this is impossible, if there is a first and second number.[c] Nor will the Ideas be numbers. For on this particular point they are right who claim that the units must be different if there are to be Ideas, as has been already stated.[d] For the form is unique; but if the units are undifferentiated, the 2's and 3's will be undifferentiated. Hence they have to say that 29 when we count like this, 1, 2, we do not add to the already existing number; for if we do, (*a*) number will not be generated from the indeterminate dyad, and (*b*) a number cannot be an Idea; because one Idea will pre-exist in another, and all the Forms will be parts of one Form.[e] Thus in relation to their 30 hypothesis they are right, but absolutely they are wrong, for their view is very destructive, inasmuch as they will say that this point presents a difficulty: whether, when we count and say "1, 2, 3," we count

Platonists will refuse to admit that there is a number between 2 and 3.
[c] *i.e.*, if numbers are specifically different. *Cf.* ch. vi. 1.
[d] §§ 2-4 *supra*.
[e] *i.e.*, the biggest number.

1082 b
νοντες ἀριθμοῦμεν ἢ κατὰ μερίδας. ποιοῦμεν δὲ ἀμφοτέρως· διὸ γελοῖον ταύτην εἰς τηλικαύτην τῆς οὐσίας ἀνάγειν διαφοράν.

1083 a VIII. Πάντων δὲ πρῶτον καλῶς ἔχει διορίσασθαι τίς ἀριθμοῦ διαφορά, καὶ μονάδος, εἰ ἔστιν. ἀνάγκη δὴ ἢ κατὰ τὸ ποσὸν ἢ κατὰ τὸ ποιὸν διαφέρειν· τούτων δ' οὐδέτερον φαίνεται ἐνδέχεσθαι
5 ὑπάρχον. ἀλλ' ἢ ἀριθμός, κατὰ τὸ ποσόν. εἰ δὲ δὴ καὶ αἱ μονάδες τῷ ποσῷ διέφερον, κἂν ἀριθμὸς ἀριθμοῦ διέφερεν ὁ ἴσος τῷ πλήθει τῶν μονάδων. ἔτι πότερον αἱ πρῶται μείζους ἢ ἐλάττους, καὶ αἱ ὕστερον ἐπιδιδόασιν ἢ τοὐναντίον; πάντα γὰρ ταῦτα ἄλογα. ἀλλὰ μὴν οὐδὲ κατὰ τὸ ποιὸν διά-
10 φέρειν ἐνδέχεται. οὐθὲν γὰρ αὐταῖς οἷόν τε ὑπάρχειν πάθος· ὕστερον γὰρ καὶ τοῖς ἀριθμοῖς φασὶν ὑπάρχειν τὸ ποιὸν τοῦ ποσοῦ. ἔτι οὔτ' ἂν ἀπὸ τοῦ ἑνὸς τοῦτ' αὐταῖς γένοιτο οὔτ' ἂν ἀπὸ τῆς δυάδος· τὸ μὲν γὰρ οὐ ποιόν, ἡ δὲ ποσοποιόν[1]· τοῦ γὰρ πολλὰ τὰ ὄντα εἶναι αἰτία αὕτη[2] ἡ φύσις. εἰ δ' ἄρα ἔχει
15 πως ἄλλως, λεκτέον ἐν ἀρχῇ μάλιστα τοῦτο καὶ διοριστέον περὶ μονάδος διαφορᾶς, μάλιστα μὲν καὶ διότι ἀνάγκη ὑπάρχειν· εἰ δὲ μή, τίνα λέγουσιν.

Ὅτι μὲν οὖν, εἴπερ εἰσὶν ἀριθμοὶ αἱ ἰδέαι, οὔτε συμβλητὰς τὰς μονάδας ἁπάσας ἐνδέχεται εἶναι,
20 φανερόν, οὔτε ἀσυμβλήτους ἀλλήλαις οὐδέτερον τῶν

[1] ποσοποιόν E^2 Syrianus: ποσὸν ποιόν.
[2] αὐτῆς EJ.

[a] This is Apelt's interpretation of κατὰ μερίδας. For this sense of the word he quotes Plutarch, *Moralia* 644 c. The meaning then is: If you count by addition, you regard number as exhibited only in concrete instances; if you treat each number as a "distinct portion" (*i.e.*, generated

by addition or by enumerating distinct portions.[a] But we do both; and therefore it is ridiculous to refer this point to so great a difference in essence.

VIII. First of all it would be well to define the differentia of a number; and of a unit, if it has a differentia. Now units must differ either in quantity or in quality; and clearly neither of these alternatives can be true. "But units may differ, as number does, in quantity." But if units also differed in quantity, number would differ from number, although equal in number of units. Again, are the first units greater or smaller, and do the later units increase in size, or the opposite? All these suggestions are absurd. Nor can units differ in quality; for no modification can ever be applicable to them, because these thinkers hold that even in numbers quality is a later attribute than quantity.[b] Further, the units cannot derive quality either from unity or from the dyad; because unity has no quality, and the dyad produces quantity, because its nature causes things to be many. If, then, the units differ in some other way, they should most certainly state this at the outset, and explain, if possible, with regard to the differentia of the unit, why it must exist; or failing this, what differentia they mean.

How can units differ?

They cannot differ in quantity, 2

or in quality. 3

Clearly, then, if the Ideas are numbers, the units cannot all be addible, nor can they all be inaddible 4

separately), you admit another kind of number besides the mathematical. Aristotle says that number can be regarded in both ways.

[b] Numbers have quality as being prime or composite, "plane" or "solid" (*i.e.*, products of two or three factors); but these qualities are clearly incidental to quantity. *Cf.* V. xiv. 2.

1083 a τρόπων. ἀλλὰ μὴν οὐδ' ὡς ἕτεροί τινες λέγουσι περὶ τῶν ἀριθμῶν λέγεται καλῶς· εἰσὶ δ' οὗτοι ὅσοι ἰδέας μὲν οὐκ οἴονται εἶναι οὔτε ἁπλῶς οὔτε ὡς ἀριθμούς τινας οὔσας, τὰ δὲ μαθηματικὰ εἶναι καὶ τοὺς ἀριθμοὺς πρώτους τῶν ὄντων, καὶ ἀρχὴν αὐτῶν εἶναι αὐτὸ τὸ ἕν. ἄτοπον γὰρ τὸ ἓν μέν εἶναί τι πρῶτον τῶν ἑνῶν, ὥσπερ ἐκεῖνοί φασι, δυάδα δὲ τῶν δυάδων μή, μηδὲ τριάδα τῶν τριάδων· τοῦ γὰρ αὐτοῦ λόγου πάντα ἐστίν. εἰ μὲν οὖν οὕτως ἔχει τὰ περὶ τὸν ἀριθμὸν καὶ θήσει τις εἶναι τὸν μαθηματικὸν μόνον, οὐκ ἔστι τὸ ἓν ἀρχή. ἀνάγκη γὰρ διαφέρειν τὸ ἓν τὸ τοιοῦτο τῶν ἄλλων μονάδων· εἰ δὲ τοῦτο, καὶ δυάδα τινὰ πρώτην τῶν δυάδων, ὁμοίως δὲ καὶ τοὺς ἄλλους ἀριθμοὺς τοὺς ἐφεξῆς. εἰ δέ ἐστι τὸ ἓν ἀρχή, ἀνάγκη μᾶλλον ὥσπερ Πλάτων ἔλεγεν ἔχειν τὰ περὶ τοὺς ἀριθμούς, καὶ εἶναι δυάδα[1] πρώτην καὶ τριάδα, καὶ οὐ συμβλητοὺς εἶναι τοὺς ἀριθμοὺς πρὸς ἀλλήλους. ἂν δ' αὖ πάλιν τις τιθῇ ταῦτα, εἴρηται ὅτι ἀδύνατα πολλὰ συμβαίνει. ἀλλὰ μὴν ἀνάγκη γε ἢ οὕτως ἢ ἐκείνως ἔχειν, ὥστ' εἰ 1083 b μηδετέρως, οὐκ ἂν ἐνδέχοιτο εἶναι τὸν ἀριθμὸν χωριστόν.

Φανερὸν δ' ἐκ τούτων καὶ ὅτι χείριστα λέγεται ὁ τρίτος τρόπος, τὸ εἶναι τὸν αὐτὸν ἀριθμὸν τὸν τῶν εἰδῶν καὶ τὸν μαθηματικόν. ἀνάγκη γὰρ εἰς μίαν δόξαν συμβαίνειν δύο ἁμαρ- 5 τίας· οὔτε γὰρ μαθηματικὸν ἀριθμὸν ἐνδέχεται τοῦτον εἶναι τὸν τρόπον, ἀλλ' ἰδίας ὑποθέσεις ὑποθέμενον ἀνάγκη μηκύνειν· ὅσα τε τοῖς ὡς εἴδη

[1] δυάδα] τινα δυάδα E: τὴν δυάδα J.

[a] *Cf.* ch. i. 4.

in either sense. Nor again is the theory sound which certain other thinkers[a] hold concerning numbers. These are they who do not believe in Ideas, either absolutely or as being a kind of numbers, but believe that the objects of mathematics exist, and that the numbers are the first of existing things, and that their principle is Unity itself. For it is absurd that if, as they say, there is a 1 which is first of the 1's,[b] there should not be a 2 first of the 2's, nor a 3 of the 3's; for the same principle applies to all cases. Now if this is the truth with regard to number, and we posit only mathematical number as existing, Unity is not a principle. For the Unity which is of this nature must differ from the other units; and if so, then there must be some 2 which is first of the 2's; and similarly with the other numbers in succession. But if Unity is a principle, then the truth about numbers must rather be as Plato used to maintain; there must be a first 2 and first 3, and the numbers cannot be addible to each other. But then again, if we assume this, many impossibilities result, as has been already stated.[c] Moreover, the truth must lie one way or the other; so that if neither view is sound, number cannot have a separate abstract existence.

Criticism of Speusippus's view.

From these considerations it is also clear that the third alternative[d]—that Ideal number and mathematical number are the same—is the worst; for two errors have to be combined to make one theory. (i.) Mathematical number cannot be of this nature, but the propounder of this view has to spin it out by making peculiar assumptions; (ii.) his theory must

Xenocrates view is the worst.

[b] *i.e.*, Speusippus recognized unity or "the One" as a formal principle, but admitted no other ideal numbers. Aristotle argues that this is inconsistent.

[c] Ch. vii. 1–viii. 3.

[d] *Cf.* ch. vi. 7.

1083 b τὸν ἀριθμὸν λέγουσι συμβαίνει, καὶ ταῦτα ἀναγκαῖον λέγειν. Ὁ δὲ τῶν Πυθαγορείων τρόπος τῇ μὲν ἐλάττους ἔχει δυσχερείας τῶν πρότερον εἰρημένων, τῇ δὲ ἰδίας ἑτέρας. τὸ μὲν γὰρ μὴ χωριστὸν ποιεῖν τὸν ἀριθμὸν ἀφαιρεῖται πολλὰ τῶν ἀδυνάτων· τὸ δὲ τὰ σώματα ἐξ ἀριθμῶν εἶναι συγκείμενα, καὶ τὸν ἀριθμὸν τοῦτον εἶναι μαθηματικόν, ἀδύνατόν ἐστιν. οὔτε γὰρ ἄτομα μεγέθη λέγειν ἀληθές, εἴ θ' ὅτι μάλιστα τοῦτον ἔχει τὸν τρόπον, οὐχ αἵ γε μονάδες μέγεθος ἔχουσιν· μέγεθος δ' ἐξ ἀδιαιρέτων συγκεῖσθαι πῶς δυνατόν; ἀλλὰ μὴν ὅ γ' ἀριθμητικὸς ἀριθμὸς μοναδικός ἐστιν. ἐκεῖνοι δὲ τὸν ἀριθμὸν τὰ ὄντα λέγουσιν· τὰ γοῦν θεωρήματα προσάπτουσι τοῖς σώμασιν ὡς ἐξ ἐκείνων ὄντων τῶν ἀριθμῶν. Εἰ τοίνυν ἀνάγκη μέν, εἴπερ ἐστὶν ἀριθμὸς τῶν ὄντων τι καθ' αὑτό, τούτων εἶναί τινα τῶν εἰρημένων τρόπων, οὐθένα δὲ τούτων ἐνδέχεται, φανερὸν ὡς οὐκ ἔστιν ἀριθμοῦ τις τοιαύτη φύσις οἵαν κατασκευάζουσιν οἱ χωριστὸν ποιοῦντες αὐτόν. Ἔτι πότερον ἑκάστη μονὰς ἐκ τοῦ μεγάλου καὶ μικροῦ ἰσασθέντων ἐστίν, ἢ ἡ μὲν ἐκ τοῦ μικροῦ ἡ δ' ἐκ τοῦ μεγάλου; εἰ μὲν δὴ οὕτως, οὔτε ἐκ πάντων τῶν στοιχείων ἕκαστον, οὔτε ἀδιάφοροι αἱ μονάδες· ἐν τῇ μὲν γὰρ τὸ μέγα ἐν τῇ δὲ τὸ μικρὸν ὑπάρχει, ἐναντίον τῇ φύσει ὄν. ἔτι αἱ ἐν τῇ τριάδι αὐτῇ πῶς; μία γὰρ περιττή. ἀλλὰ διὰ τοῦτο ἴσως αὐτὸ τὸ ἓν ποιοῦσιν ἐν τῷ περιττῷ μέσον. εἰ δ'

[a] See Vol. I. Introd. p. xvii.
[b] This is proved in *De Gen. et Corr.* 315 b 24-317 a 17.
[c] *Cf.* ch. vii. 5 n. Aristotle is obviously referring to the two units in the Ideal 2.

admit all the difficulties which confront those who speak of Ideal number.

The Pythagorean view.

9 The Pythagorean view in one way contains fewer difficulties than the view described above, but in another way it contains further difficulties peculiar to itself. By not regarding number as separable, it disposes of many of the impossibilities; but that bodies should be composed of numbers, and that these numbers should be mathematical, is impossible.[a] For (*a*) it is not true to speak of indivisible magnitudes[b]; (*b*) assuming that this view is perfectly true, still units at any rate have no magnitude; and how can a magnitude be composed of indivisible parts? Moreover arithmetical number consists of abstract units. But the Pythagoreans identify number with existing things; at least they apply mathematical propositions to bodies as though they consisted of those numbers.[a]

It follows that number cannot be a self-subsistent reality.

11 Thus if number, if it is a self-subsistent reality, must be regarded in one of the ways described above, and if it cannot be regarded in any of these ways, clearly number has no such nature as is invented for it by those who treat it as separable.

General objections. (1) How are such numbers generated?

12 Again, does each unit come from the Great and the Small, when they are equalized[c]; or does one come from the Small and another from the Great? If the latter, each thing is not composed of all the elements, nor are the units undifferentiated; for one contains the Great, and the other the Small, which is by nature contrary to the Great. Again, what of the

13 units in the Ideal 3? because there is one over. But no doubt it is for this reason that in an odd number they make the Ideal One the middle unit.[d] If on

[d] *Cf.* Diels, *Vorsokratiker* 270. 18.

1083 b ἑκατέρα τῶν μονάδων ἐξ ἀμφοτέρων ἐστὶν ἰσασθέντων, ἡ δυὰς πῶς ἔσται μία τις οὖσα φύσις ἐκ τοῦ μεγάλου καὶ μικροῦ; ἢ τί διοίσει τῆς μονάδος; ἔτι προτέρα ἡ μονὰς τῆς δυάδος· ἀναιρουμένης γὰρ ἀναιρεῖται ἡ δυάς. ἰδέαν οὖν ἰδέας ἀναγκαῖον αὐτὴν εἶναι, προτέραν γ' οὖσαν ἰδέας, καὶ γεγονέναι προτέραν. ἐκ τίνος οὖν[1]; ἡ γὰρ ἀόριστος δυὰς δυοποιὸς ἦν. Ἔτι ἀνάγκη ἤτοι ἄπειρον τὸν ἀριθμὸν εἶναι ἢ πεπερασμένον· χωριστὸν γὰρ ποιοῦσι
1084 a τὸν ἀριθμόν, ὥστε οὐχ οἷόν τε μὴ οὐχὶ τούτων θάτερον ὑπάρχειν. ὅτι μὲν τοίνυν ἄπειρον οὐκ ἐνδέχεται, δῆλον· οὔτε γὰρ περιττὸς ὁ ἄπειρός ἐστιν οὔτε ἄρτιος, ἡ δὲ γένεσις τῶν ἀριθμῶν ἢ περιττοῦ ἀριθμοῦ ἢ ἀρτίου ἀεί ἐστιν, ὠδὶ μὲν τοῦ
5 ἑνὸς εἰς τὸν ἄρτιον πίπτοντος περιττός, ὠδὶ δὲ τῆς μὲν δυάδος ἐμπιπτούσης ὁ ἀφ' ἑνὸς διπλασιαζόμενος, ὠδὶ δὲ τῶν περιττῶν ὁ ἄλλος ἄρτιος. Ἔτι εἰ πᾶσα ἰδέα τινός, οἱ δὲ ἀριθμοὶ ἰδέαι, καὶ ὁ ἄπειρος ἔσται ἰδέα τινός, ἢ τῶν αἰσθητῶν ἢ ἄλλου τινός. καίτοι οὔτε κατὰ τὴν θέσιν ἐνδέχεται οὔτε
10 κατὰ λόγον, τάττουσί γ'[2] οὕτω τὰς ἰδέας. Εἰ δὲ πεπερασμένος, μέχρι πόσου; τοῦτο γὰρ δεῖ λέγεσθαι οὐ μόνον ὅτι, ἀλλὰ καὶ διότι. ἀλλὰ μὴν εἰ μέχρι τῆς δεκάδος ὁ ἀριθμός, ὥσπερ τινές φασιν,

[1] τίνος οὖν A[b] Alexander Syrianus: τινος οὖν (τινοσοῦν) EJ.
[2] γ' Schwegler; δ'.

[a] Ch. vii. 18.
[b] The point seems to be that if number is self-subsistent it must be *actually* finite or infinite. Aristotle himself holds that number is infinite only potentially; *i.e.*, however high you count, you can always count higher.
[c] *i.e.*, as implying an actual infinite.

the other hand each of the units comes from both Great and Small, when they are equalized, how can the Ideal 2 be a single entity composed of the Great and Small? How will it differ from one of its units? Again, the unit is prior to the 2; because when the unit disappears the 2 disappears. Therefore the unit 14
must be the Idea of an Idea, since it is prior to an Idea, and must have been generated before it. From what, then? for the indeterminate dyad, as we have seen,[a] causes duality.

Again, number must be either infinite or finite (for they make number separable, so that one of these alternatives must be true).[b] Now it is obvious 15
that it cannot be infinite, because infinite number is neither odd nor even, and numbers are always generated either from odd or from even number. By one process, when 1 is added to an even number, we get an odd number; by another, when 1 is multiplied by 2, we get ascending powers of 2; and by another, when powers of 2 are multiplied by odd numbers, we get the remaining even numbers.

Again, if every Idea is an Idea of something, and 16
the numbers are Ideas, infinite number will also be an Idea of something, either sensible or otherwise. This, however, is impossible, both logically[c] and on their own assumption,[d] since they regard the Ideas as they do.

If, on the other hand, number is finite, what is its limit? In reply to this we must not only assert the fact, but give the reason. Now if number only goes 17
up to 10, as some hold,[e] in the first place the Forms

[d] *i.e.*, as inconsistent with the conception of an Idea as a determining principle.
[e] *Cf.* XII. viii. 2. The Platonists derived this view from the Pythagoreans; see Vol. I. Introd. p. xvi.

If number is self-subsistent (a) it cannot be infinite,
(b) if it is finite, and the limit is 10, as some hold, the

1084 a πρῶτον μὲν ταχὺ ἐπιλείψει τὰ εἴδη· οἷον εἰ ἔστιν ἡ τριὰς αὐτοάνθρωπος, τίς ἔσται ἀριθμὸς αὐτό-
15 ιππος; αὐτὸ γὰρ ἕκαστος ἀριθμὸς μέχρι δεκάδος· ἀνάγκη δὴ τῶν ἐν τούτοις ἀριθμῶν τινὰ[1] εἶναι— οὐσίαι γὰρ καὶ ἰδέαι οὗτοι—ἀλλ' ὅμως ἐκλείψει· τὰ τοῦ ζῴου γὰρ εἴδη ὑπερέξει· ἅμα δὲ δῆλον ὅτι εἰ οὕτως ἡ τριὰς αὐτοάνθρωπος, καὶ αἱ ἄλλαι
20 τριάδες· ὅμοιαι γὰρ αἱ ἐν τοῖς αὐτοῖς ἀριθμοῖς, ὥστ' ἄπειροι ἔσονται ἄνθρωποι, εἰ μὲν ἰδέα ἑκάστη τριάς, αὐτὸ ἕκαστος[2] ἄνθρωπος, εἰ δὲ μή, ἀλλ' ἄνθρωποί γε. καὶ εἰ μέρος ὁ ἐλάττων τοῦ μείζονος, ὁ ἐκ τῶν συμβλητῶν μονάδων τῶν ἐν τῷ αὐτῷ ἀριθμῷ, εἰ δὴ[3] ἡ τετρὰς αὐτὴ[4] ἰδέα τινός ἐστιν, οἷον ἵππου ἢ λευκοῦ, ὁ ἄνθρωπος ἔσται μέρος
25 ἵππου, εἰ δυὰς ὁ ἄνθρωπος. ἄτοπον δὲ καὶ τὸ τῆς μὲν δεκάδος εἶναι ἰδέαν, ἐνδεκάδος δὲ μή, μηδὲ τῶν ἐχομένων ἀριθμῶν. Ἔτι δὲ καὶ ἔστι καὶ γίγνεται ἕνια καὶ ὧν εἴδη οὐκ ἔστιν, ὥστε διὰ τί οὐ κἀκείνων εἴδη ἔστιν; οὐκ ἄρα αἴτια τὰ εἴδη ἐστίν.

Ἔτι ἄτοπον εἰ ὁ ἀριθμὸς ὁ μέχρι τῆς δε-
30 κάδος μᾶλλόν τι ὂν καὶ εἶδος αὐτῆς τῆς δεκάδος, καίτοι τοῦ μὲν οὐκ ἔστι γένεσις ὡς ἑνός, τῆς δ' ἔστιν. πειρῶνται δ' ὡς τοῦ μέχρι τῆς δεκάδος τελείου ὄντος ἀριθμοῦ. γεννῶσι γοῦν τὰ ἑπόμενα, οἷον τὸ κενόν, ἀναλογίαν, τὸ περιττόν, τὰ ἄλλα τὰ

[1] τινὰ Alexander, Bonitz: τινὰς.
[2] αὐτὸ ἕκαστος J Bessarion Alexander: αὐτοέκαστος.
[3] δὴ Bonitz: δ'.
[4] αὐτὴ T Bessarion Alexander: αὕτη.

[a] Robin is probably right in taking this to mean that the 3 which is in the ideal 4 is like the 3 which is in the 4 which

will soon run short. For example, if 3 is the Idea of Man, what number will be the Idea of Horse? Each number up to 10 is an Idea; the Idea of Horse, then, must be one of the numbers in this series, for they are substances or Ideas. But the fact remains 18 that they will run short, because the different types of animals will outnumber them. At the same time it is clear that if in this way the Ideal 3 is the Idea of Man, so will the other 3's be also (for the 3's in the same numbers[a] are similar), so that there will be an infinite number of men; and if each 3 is an Idea, each man will be an Idea of Man; or if not, they will still be men. And if the smaller number is 19 part of the greater, when it is composed of the addible units contained in the same number, then if the Ideal 4 is the Idea of something, *e.g.* "horse" or "white," then "man" will be part of "horse," if "man" is 2. It is absurd also that there should be an Idea of 10 and not of 11, nor of the following numbers. consequences are absurd.

Again, some things exist and come into being of 20 which there are no Forms[b]; why, then, are there not Forms of these too? It follows that the Forms are not the causes of things.

Again, it is absurd that number up to 10 should be more really existent, and a Form, than 10 itself; although the former is not generated as a unity, whereas the latter is. However, they try to make out that the series up to 10 is a complete number; at least they generate the derivatives, *e.g.* the void, 21 proportion, the odd, etc., from within the decad.

is in a higher ideal number, and so on (*La Théorie platonicienne des Idées et des Nombres d'après Aristote*, p. 352).

[b] *Cf.* ch. iv. 7, 8; I. ix. 2, 3.

1084 a τοιαῦτα ἐντὸς τῆς δεκάδος· τὰ μὲν γὰρ ταῖς ἀρχαῖς
35 ἀποδιδόασιν, οἷον κίνησιν, στάσιν, ἀγαθόν, κακόν,
τὰ δ' ἄλλα τοῖς ἀριθμοῖς. διὸ τὸ ἓν τὸ περιττόν·
εἰ γὰρ ἐν τῇ τριάδι, πῶς ἡ πεντὰς περιττόν; Ἔτι
1084 b τὰ μεγέθη καὶ ὅσα τοιαῦτα μέχρι ποσοῦ, οἷον ἡ
πρώτη γραμμὴ ⟨ἡ⟩[1] ἄτομος, εἶτα δυάς, εἶτα καὶ
ταῦτα μέχρι δεκάδος. Ἔτι εἰ ἔστι χωριστὸς
ὁ ἀριθμός, ἀπορήσειεν ἄν τις πότερον πρότερον τὸ
ἓν ἢ ἡ τριὰς καὶ ἡ δυάς. ᾗ μὲν δὴ σύνθετος ὁ
5 ἀριθμός, τὸ ἕν, ᾗ δὲ τὸ καθόλου πρότερον καὶ τὸ
εἶδος, ὁ ἀριθμός· ἑκάστη γὰρ τῶν μονάδων μόριον
τοῦ ἀριθμοῦ ὡς ὕλη, ὁ δ' ὡς εἶδος. καὶ ἔστι μὲν
ὡς ἡ ὀρθὴ προτέρα τῆς ὀξείας, ὅτι ὥρισται καὶ τῷ
λόγῳ· ἔστι δ' ὡς ἡ ὀξεῖα, ὅτι μέρος καὶ εἰς
ταύτην διαιρεῖται. ὡς μὲν δὴ ὕλη ἡ ὀξεῖα καὶ τὸ
10 στοιχεῖον καὶ ἡ μονὰς πρότερον, ὡς δὲ κατὰ τὸ
εἶδος καὶ τὴν οὐσίαν τὴν κατὰ τὸν λόγον ἡ ὀρθὴ καὶ
τὸ ὅλον τὸ ἐκ τῆς ὕλης καὶ τοῦ εἴδους· ἐγγύτερον
γὰρ τοῦ εἴδους καὶ οὗ ὁ λόγος τὸ ἄμφω, γενέσει δ'
ὕστερον. Πῶς οὖν ἀρχὴ τὸ ἕν; ὅτι οὐ
διαιρετόν, φασίν· ἀλλὰ ἀδιαίρετον καὶ τὸ καθόλου
15 καὶ τὸ ἐπὶ μέρους καὶ τὸ στοιχεῖον. ἀλλὰ τρόπον

[1] Ross.

[a] From the Dyad were derived void (Theophrastus, *Met.* 312. 18-313. 3) and motion (*cf.* I. ix. 29, XI. ix. 8). Rest would naturally be derived from unity. For good and evil see I. vi. 10. Proportion alone of the "derivatives" here mentioned appears to be derived from number. As Syrianus says, the three types of proportion can be illustrated by numbers from within the decad—arithmetical 1. 2. 3, geometrical 1. 2. 4, harmonic 2. 3. 6.

[b] *sc.* because (on their theory) 3 is not contained in 5.

Some, such as motion, rest, good and evil, they assign to the first principles; the rest to numbers.[a] Hence 22
they identify the odd with Unity; because if oddness depended on 3, how could 5 be odd?[b]

Again, they hold that spatial magnitudes and the like have a certain limit; *e.g.* the first or indivisible line, then the 2, and so on; these too extending up to 10.[c]

Again, if number is separable, the question might Difficulties
be raised whether Unity is prior, or 3 or 2. Now 23
if we regard number as composite, Unity is prior; about the nature of Unity.
but if we regard the universal or form as prior, number is prior, because each unit is a material part of number, while number is the form of the units. And there is a sense in which the right angle is prior to the acute angle—since it is definite and is involved in the definition of the acute angle—and another sense in which the acute angle is prior, because it is a part of the other, *i.e.*, the right angle is divided into acute angles. Thus regarded as 24
matter the acute angle and element and unit are prior; but with respect to form and substance in the sense of formula, the right angle, and the whole composed of matter and form, is prior. For the concrete whole is nearer to the form or subject of the definition, although in generation it is posterior.[d]

In what sense, then, is the One a first principle? Because, they say, it is indivisible. But the uni- 25
versal and the part or element are also indivisible.

Thus oddness had to be referred to not a number but a principle—unity.

[c] The "indivisible line" or point was connected with 1, the line with 2, the plane with 3 and the solid with 4 (XIV. iii. 9); and 1 + 2 + 3 + 4 = 10.

[d] *Cf.* VII. x., xi.

1084 b ἄλλον, τὸ μὲν κατὰ λόγον τὸ δὲ κατὰ χρόνον. ποτέρως οὖν τὸ ἓν ἀρχή; ὥσπερ γὰρ εἴρηται, καὶ ἡ ὀρθὴ τῆς ὀξείας καὶ αὕτη ἐκείνης δοκεῖ προτέρα εἶναι, καὶ ἑκατέρα μία. ἀμφοτέρως δὴ ποιοῦσι τὸ ἓν ἀρχήν. ἔστι[1] δὲ ἀδύνατον· τὸ μὲν γὰρ ὡς εἶδος καὶ ἡ οὐσία, τὸ δ' ὡς μέρος καὶ ὡς ὕλη. ἔστι γάρ πως ἓν ἑκάτερον, τῇ μὲν ἀληθείᾳ δυνάμει (εἴ γε ὁ ἀριθμὸς ἕν τι καὶ μὴ ὡς σωρός, ἀλλ' ἕτερος ἐξ ἑτέρων μονάδων, ὥσπερ φασίν), ἐντελεχείᾳ δ' οὐκ ἔστι μονὰς ἑκατέρα. αἴτιον δὲ τῆς συμβαινούσης ἁμαρτίας ὅτι ἅμα ἐκ τῶν μαθημάτων ἐθήρευον καὶ ἐκ τῶν λόγων τῶν καθόλου, ὥστ' ἐξ ἐκείνων μὲν ὡς στιγμὴν τὸ ἓν καὶ τὴν ἀρχὴν ἔθηκαν· ἡ γὰρ μονὰς στιγμὴ ἄθετός ἐστιν. καθάπερ οὖν καὶ ἕτεροί τινες ἐκ τοῦ ἐλαχίστου τὰ ὄντα συνετίθεσαν καὶ οὗτοι. ὥστε γίγνεται ἡ μονὰς ὕλη τῶν ἀριθμῶν καὶ ἅμα προτέρα τῆς δυάδος, πάλιν δὲ ὑστέρα ὡς ὅλου τινὸς καὶ ἑνὸς καὶ εἴδους τῆς δυάδος οὔσης. διὰ δὲ τὸ καθόλου ζητεῖν τὸ κατηγορούμενον ἓν καὶ οὕτως ὡς μέρος ἔλεγον· ταῦτα δὲ ἅμα τῷ αὐτῷ ἀδύνατον ὑπάρχειν. Εἰ δὲ τὸ ἓν αὐτὸ δεῖ †μόνον ἄθετον†[2] εἶναι (οὐθενὶ γὰρ διαφέρει

[1] ἔτι recc.

[2] μόνον ἄθετον] μόνον ἀσύνθετον Bywater, μοναδικὸν Ross.

[a] Aristotle takes the number 2 as an example, but the principle is of course universal. In a sense both number and unit are one; but if the number exists as an actual unity, the unit can only exist potentially.

[b] Perhaps the Atomists; but *cf.* I. viii. 3, 4.

[c] If the text is sound (and no convincing emendation has been suggested), it seems best to understand *ἄθετον* in a rather wider sense than the semi-technical one put forward by Ross. "Without position"=not localized, *i.e.* abstract. Unity as a principle has no concrete instance.

Yes, but they are prior in a different sense; the one in formula and the other in time. In which sense, then, is the One a first principle? for, as we have just said, both the right angle seems to be prior to the acute angle, and the latter prior to the former; and each of them is one. Accordingly the Platonists 26
make the One a first principle in both senses. But this is impossible; for in one sense it is the One *qua* form or essence, and in the other the One *qua* part or matter, that is primary. There is a sense in which both number and unit are one; they are so in truth potentially—that is, if a number is not an aggregate but a unity consisting of units distinct from those of other numbers, as the Platonists hold—but each of the two[a] units is not one in com- 27
plete reality. The cause of the error which befell the Platonists was that they were pursuing their inquiry from two points of view—that of mathematics and that of general definition—at the same time. Hence as a result of the former they conceived of the One or first principle as a point, for the unit is a point without position. (Thus they too, just like certain others, represented existing things as com- 28
posed of that which is smallest.)[b] We get, then, that the unit is the material element of numbers, and at the same time is prior to the number 2; and again we get that it is posterior to 2 regarded as a whole or unity or form. On the other hand, through looking for the universal, they were led to speak of the unity predicated of a given number as a part in the formal sense also. But these two characteristics cannot belong simultaneously to the same thing.

And if Unity itself must only be without position[c] 29
(for it differs only in that it is a principle) and 2 is

1084 b ἢ ὅτι ἀρχή), καὶ ἡ μὲν δυὰς διαιρετὴ ἡ δὲ μονὰς
35 οὔ, ὁμοιοτέρα ἂν εἴη τῷ ἑνὶ αὐτῷ ἡ μονάς· εἰ
δ' ἡ μονάς, κἀκεῖνο τῇ μονάδι ἢ τῇ δυάδι· ὥστε
προτέρα ἂν εἴη ἑκατέρα ἡ μονὰς τῆς δυάδος. οὗ
1085 a φασι δέ· γεννῶσι γοῦν τὴν δυάδα πρῶτον. Ἔτι
εἰ ἔστιν ἡ δυὰς ἕν τι αὐτὴ καὶ ἡ τριὰς αὐτή, ἄμφω
δυάς. ἐκ τίνος οὖν αὕτη ἡ δυάς;

IX. Ἀπορήσειε δ' ἄν τις καὶ ἐπεὶ ἀφὴ μὲν οὐκ
ἔστιν ἐν τοῖς ἀριθμοῖς, τὸ δ' ἐφεξῆς, ὅσων μὴ ἔστι
5 μεταξὺ μονάδων, οἷον τῶν ἐν τῇ δυάδι ἢ τῇ τριάδι,
πότερον ἐφεξῆς τῷ ἑνὶ αὐτῷ ἢ οὔ, καὶ πότερον ἡ
δυὰς προτέρα τῶν ἐφεξῆς ἢ τῶν μονάδων ὁποτερα-
οῦν.[1]

Ὁμοίως δὲ καὶ περὶ τῶν ὕστερον γενῶν
τοῦ ἀριθμοῦ συμβαίνει τὰ δυσχερῆ, γραμμῆς τε
καὶ ἐπιπέδου καὶ σώματος. οἱ μὲν γὰρ ἐκ τῶν
10 εἰδῶν τοῦ μεγάλου καὶ τοῦ μικροῦ ποιοῦσιν, οἷον ἐκ
μακροῦ μὲν καὶ βραχέος τὰ μήκη, πλατέος δὲ καὶ
στενοῦ τὰ ἐπίπεδα, ἐκ βαθέος δὲ καὶ ταπεινοῦ τοὺς
ὄγκους· ταῦτα δέ ἐστιν εἴδη τοῦ μεγάλου καὶ
μικροῦ. τὴν δὲ κατὰ τὸ ἓν ἀρχὴν ἄλλοι ἄλλως
τιθέασι τῶν τοιούτων. καὶ ἐν τούτοις δὲ μυρία
15 φαίνεται τά τε ἀδύνατα καὶ τὰ πλασματώδη καὶ
τὰ ὑπεναντία πᾶσι τοῖς εὐλόγοις. ἀπολελυμένα τε
γὰρ ἀλλήλων συμβαίνει, εἰ μὴ συνακολουθοῦσι καὶ
αἱ ἀρχαί, ὥστε εἶναι τὸ πλατὺ καὶ στενὸν καὶ
μακρὸν καὶ βραχύ· εἰ δὲ τοῦτο, ἔσται τὸ ἐπίπεδον
γραμμὴ καὶ τὸ στερεὸν ἐπίπεδον. ἔτι δὲ γωνίαι
20 καὶ σχήματα καὶ τὰ τοιαῦτα πῶς ἀποδοθήσεται;

[1] ὁποτερουοῦν Bessarion, Aldine, Bekker.

divisible whereas the unit is not, the unit will be more nearly akin to Unity itself; and if this is so, Unity itself will also be more nearly akin to the unit than to 2. Hence each of the units in 2 will be prior to 2. But this they deny; at least they make out that 2 is generated first.[a]

Further, if 2 itself and 3 itself are each one thing, both together make 2. From what, then, does this 2 come?

IX. Since there is no contact in numbers, but units which have nothing between them—*e.g.* those in 2 or 3—are successive, the question might be raised whether or not they are successive to Unity itself, and whether of the numbers which succeed it 2 or one of the units in 2 is prior.[b]

We find similar difficulties in the case of the genera posterior to number[c]—the line, plane and solid. Some derive these from the species of the Great and Small; viz. lines from the Long and Short, planes from the Broad and Narrow, and solids from the Deep and Shallow. These are species of the Great and Small. As for the geometrical first principle which corresponds to the arithmetical One, different Platonists propound different views.[d] In these too we can see innumerable impossibilities, fictions and contradictions of all reasonable probability. For (*a*) we get that the geometrical forms are unconnected with each other, unless their principles also are so associated that the Broad and Narrow is also Long and Short; and if this is so, the plane will be a line and the solid a plane. Moreover, how can angles and figures, etc., be explained? And (*b*) the same

2 Difficulties about the generation of geometrical objects. Some Platonists

3 derive them from species of the Great and Small as their material principle; this is clearly illogical.

4

[a] *Cf.* ch. vii. 5. [b] *Cf. ibid.* 5-7. [c] *Cf.* ch. vi. 10. [d] *Cf.* III. iv. 34, XIV. iii. 9,

1085 a ταὐτό τε συμβαίνει τοῖς περὶ τὸν ἀριθμόν· ταῦτα γὰρ πάθη μεγέθους ἐστίν, ἀλλ' οὐκ ἐκ τούτων τὸ μέγεθος, ὥσπερ οὐδ' ἐξ εὐθέος καὶ καμπύλου τὸ μῆκος, οὐδ' ἐκ λείου καὶ τραχέος τὰ στερεά. Πάντων δὲ κοινὸν τούτων ὅπερ ἐπὶ τῶν εἰδῶν τῶν ὡς γένους συμβαίνει διαπορεῖν, ὅταν τις θῇ τὰ καθόλου, πότερον τὸ ζῷον αὐτὸ ἐν τῷ ζῴῳ ἢ ἕτερον αὐτοῦ ζῴου. τούτου γὰρ μὴ χωριστοῦ μὲν ὄντος οὐδεμίαν ποιήσει ἀπορίαν· χωριστοῦ δ', ὥσπερ οἱ ταῦτα λέγοντές φασι, τοῦ ἑνὸς καὶ τῶν ἀριθμῶν οὐ ῥᾴδιον λῦσαι, εἰ μὴ ῥᾴδιον δεῖ λέγειν τὸ ἀδύνατον. ὅταν γὰρ νοῇ τις ἐν τῇ δυάδι τὸ ἓν καὶ ὅλως ἐν ἀριθμῷ, πότερον αὐτὸ νοεῖ τι ἢ ἕτερον; Οἱ μὲν οὖν τὰ μεγέθη γεννῶσιν ἐκ τοιαύτης ὕλης, ἕτεροι δὲ ἐκ τῆς στιγμῆς (ἡ δὲ στιγμὴ αὐτοῖς δοκεῖ εἶναι οὐχ ἓν ἀλλ' οἷον τὸ ἕν) καὶ ἄλλης ὕλης οἵας τὸ πλῆθος, ἀλλ' οὐ πλήθους· περὶ ὧν οὐδὲν ἧττον συμβαίνει τὰ αὐτὰ ἀπορεῖν. εἰ μὲν γὰρ μία ἡ ὕλη, ταὐτὸ γραμμὴ καὶ ἐπίπεδον καὶ στερεόν (ἐκ γὰρ τῶν αὐτῶν τὸ 1085 b αὐτὸ καὶ ἓν ἔσται)· εἰ δὲ πλείους αἱ ὗλαι, καὶ ἑτέρα μὲν γραμμῆς ἑτέρα δὲ τοῦ ἐπιπέδου καὶ ἄλλη τοῦ στερεοῦ, ἤτοι ἀκολουθοῦσιν ἀλλήλαις ἢ οὔ, ὥστε ταὐτὰ συμβήσεται καὶ οὕτως· ἢ γὰρ οὐχ ἕξει τὸ ἐπίπεδον γραμμὴν ἢ ἔσται γραμμή. Ἔτι 5 πῶς μὲν ἐνδέχεται εἶναι ἐκ τοῦ ἑνὸς καὶ πλήθους

[a] The reference is probably to Speusippus; Plato and Xenocrates did not believe in points (I. ix. 25, ch. v. 10 n.).

result follows as in the case of number; for these concepts are modifications of magnitude, but magnitude is not generated from them, any more than a line is generated from the Straight and Crooked, or solids from the Smooth and Rough.

Common to all these Platonic theories is the same problem which presents itself in the case of species of a genus when we posit universals—viz. whether it is the Ideal animal that is present in the particular animal, or some other "animal" distinct from the Ideal animal. This question will cause no difficulty if the universal is not separable; but if, as the Platonists say, Unity and the numbers exist separately, then it is not easy to solve (if we should apply the phrase "not easy" to what is impossible). For when we think of the one in 2, or in number generally, are we thinking of an Idea or of something else? 5 (Digression. The fundamental difficulty of the Ideal theory.) 6

These thinkers, then, generate geometrical magnitudes from this sort of material principle, but others [a] generate them from the point (they regard the point not as a unity but as similar to Unity) and another material principle which is not plurality but is similar to it; yet in the case of these principles none the less we get the same difficulties. For if the matter is one, line, plane and solid will be the same; because the product of the same elements must be one and the same. If on the other hand there is more than one kind of matter—one of the line, another of the plane, and another of the solid—either the kinds are associated with each other, or they are not. Thus the same result will follow in this case also; for either the plane will not contain a line, or it will be a line. Others generate geometrical objects from principles "similar" to unity and plurality. The same difficulties apply to this view. 7

Further, no attempt is made to explain how num- 8

1085 b τὸν ἀριθμὸν οὐθὲν ἐπιχειρεῖται· ὅπως δ' οὖν λέγουσι ταὐτὰ συμβαίνει δυσχερῆ ἅπερ καὶ τοῖς ἐκ τοῦ ἑνὸς καὶ ἐκ τῆς δυάδος τῆς ἀορίστου. ὁ μὲν γὰρ ἐκ τοῦ κατηγορουμένου καθόλου γεννᾷ τὸν ἀριθμὸν καὶ οὐ τινὸς πλήθους, ὁ δ' ἔκ τινος πλήθους, τοῦ πρώτου δέ (τὴν γὰρ δυάδα πρῶτόν τι εἶναι πλῆθος), ὥστε διαφέρει οὐθὲν ὡς εἰπεῖν, ἀλλ' αἱ ἀπορίαι αἱ αὐταὶ[1] ἀκολουθήσουσι, μῖξις ἢ θέσις ἢ κρᾶσις ἢ γένεσις καὶ ὅσα ἄλλα τοιαῦτα. Μάλιστα δ' ἄν τις ἐπιζητήσειεν, εἰ μία ἑκάστη μονάς, ἐκ τίνος ἐστίν· οὐ γὰρ δὴ αὐτό γε τὸ ἓν ἑκάστη. ἀνάγκη δὴ[2] ἐκ τοῦ ἑνὸς αὐτοῦ εἶναι καὶ πλήθους, ἢ μορίου τοῦ πλήθους. τὸ μὲν οὖν πλῆθός τι εἶναι φάναι τὴν μονάδα ἀδύνατον, ἀδιαίρετόν γ' οὖσαν· τὸ δ' ἐκ μορίου ἄλλας ἔχει πολλὰς δυσχερείας· ἀδιαιρετόν τε γὰρ ἕκαστον ἀναγκαῖον εἶναι τῶν μορίων, ἢ πλῆθος εἶναι καὶ τὴν μονάδα διαιρετήν, καὶ μὴ στοιχεῖον εἶναι τὸ ἓν καὶ τὸ πλῆθος· ἢ γὰρ μονὰς ἑκάστη οὐκ ἐκ πλήθους καὶ ἑνός. ἔτι οὐθὲν ἄλλο ποιεῖ ὁ τοῦτο λέγων ἀλλ' ἢ ἀριθμὸν ἕτερον· τὸ γὰρ πλῆθος ἀδιαιρέτων ἐστὶν ἀριθμός.

Ἔτι ζητητέον καὶ παρὰ τοῦ οὕτω λέγοντος[3] πότερον ἄπειρος ὁ ἀριθμὸς ἢ πεπερασμένος. ὑπῆρχε

[1] αἱ αὐταὶ Γ Syrianus, fort. Alexander: αὗται (αἱ sup. lin. addito) J: αὗται EA^b.
[2] δ' ἢ A^{b}Γ Syrianus.
[3] τοῦ οὕτω λέγοντος scripsi: τοὺς οὕτω λέγοντας.

[a] Aristotle again identifies the indeterminate dyad with the number 2.
[b] *sc.* of the elements of number.
[c] Which, being a principle, is ἄθετον (viii. 29).
[d] *sc.* but from an indivisible part of plurality—which is not a plurality but a unity.

ber can be generated from unity and plurality; but howsoever they account for this, they have to meet the same difficulties as those who generate number from unity and the indeterminate dyad. The one school generates number not from a particular plurality but from that which is universally predicated; the other from a particular plurality, but the first; for they hold that the dyad is the first plurality.[a] Thus there is practically no difference between the two views; the same difficulties will be involved with regard to mixture, position, blending, generation and the other similar modes of combination.[b]

Their generation of numbers is equally unsatisfactory.

We might very well ask the further question: if each unit is one, of what it is composed; for clearly each unit is not absolute unity.[c] It must be generated from absolute unity and either plurality or a part of plurality. Now we cannot hold that the unit is a plurality, because the unit is indivisible; but the view that it is derived from a part of plurality involves many further difficulties, because (*a*) each part must be indivisible; otherwise it will be a plurality and the unit will be divisible, and unity and plurality will not be its elements, because each unit will not be generated from plurality[d] and unity. (*b*) The exponent of this theory merely introduces another number; because plurality is a number of indivisible parts.[e]

How can units be generated from unity and plurality?

Again, we must inquire from the exponent of this theory whether the number[f] is infinite or finite.

Is the plurality finite or

[e] *i.e.*, to say that number is derived from plurality is to say that number is derived from number—which explains nothing.
[f] *sc.* which plurality has been shown to be.

1085 b
γάρ, ὡς ἔοικε, καὶ πεπερασμένον πλῆθος, ἐξ οὗ αἱ πεπερασμέναι μονάδες καὶ τοῦ ἑνός· ἔστι τε ἕτερον αὐτὸ πλῆθος καὶ πλῆθος ἄπειρον. ποῖον οὖν πλῆθος στοιχεῖόν ἐστι καὶ τὸ ἕν; Ὁμοίως δὲ καὶ περὶ στιγμῆς ἄν τις ζητήσειε καὶ τοῦ στοιχείου ἐξ οὗ ποιοῦσι τὰ μεγέθη· οὐ γὰρ μία γε μόνον στιγμή ἐστιν αὕτη. τῶν γοῦν ἄλλων στιγμῶν ἑκάστη ἐκ τίνος; οὐ γὰρ δὴ ἔκ γε διαστήματός τινος καὶ αὐτῆς στιγμῆς. ἀλλὰ μὴν οὐδὲ μόρια ἀδιαίρετα ἐνδέχεται τοῦ διαστήματος εἶναι μόρια, ὥσπερ τοῦ πλήθους ἐξ ὧν αἱ μονάδες· ὁ μὲν γὰρ ἀριθμὸς ἐξ ἀδιαιρέτων σύγκειται, τὰ δὲ μεγέθη οὔ. Πάντα δὴ ταῦτα καὶ ἄλλα τοιαῦτα φανερὸν ποιεῖ ὅτι ἀδύνατον εἶναι τὸν ἀριθμὸν καὶ τὰ μεγέθη χωριστά.

1086 a
ἔτι δὲ τὸ διαφωνεῖν τοὺς πρώτους[1] περὶ τῶν ἀριθμῶν σημεῖον ὅτι τὰ πράγματα αὐτὰ[2] οὐκ ὄντα ἀληθῆ παρέχει τὴν ταραχὴν αὐτοῖς. οἱ μὲν γὰρ τὰ μαθηματικὰ μόνον ποιοῦντες παρὰ τὰ αἰσθητά, ὁρῶντες τὴν περὶ τὰ εἴδη δυσχέρειαν καὶ πλάσιν, ἀπέστησαν ἀπὸ τοῦ εἰδητικοῦ ἀριθμοῦ καὶ τὸν μαθηματικὸν ἐποίησαν· οἱ δὲ τὰ εἴδη βουλόμενοι ἅμα καὶ ἀριθμοὺς ποιεῖν, οὐχ ὁρῶντες δέ, εἰ τὰς ἀρχάς τις ταύτας θήσεται, πῶς ἔσται ὁ μαθηματικὸς ἀριθμὸς παρὰ τὸν εἰδητικόν, τὸν αὐτὸν

[1] πρώτους A^b Alexander: τρόπους EJ γρ. Alexander.
[2] ταῦτα A^bJ Syrianus.

[a] Alexander preferred the reading πρώτους, interpreting it in this sense; and I do not see why he should not be followed. Ross objects that πρῶτος is used in the chronological sense in § 16 *init.*, but this is really no argument. For a much more serious (although different) inconsistency in the use of terms *cf.* XII. iii. 1.

[b] Speusippus and his followers.

There was, it appears, a finite plurality from which, in combination with unity, the finite units were generated; and absolute plurality is different from finite plurality. What sort of plurality is it, then, that is, in combination with unity, an element of number? 12 infinite?

We might ask a similar question with regard to the point, *i.e.* the element out of which they create spatial magnitudes. This is surely not the one and only point. At least we may ask from what each of the other points comes; it is not, certainly, from some interval and the Ideal point. Moreover, the parts of the interval cannot be indivisible parts, any more than the parts of the plurality of which the units are composed; because although number is composed of indivisible parts, spatial magnitudes are not. How are points 13 generated?

All these and other similar considerations make it clear that number and spatial magnitudes cannot exist separately. Further, the fact that the leading authorities[a] disagree about numbers indicates that it is the misrepresentation of the facts themselves that produces this confusion in their views. Those[b] who recognize only the objects of mathematics as existing besides sensible things, abandoned Ideal number and posited mathematical number because they perceived the difficulty and artificiality of the Ideal theory. Others,[c] wishing to maintain both Forms and numbers, but not seeing how, if one posits these[d] as first principles, mathematical number can exist besides Ideal number, identified Ideal with mathe- 14 Summary of the criticisms already stated. 15

[c] Xenocrates and his followers.

[d] Unity and the indeterminate dyad; for the difficulty see ch. vii. 3, 4.

1086 a εἰδητικὸν καὶ μαθηματικὸν ἐποίησαν ἀριθμόν—
τῷ λόγῳ, ἐπεὶ ἔργῳ γε ἀνῄρηται ὁ μαθηματικός·
ἰδίας γὰρ καὶ οὐ μαθηματικὰς ὑποθέσεις λέγουσιν·
ὁ δὲ πρῶτος θέμενος τὰ[1] εἴδη εἶναι καὶ ἀριθμοὺς
τὰ εἴδη καὶ τὰ μαθηματικὰ εἶναι εὐλόγως ἐχώρισεν·
ὥστε πάντας συμβαίνει κατὰ μέν τι λέγειν ὀρθῶς,
ὅλως δ' οὐκ ὀρθῶς. καὶ αὐτοὶ δὲ ὁμολογοῦσιν οὐ
ταὐτὰ λέγοντες ἀλλὰ τὰ ἐναντία. αἴτιον δ' ὅτι αἱ
ὑποθέσεις καὶ αἱ ἀρχαὶ ψευδεῖς. χαλεπὸν δ' ἐκ μὴ
καλῶς ἐχόντων λέγειν καλῶς, κατ' Ἐπίχαρμον·
ἀρτίως τε γὰρ λέλεκται, καὶ εὐθέως φαίνεται οὐ
καλῶς ἔχον. Ἀλλὰ περὶ μὲν τῶν ἀριθμῶν ἱκανὰ
τὰ διηπορημένα καὶ διωρισμένα· μᾶλλον γὰρ ἐκ
πλειόνων ἂν ἔτι πεισθείη τις πεπεισμένος, πρὸς δὲ
τὸ πεισθῆναι μὴ πεπεισμένος οὐθὲν μᾶλλον· περὶ δὲ
τῶν πρώτων ἀρχῶν καὶ τῶν πρώτων αἰτίων καὶ
στοιχείων ὅσα μὲν λέγουσιν οἱ περὶ μόνης τῆς
αἰσθητῆς οὐσίας διορίζοντες, τὰ μὲν ἐν τοῖς περὶ
φύσεως εἴρηται, τὰ δ' οὐκ ἔστι τῆς μεθόδου τῆς
νῦν· ὅσα δὲ οἱ φάσκοντες εἶναι παρὰ τὰς αἰσθητὰς
ἑτέρας οὐσίας, ἐχόμενόν ἐστι θεωρῆσαι τῶν εἰρη-
μένων.

Ἐπεὶ οὖν λέγουσί τινες τοιαύτας εἶναι τὰς ἰδέας
καὶ τοὺς ἀριθμούς, καὶ τὰ τούτων στοιχεῖα τῶν
ὄντων εἶναι στοιχεῖα καὶ ἀρχάς, σκεπτέον περὶ τού-
των τί λέγουσι καὶ πῶς λέγουσιν. Οἱ μὲν οὖν
ἀριθμοὺς ποιοῦντες μόνον καὶ τούτους μαθηματι-

[1] τὰ : τά τε recc. Syrianus.

[a] *Cf.* ch. vi. 10. [b] Plato. [c] Fr. 14, Diels.
[d] *Physics* I. iv.–vi.
[e] The Pythagoreans and Speusippus.

matical number,—but only in theory, since actually mathematical number is done away with, because the hypotheses which they state are peculiar to them and not mathematical.[a] And he[b] who first assumed 16
that there are Ideas, and that the Ideas are numbers, and that the objects of mathematics exist, naturally separated them. Thus it happens that all are right in some respect, but not altogether right; even they themselves admit as much by not agreeing but contradicting each other. The reason of this is that their assumptions and first principles are wrong; and it is difficult to propound a correct theory from 17
faulty premisses: as Epicharmus says, "no sooner is it said than it is seen to be wrong."[c]

We have now examined and analyzed the questions concerning numbers to a sufficient extent; for although one who is already convinced might be still more convinced by a fuller treatment, he who is not convinced would be brought no nearer to conviction. As for the first principles and causes and 18
elements, the views expressed by those who discuss only sensible substance either have been described in the *Physics*[d] or have no place in our present inquiry; but the views of those who assert that there are other substances besides sensible ones call for investigation next after those which we have just discussed.

Since, then, some thinkers hold that the Ideas and 19
numbers are such substances, and that their elements are the elements and principles of reality, we must inquire what it is that they hold, and in what sense they hold it.

Those[e] who posit only numbers, and mathematical 20

κοὺς ὕστερον ἐπισκεπτέοι· τῶν δὲ τὰς ἰδέας λεγόντων ἅμα τόν τε τρόπον θεάσαιτ' ἄν τις καὶ τὴν ἀπορίαν τὴν περὶ αὐτῶν. ἅμα γὰρ καθόλου τε ὡς οὐσίας[1] ποιοῦσι τὰς ἰδέας καὶ πάλιν ὡς χωριστὰς καὶ τῶν καθ' ἕκαστον. ταῦτα δ' ὅτι οὐκ ἐνδέχεται διηπόρηται πρότερον. αἴτιον δὲ τοῦ συνάψαι ταῦτα εἰς ταὐτὸν τοῖς λέγουσι τὰς οὐσίας[2] καθόλου, ὅτι τοῖς αἰσθητοῖς οὐ τὰς αὐτὰς [οὐσίας][3] ἐποίουν. τὰ μὲν οὖν ἐν τοῖς αἰσθητοῖς καθ' ἕκαστα ῥεῖν ἐνόμιζον καὶ μένειν οὐθὲν αὐτῶν, τὸ δὲ καθόλου παρὰ ταῦτα εἶναί τε καὶ ἕτερόν τι εἶναι. τοῦτο δ', ὥσπερ ἐν τοῖς ἔμπροσθεν ἐλέγομεν, ἐκίνησε μὲν Σωκράτης διὰ τοὺς ὁρισμούς, οὐ μὴν ἐχώρισέ γε τῶν καθ' ἕκαστον· καὶ τοῦτο ὀρθῶς ἐνόησεν οὐ χωρίσας. δηλοῖ δὲ ἐκ τῶν ἔργων· ἄνευ μὲν γὰρ τοῦ καθόλου οὐκ ἔστιν ἐπιστήμην λαβεῖν, τὸ δὲ χωρίζειν αἴτιον τῶν συμβαινόντων δυσχερῶν περὶ τὰς ἰδέας ἐστίν. οἱ δ' ὡς ἀναγκαῖον, εἴπερ ἔσονταί τινες οὐσίαι παρὰ τὰς αἰσθητὰς καὶ ῥεούσας, χωριστὰς εἶναι, ἄλλας μὲν οὐκ εἶχον, ταύτας δὲ τὰς καθόλου λεγομένας ἐξέθεσαν, ὥστε συμβαίνειν σχεδὸν τὰς αὐτὰς φύσεις εἶναι τὰς καθόλου καὶ τὰς καθ' ἕκαστον. αὕτη μὲν οὖν αὐτὴ καθ' αὑτὴν εἴη τις ἂν δυσχέρεια τῶν εἰρημένων.

X. Ὁ δὲ καὶ τοῖς λέγουσι τὰς ἰδέας ἔχει τινὰ ἀπορίαν καὶ τοῖς μὴ λέγουσιν, καὶ κατ' ἀρχὰς ἐν

[1] ὡς οὐσίας secl. Jaeger.
[2] οὐσίας Jaeger: ἰδέας.
[3] Jaeger.

[a] XIV. ii. 21, iii. 2-8, 15, 16.
[b] III. vi. 7-9.
[c] Ch. iv., and *cf.* I. vi.
[d] The Platonists.

numbers at that, may be considered later[a]; but as for those who speak of the Ideas, we can observe at the same time their way of thinking and the difficulties which befall them. For they not only treat the Ideas as universal substances, but also as separable and particular. (That this is impossible has been already shown[b] by a consideration of the difficulties involved.) The reason why those who hold substances to be universal combined these two views was that they did not identify substances with sensible things. They considered that the particulars in the sensible world are in a state of flux, and that none of them persists, but that the universal exists besides them and is something distinct from them. This theory, as we have said in an earlier passage,[c] was initiated by Socrates as a result of his definitions, but he did not separate universals from particulars; and he was right in not separating them. This is evident from the facts; for without the universal we cannot acquire knowledge, and the separation of the universal is the cause of the difficulties which we find in the Ideal theory. Others,[d] regarding it as necessary, if there are to be any substances besides those which are sensible and transitory, that they should be separable, and having no other substances, assigned separate existence to those which are universally predicated; thus it followed that universals and particulars are practically the same kind of thing. This in itself would be one difficulty in the view which we have just described.[e]

Criticism of the Ideal theory.

X. Let us now mention a point which presents some difficulty both to those who hold the Ideal theory and to those who do not. It has been stated already, at

How are substances to be regarded?

[e] See Vol. I. Introd. pp. xxi f.

1086 b τοῖς διαπορήμασιν ἐλέχθη πρότερον, λέγωμεν νῦν. εἰ μὲν γάρ τις μὴ θήσει τὰς οὐσίας εἶναι κεχωρισμένας, καὶ τὸν τρόπον τοῦτον ὡς λέγεται τὰ καθ' ἕκαστα τῶν ὄντων, ἀναιρήσει τὴν οὐσίαν ὡς βουλόμεθα λέγειν· ἂν δέ τις θῇ τὰς οὐσίας χωριστάς, πῶς θήσει τὰ στοιχεῖα καὶ τὰς ἀρχὰς αὐτῶν; εἰ μὲν γὰρ καθ' ἕκαστον καὶ μὴ καθόλου, τοσαῦτα ἔσται τὰ ὄντα ὅσαπερ τὰ στοιχεῖα, καὶ οὐκ ἐπιστητὰ τὰ στοιχεῖα. ἔστωσαν γὰρ αἱ μὲν ἐν τῇ φωνῇ συλλαβαὶ οὐσίαι, τὰ δὲ στοιχεῖα αὐτῶν στοιχεῖα τῶν οὐσιῶν· ἀνάγκη δὴ τὸ BA ἓν εἶναι καὶ ἑκάστην τῶν συλλαβῶν μίαν, εἴπερ μὴ καθόλου καὶ τῷ εἴδει αἱ αὐταί, ἀλλὰ μία ἑκάστη τῷ ἀριθμῷ καὶ τόδε τι καὶ μὴ ὁμώνυμον· ἔτι δ' αὐτὸ ὅ ἐστιν ἓν ἕκαστον τιθέασιν· εἰ δ' αἱ συλλαβαί, οὕτω καὶ ἐξ ὧν εἰσίν· οὐκ ἔσται ἄρα πλείω ἄλφα ἑνός, οὐδὲ τῶν ἄλλων στοιχείων οὐθὲν κατὰ τὸν αὐτὸν λόγον ὅνπερ οὐδὲ τῶν [ἄλλων][1] συλλαβῶν ἡ αὐτὴ ἄλλη καὶ ἄλλη. ἀλλὰ μὴν εἰ τοῦτο, οὐκ ἔσται παρὰ τὰ στοιχεῖα ἕτερα ὄντα, ἀλλὰ μόνον τὰ στοιχεῖα.

Ἔτι δὲ οὐδ' ἐπιστητὰ τὰ στοιχεῖα· οὐ γὰρ καθόλου, ἡ δ' ἐπιστήμη τῶν καθόλου. δῆλον δ' ἐκ[2] τῶν ἀποδείξεων καὶ τῶν ὁρισμῶν· οὐ γὰρ γίγνεται συλλογισμὸς ὅτι τόδε τὸ τρίγωνον δύο ὀρθαῖς, εἰ μὴ πᾶν τρίγωνον δύο ὀρθαί,[3] οὐδ' ὅτι ὁδὶ ὁ

[1] ἄλλων seclusi.
[2] ἔκ τε E.
[3] ὀρθαῖς J.

the beginning of our treatise, among the problems.[a] If we do not suppose substances to be separate, that is in the way in which particular things are said to be separate, we shall do away with substance in the sense in which we wish to maintain it; but if we suppose substances to be separable, how are we to regard their elements and principles? If they are particular and not universal, there will be as many real things as there are elements, and the elements will not be knowable. For let us suppose that the syllables in speech are substances, and that their letters are the elements of substances. Then there must be only one BA, and only one of each of the other syllables; that is, if they are not universal and identical in form, but each is numerically one and an individual, and not a member of a class bearing a common name. (Moreover, the Platonists assume that each Ideal entity is unique.) Now if this is true of the syllables, it is also true of their letters. Hence there will not be more than one A, nor more than one of any of the other letters,[b] on the same argument by which in the case of the syllable there cannot be more than one instance of the same syllable. But if this is so, there will be no other things besides the letters, but only the letters.

2 If they are particular, existing things will be no more in number than their elements,

Nor again will the elements be knowable; for they will not be universal, and knowledge is of the universal. This can be seen by reference to proofs and definitions; for there is no logical conclusion that a given triangle has its angles equal to two right angles unless every triangle has its angles equal to two right

4 and these elements will be unknowable.

[a] *Cf.* III. iv. 8-10, vi. 7-9.
[b] This is, as a matter of fact, the assumption upon which the whole argument rests; Aristotle is arguing in a circle.

1086 b ἄνθρωπος ζῷον, εἰ μὴ πᾶς ἄνθρωπος ζῷον. Ἀλλὰ
1087 a μὴν εἴγε καθόλου αἱ ἀρχαὶ ἢ καὶ αἱ[1] ἐκ τούτων οὐσίαι καθόλου ⟨ἢ⟩[2] ἔσται μὴ οὐσία πρότερον οὐσίας· τὸ μὲν γὰρ καθόλου οὐκ οὐσία, τὸ δὲ στοιχεῖον καὶ ἡ ἀρχὴ καθόλου· πρότερον δὲ τὸ στοιχεῖον καὶ ἡ ἀρχὴ ὧν ἀρχὴ καὶ στοιχεῖόν ἐστιν.
5 ταῦτά τε δὴ πάντα συμβαίνει εὐλόγως, ὅταν ἐκ στοιχείων τε ποιῶσι τὰς ἰδέας καὶ παρὰ τὰς τὸ αὐτὸ εἶδος ἐχούσας οὐσίας καὶ ἰδέας ἔν τι ἀξιῶσιν εἶναι κεχωρισμένον. Εἰ δὲ μηθὲν κωλύει ὥσπερ ἐπὶ τῶν τῆς φωνῆς στοιχείων πολλὰ εἶναι τὰ ἄλφα καὶ τὰ βῆτα καὶ μηθὲν εἶναι παρὰ τὰ πολλὰ
10 αὐτὸ ἄλφα καὶ αὐτὸ βῆτα, ἔσονται ἕνεκά γε τούτου ἄπειροι αἱ ὅμοιαι συλλαβαί. Τὸ δὲ τὴν ἐπιστήμην εἶναι καθόλου πᾶσαν, ὥστε ἀναγκαῖον εἶναι καὶ τὰς τῶν ὄντων ἀρχὰς καθόλου εἶναι καὶ μὴ οὐσίας κεχωρισμένας, ἔχει μὲν μάλιστ' ἀπορίαν τῶν λεχθέντων, οὐ μὴν ἀλλ' ἔστι μὲν ὡς ἀληθὲς
15 τὸ λεγόμενον, ἔστι δ' ὡς οὐκ ἀληθές. ἡ γὰρ ἐπιστήμη, ὥσπερ καὶ τὸ ἐπίστασθαι, διττόν, ὧν τὸ μὲν δυνάμει, τὸ δὲ ἐνεργείᾳ. ἡ μὲν οὖν δύναμις ὡς ὕλη [τοῦ][3] καθόλου οὖσα καὶ ἀόριστος τοῦ καθόλου καὶ ἀορίστου ἐστίν, ἡ δ' ἐνέργεια ὡρισμένη καὶ ὡρισμένου τόδε τι οὖσα τοῦδέ τινος. ἀλλὰ κατὰ συμβεβηκὸς ἡ ὄψις τὸ καθόλου χρῶμα
20 ὁρᾷ, ὅτι τόδε τὸ χρῶμα ὃ ὁρᾷ χρῶμά ἐστιν, καὶ ὃ θεωρεῖ ὁ γραμματικός, τόδε τὸ ἄλφα ἄλφα· ἐπεὶ εἰ ἀνάγκη τὰς ἀρχὰς καθόλου εἶναι, ἀνάγκη

[1] αἱ om. EJ Syrianus.
[2] ἢ Ross, Syrianus (?): habet ante καθόλου T.
[3] Bonitz.

angles, or that a given man is an animal unless every man is an animal.

On the other hand, if the first principles are universal, either the substances composed of them will be universal too, or there will be a non-substance prior to substance; because the universal is not substance, and the element or first principle is universal; and the element or first principle is prior to that of which it is an element or first principle. All this naturally follows when they compose the Ideas of elements and assert that besides the substances which have the same form there are also Ideas each of which is a separate entity. 5 If the first principles are universal, the consequences are equally difficult. 6

But if, as in the case of the phonetic elements, there is no reason why there should not be many A's and B's, and no "A itself" or "B itself" apart from these many, then on this basis there may be any number of similar syllables. Solution of the problem.

The doctrine that all knowledge is of the universal, and hence that the principles of existing things must also be universal and not separate substances, presents the greatest difficulty of all that we have discussed; there is, however, a sense in which this statement is true, although there is another in which it is not true. Knowledge, like the verb "to know," has two senses, of which one is potential and the other actual. The potentiality being, as matter, universal and indefinite, has a universal and indefinite object; but the actuality is definite and has a definite object, because it is particular and deals with the particular. It is only accidentally that sight sees universal colour, because the particular colour which it sees is colour; and the particular A which the grammarian studies is an A. For if the first principles must be universal, 7 8 9

1087 a καὶ τὰ ἐκ τούτων καθόλου, ὥσπερ ἐπὶ τῶν ἀποδείξεων· εἰ δὲ τοῦτο, οὐκ ἔσται χωριστὸν οὐθὲν οὐδ' οὐσία. ἀλλὰ δῆλον ὅτι ἔστι μὲν ὡς ἢ[1] ἐπιστήμη καθόλου, ἔστι δ' ὡς οὔ.

[1] ἢ om. EJ.

[a] "Because *ἀπόδειξις*" (logical or syllogistic proof) "must be in the first figure (*An. Post.* I. xiv.), and in that

that which is derived from them must also be universal, as in the case of logical proofs[a]; and if this is so, there will be nothing which has a separate existence; *i.e.* no substance. But it is clear that although in one sense knowledge is universal, in another it is not.

figure universal premises always give a universal conclusion." (Ross.)

N

1087 a I. Περὶ μὲν οὖν τῆς οὐσίας ταύτης εἰρήσθω
τοσαῦτα, πάντες δὲ ποιοῦσι τὰς ἀρχὰς ἐναντίας,
ὥσπερ ἐν τοῖς φυσικοῖς, καὶ περὶ τὰς ἀκινήτους
οὐσίας ὁμοίως. εἰ δὲ τῆς τῶν ἁπάντων ἀρχῆς μὴ
ἐνδέχεται πρότερόν τι εἶναι, ἀδύνατον ἂν εἴη τὴν
ἀρχὴν ἕτερόν τι οὖσαν εἶναι ἀρχήν, οἷον εἴ τις
λέγοι τὸ λευκὸν ἀρχὴν εἶναι οὐχ ᾗ ἕτερον ἀλλ' ᾗ
λευκόν, εἶναι μέντοι καθ' ὑποκειμένου, καὶ ἕτερόν
τι ὂν λευκὸν εἶναι· ἐκεῖνο γὰρ πρότερον ἔσται.
ἀλλὰ μὴν γίγνεται πάντα ἐξ ἐναντίων ὡς ὑποκει-
μένου τινός· ἀνάγκη ἄρα μάλιστα ἐν τοῖς ἐναντίοις
1087 b τοῦθ' ὑπάρχειν. ἀεὶ ἄρα πάντα τὰ ἐναντία καθ'
ὑποκειμένου, καὶ οὐθὲν χωριστόν· ἀλλ' ὥσπερ καὶ
φαίνεται οὐθὲν οὐσίᾳ ἐναντίον, καὶ ὁ λόγος μαρ-
τυρεῖ. οὐθὲν ἄρα τῶν ἐναντίων κυρίως ἀρχὴ πάν-
5 των ἀλλ' ἑτέρα. Οἱ δὲ τὸ ἕτερον τῶν ἐναντίων

[a] *i.e.*, the Platonic Ideas or numbers, which they regarded as unchangeable substances. There is, however, no definite transition to a fresh subject at this point. The criticisms of the Ideas or numbers as substances, and of the Platonic first principles, have not been grouped systematically in Books

BOOK XIV

I. With regard to this kind of substance,[a] then, let the foregoing account suffice. All thinkers make the first principles contraries; as in the realm of natural objects, so too in respect of the unchangeable substances. Now if nothing can be prior to the first principle of all things, that first principle cannot be a first principle if it is an attribute of something else. This would be as absurd as to say that "white" is the first principle, not *qua* anything else but *qua* white, and yet that it is predicable of a subject, and is white because it is an attribute of something else; because the latter will be prior to it. Moreover, all things are generated from contraries as from a substrate, and therefore contraries must most certainly have a substrate. Therefore all contraries are predicated of a subject, and none of them exists separately. But there is no contrary to substance; not only is this apparent, but it is borne out by reasoned consideration.[b] Thus none of the contraries is strictly a first principle; the first principle is something different.

But the Platonists treat one of the contraries as

Book XIV. Further criticism of the theories of Ideas and Numbers.

2 All thinkers adopt contrary first principles.

3 But no contrary can be a first principle.

4

XIII. and XIV. Indeed there is so little distinction in subject matter between the two books that in some MSS. XIV. was made to begin at XIII. ix. 18 (Syrianus *ad loc.*). *Cf.* Vol. I. Introd. p. xxxii.

[b] *Cf. Categories* 3 b 24-27.

1087 b ὕλην ποιοῦσιν, οἱ μὲν τῷ ἑνὶ [τῷ ἴσῳ][1] τὸ ἄνισον, ὡς τοῦτο τὴν τοῦ πλήθους οὖσαν φύσιν, οἱ δὲ τῷ ἑνὶ τὸ πλῆθος· γεννῶνται γὰρ οἱ ἀριθμοὶ τοῖς μὲν ἐκ τῆς τοῦ ἀνίσου δυάδος τοῦ μεγάλου καὶ μικροῦ, τῷ δ' ἐκ τοῦ πλήθους, ὑπὸ τῆς τοῦ ἑνὸς δὲ οὐσίας ἀμφοῖν· καὶ γὰρ ὁ τὸ ἄνισον καὶ ἓν λέγων τὰ στοιχεῖα, τὸ δ' ἄνισον ἐκ μεγάλου καὶ μικροῦ δυάδα, ὡς ἓν ὄντα τὸ ἄνισον καὶ τὸ μέγα καὶ τὸ μικρὸν λέγει, καὶ οὐ διορίζει ὅτι λόγῳ ἀριθμῷ δ' οὔ.

'Αλλὰ μὴν καὶ τὰς ἀρχὰς ἃς στοιχεῖα καλοῦσιν, οὐ καλῶς ἀποδιδόασιν, οἱ μὲν τὸ μέγα καὶ τὸ μικρὸν λέγοντες μετὰ τοῦ ἑνὸς τρία ταῦτα στοιχεῖα τῶν ἀριθμῶν, τὰ μὲν δύο ὕλην, τὸ δ' ἓν τὴν μορφήν, οἱ δὲ τὸ πολὺ καὶ ὀλίγον, ὅτι τὸ μέγα καὶ τὸ μικρὸν μεγέθους οἰκειότερα τὴν φύσιν, οἱ δὲ τὸ καθόλου μᾶλλον ἐπὶ τούτων τὸ ὑπερέχον καὶ τὸ ὑπερεχόμενον. διαφέρει δὲ τούτων οὐθὲν ὡς εἰπεῖν πρὸς ἕνια τῶν συμβαινόντων, ἀλλὰ πρὸς τὰς λογικὰς μόνον δυσχερείας, ἃς φυλάττονται διὰ τὸ καὶ αὐτοὶ λογικὰς φέρειν τὰς ἀποδείξεις. πλὴν τοῦ αὐτοῦ γε λόγου ἐστὶ τὸ ὑπερέχον καὶ[2] ὑπερεχόμενον εἶναι ἀρχὰς ἀλλὰ μὴ τὸ μέγα καὶ τὸ μικρόν, καὶ τὸν ἀριθμὸν πρότερον τῆς δυάδος ἐκ

[1] Jaeger. [2] καὶ τὸ recc.

[a] Plato; *cf.* XIII. vii. 5.
[b] Probably Speusippus.
[c] This shows clearly that by the Great-and-Small Plato meant a single principle, *i.e.*, indeterminate quantity. Aristotle admits this here because he is contrasting the Great-and-Small with the One; but elsewhere he prefers to regard the Platonic material principle as a duality. *Cf.* Vol. I. Introd. pp. xxii f.

matter, some opposing "the unequal" to Unity (on the ground that the former is of the nature of plurality) and others plurality. For according to some,[a] numbers are generated from the unequal dyad of the Great and Small; and according to another,[b] from plurality; but in both cases they are generated *by* the essence of unity. For he who speaks of "the unequal" and Unity as elements, and describes the unequal as a dyad composed of Great and Small, speaks of the unequal, *i.e.* the Great and Small, as being one; and does not draw the distinction that they are one in formula but not in number.[c]

The Platonists employ contrary first principles,

Again, they state the first principles, which they call elements, badly; some say that the Great and the Small, together with Unity (making 3[d] in all), are the elements of numbers; the two former as matter, and Unity as form. Others speak of the Many and Few, because the Great and the Small are in their nature more suited to be the principles of magnitude; and others use the more general term which covers these—"the exceeding" and "the exceeded." But none of these variations makes any appreciable difference with respect to some of the consequences of the theory; they only affect the abstract difficulties, which these thinkers escape because the proofs which they themselves employ are abstract. There is, however, this exception: if "the exceeding" and "the exceeded" are the first principles, and not the Great and the Small, on the same principle number should be derived from the elements before 2 is derived; for as "the exceeding and the exceeded" is more

6 and state them badly.

7

8

[d] *Cf.* previous note.

1087 b
τῶν στοιχείων· καθόλου γὰρ ἀμφότερα μᾶλλόν ἐστιν. νῦν δὲ τὸ μὲν λέγουσι τὸ δ' οὐ λέγουσιν.

Οἱ δὲ τὸ ἕτερον καὶ τὸ ἄλλο πρὸς τὸ ἓν ἀντιτιθέασιν, οἱ δὲ πλῆθος καὶ τὸ ἕν. εἰ δ' ἐστίν, ὥσπερ βούλονται, τὰ ὄντα ἐξ ἐναντίων, τῷ δὲ ἑνὶ ἢ οὐθὲν ἐναντίον, ἢ εἴπερ ἄρα μέλλει, τὸ πλῆθος, τὸ δ' ἄνισον τῷ ἴσῳ καὶ τὸ ἕτερον τῷ ταὐτῷ καὶ τὸ ἄλλο αὐτῷ,[1] μάλιστα μὲν οἱ τὸ ἓν τῷ πλήθει ἀντιτιθέντες ἔχονταί τινος δόξης, οὐ μὴν οὐδ' οὗτοι ἱκανῶς· ἔσται γὰρ τὸ ἓν ὀλίγον· πλῆθος μὲν γὰρ ὀλιγότητι, τὸ δὲ πολὺ τῷ ὀλίγῳ ἀντίκειται. Τὸ δ' ἓν ὅτι μέτρον σημαίνει, φανερόν. καὶ ἐν παντί ἐστί τι ἕτερον ὑποκείμενον, οἷον ἐν ἁρμονίᾳ δίεσις, ἐν δὲ μεγέθει δάκτυλος ἢ πούς ἤ τι τοιοῦτον, ἐν δὲ ῥυθμοῖς βάσις ἢ συλλαβή· ὁμοίως δὲ καὶ ἐν βάρει σταθμός τις ὡρισμένος ἐστίν· καὶ κατὰ πάν-
1088 a των δὲ τὸν αὐτὸν τρόπον, ἐν μὲν τοῖς ποιοῖς ποιόν τι, ἐν δὲ τοῖς ποσοῖς ποσόν τι (καὶ ἀδιαίρετον τὸ μέτρον, τὸ μὲν κατὰ τὸ εἶδος τὸ δὲ πρὸς τὴν αἴσθησιν), ὡς οὐκ ὄντος τινὸς τοῦ ἑνὸς καθ' αὑτὸ οὐσίας. καὶ τοῦτο κατὰ λόγον· σημαίνει γὰρ τὸ
5 ἓν ὅτι μέτρον πλήθους τινός, καὶ ὁ ἀριθμὸς ὅτι πλῆθος μεμετρημένον καὶ πλῆθος μέτρων (διὸ καὶ εὐλόγως οὐκ ἔστι τὸ ἓν ἀριθμός· οὐδὲ γὰρ τὸ μέτρον μέτρα, ἀλλ' ἀρχὴ καὶ τὸ μέτρον καὶ τὸ ἕν). δεῖ δὲ ἀεὶ τὸ αὐτό τι ὑπάρχειν πᾶσι τὸ μέτρον, οἷον εἰ ἵπποι, τὸ μέτρον ἵππος, καὶ εἰ ἄνθρωποι,

[1] ταὐτῷ Bekker.

[a] *Cf.* V. vi. 17, 18, X. i. 8, 21.

universal than the Great and Small, so number is more universal than 2. But in point of fact they assert the one and not the other.

Others oppose "the different" or "other" to Unity; and others contrast Plurality and Unity. Now if, as they maintain, existing things are derived 9
from contraries, and if there is either no contrary to unity, or if there is to be any contrary it is plurality; and if the unequal is contrary to the equal, and the different to the same, and the other to the thing itself, then those who oppose unity to plurality have the best claim to credibility—but even their theory is inadequate, because then unity will be few. For plurality is opposed to paucity, and many to few.

That "unity" denotes a measure[a] is obvious. And 10
in every case there is something else which underlies it; *e.g.*, in the scale there is the quarter-tone; in spatial magnitude the inch or foot or some similar thing; and in rhythms the foot or syllable. Similarly in the case of gravity there is some definite weight. Unity is predicated of all things in the same way; of qualities as a quality, and of quantities as a quantity. (The measure is indivisible, in the former case in 11
kind, and in the latter to our senses.) This shows that unity is not any independent substance. And this is reasonable; because unity denotes a measure of some plurality, and number denotes a measured plurality and a plurality of measures. (Hence too it stands to reason that unity is not a number; for the measure is not measures, but the measure and unity are starting-points.) The measure must 12
always be something which applies to all alike; *e.g.*, if the things are horses, the measure is a horse; if

Unity or "the One is a measure which implies a substrate. It has no substantial existence.

1088 a
ἄνθρωπος.[1] εἰ δ' ἄνθρωπος καὶ ἵππος κα θεός,
ζῷον ἴσως, καὶ ὁ ἀριθμὸς αὐτῶν ἔσται ζῷα. εἰ
δ' ἄνθρωπος καὶ λευκὸν καὶ βαδίζον, ἥκιστα μὲν
ἀριθμὸς τούτων διὰ τὸ ταὐτῷ πάντα ὑπάρχειν καὶ
ἑνὶ κατὰ[2] ἀριθμόν, ὅμως δὲ γενῶν ἔσται ὁ ἀρι-
θμὸς ὁ τούτων, ἢ τινος ἄλλης τοιαύτης προσ-
ηγορίας.

Οἱ δὲ τὸ ἄνισον ὡς ἕν τι, τὴν δυάδα δὲ
ἀόριστον ποιοῦντες μεγάλου καὶ μικροῦ, πόρρω
λίαν τῶν δοκούντων καὶ δυνατῶν λέγουσιν· πάθη
τε γὰρ ταῦτα καὶ συμβεβηκότα μᾶλλον ἢ ὑπο-
κείμενα τοῖς ἀριθμοῖς καὶ τοῖς μεγέθεσίν ἐστι, τὸ
πολὺ καὶ ὀλίγον ἀριθμοῦ, καὶ μέγα καὶ μικρὸν
μεγέθους, ὥσπερ ἄρτιον καὶ περιττόν, καὶ λεῖον
καὶ τραχύ, καὶ εὐθὺ καὶ καμπύλον. ἔτι δὲ πρὸς
ταύτῃ τῇ ἁμαρτίᾳ καὶ πρός τι ἀνάγκη εἶναι τὸ
μέγα καὶ τὸ μικρὸν καὶ ὅσα τοιαῦτα· τὸ δὲ πρός
τι πάντων ἥκιστα φύσις τις ἢ οὐσία τῶν κατ-
ηγοριῶν ἐστί, καὶ ὑστέρα τοῦ ποιοῦ καὶ ποσοῦ·
καὶ πάθος τι τοῦ ποσοῦ τὸ πρός τι, ὥσπερ ἐλέχθη,
ἀλλ' οὐχ ὕλη, εἰ τι ἕτερον καὶ τῷ ὅλως κοινῷ
πρός τι, καὶ τοῖς μέρεσιν αὐτοῦ καὶ εἴδεσιν. οὐθὲν
γάρ ἐστιν οὔτε μέγα οὔτε μικρόν, οὔτε πολὺ οὔτε
ὀλίγον, οὔτε ὅλως πρός τι, ὃ οὐχ ἕτερόν τι ὂν
πολὺ ἢ ὀλίγον ἢ μέγα ἢ μικρὸν ἢ πρός τι ἐστίν,
σημεῖον δ' ὅτι ἥκιστα οὐσία τις καὶ ὄν τι τὸ πρός

[1] ἵππος . . . ἵππος . . . ἄνθρωποι, ἄνθρωπος Bonitz: ἵπποι . . . ἵππους . . . ἄνθρωπος, ἀνθρώπους codd.
[2] κατὰ τὸν recc.

[a] *Cf.* § 5.
[b] *Cf.* XI. xii. 1. There Aristotle refers to seven categories, but here he omits "activity" and "passivity" as being virtually identical with motion.

they are men, the measure is a man; and if they are man, horse and god, the measure will presumably be an animate being, and the number of them animate beings. If the things are "man," "white" and 13
"walking," there will scarcely be a number of them, because they all belong to a subject which is one and the same in number; however, their number will be a number of "genera," or some other such appellation.

Those[a] who regard the unequal as a unity, and 14
the dyad as an indeterminate compound of great and small, hold theories which are very far from being probable or possible. For these terms represent affections and attributes, rather than substrates, of numbers and magnitudes—"many" and "few" applying to number, and "great" and "small" to magnitude—just as odd and even, smooth and rough, straight and crooked, are attributes. Further, in 15
addition to this error, "great" and "small" and all other such terms must be relative. And the relative is of all the categories in the least degree a definite entity or substance; it is posterior to quality and quantity. The relative is an affection of quantity, as we have said, and not its matter; since there is something else distinct which is the matter both of the relative in general and of its parts and kinds. There is nothing great or small, many 16
or few, or in general relative, which is many or few, great or small, or relative to something else without having a distinct nature of its own. That the relative is in the lowest degree a substance and a real thing is shown by the fact that of it alone[b] there is neither

Similarly, "the unequal" or "great-and-small" is an attribute, and not a substance.

1089 a τι τὸ μόνου[1] μὴ εἶναι γένεσιν αὐτοῦ μηδὲ φθορὰν μηδὲ κίνησιν, ὥσπερ κατὰ τὸ ποσὸν αὔξησις καὶ φθίσις, κατὰ τὸ ποιὸν ἀλλοίωσις, κατὰ τόπον φορά, κατὰ τὴν οὐσίαν ἡ ἁπλῆ γένεσις καὶ φθορά· ἀλλ' οὐ κατὰ τὸ πρός τι· ἄνευ γὰρ τοῦ κινηθῆναι
35 ὁτὲ μὲν μεῖζον ὁτὲ δὲ ἔλαττον ἢ ἴσον ἔσται θατέρου
1089 b κινηθέντος κατὰ τὸ ποσόν. ἀνάγκη τε ἑκάστου ὕλην εἶναι τὸ δυνάμει τοιοῦτον, ὥστε καὶ οὐσίας· τὸ δὲ πρός τι οὔτε δυνάμει οὐσία οὔτε ἐνεργείᾳ.

Ἄτοπον οὖν, μᾶλλον δὲ ἀδύνατον, τὸ οὐσίας μὴ οὐσίαν ποιεῖν στοιχεῖον καὶ πρότερον· ὕστερον γὰρ
5 πᾶσαι αἱ κατηγορίαι. ἔτι δὲ τὰ στοιχεῖα οὐ κατηγορεῖται καθ' ὧν στοιχεῖα, τὸ δὲ πολὺ καὶ ὀλίγον καὶ χωρὶς καὶ ἅμα κατηγορεῖται ἀριθμοῦ, καὶ τὸ μακρὸν καὶ τὸ βραχὺ γραμμῆς, καὶ ἐπίπεδόν ἐστι καὶ πλατὺ καὶ στενόν. εἰ δὲ δὴ καὶ ἔστι τι πλῆθος οὗ τὸ μὲν ἀεὶ ⟨τὸ⟩[2] ὀλίγον, οἷον ἡ δυάς
10 (εἰ γὰρ πολύ, τὸ ἓν ἂν ὀλίγον εἴη), κἂν πολὺ ἁπλῶς εἴη, οἷον ἡ δεκὰς πολύ, [καὶ][3] εἰ ταύτης μὴ ἔστι πλεῖον, ἢ τὰ μύρια. πῶς οὖν ἔσται οὕτως ἐξ ὀλίγου καὶ πολλοῦ ὁ ἀριθμός; ἢ γὰρ ἄμφω ἔδει κατηγορεῖσθαι ἢ μηδέτερον· νῦν δὲ τὸ ἕτερον μόνον κατηγορεῖται.

II. Ἁπλῶς δὲ δεῖ σκοπεῖν, ἆρα δυνατὸν τὰ ἀΐδια
15 ἐκ στοιχείων συγκεῖσθαι· ὕλην γὰρ ἔξει· σύνθετον γὰρ πᾶν τὸ ἐκ στοιχείων. εἰ τοίνυν ἀνάγκη, ἐξ οὗ

[1] μόνου E Syrianus: μόνουν J[1]: μόνον J[2]A[b]T.
[2] τὸ Alexander (?) Ross. [3] Bonitz.

[a] *Cf.* X. vi. 1-3. [b] *Cf.* XIII. viii. 17.

generation nor destruction nor change in the sense that in respect of quantity there is increase and decrease, in respect of quality, alteration, in respect of place, locomotion, and in respect of substance, absolute generation and destruction. There is no 17
real change in respect of the relative; for without any change in itself, one term will be now greater, now smaller or equal, as the other term undergoes quantitative change. Moreover, the matter of every thing, and therefore of substance, must be that which is potentially of that nature; but the relative is neither potentially substance nor actually.

It is absurd, then, or rather impossible, to represent 18
non-substance as an element of substance and prior to it; for all the other categories are posterior to substance. And further, the elements are not predicated of those things of which they are elements; yet "many" and "few" are predicated, both separately and together, of number; and "long" and "short" are predicated of the line, and the plane is both broad and narrow. If, then, there is a 19
plurality of which one term, viz. "few," is always predicable, *e.g.* 2 (for if 2 is many, 1 will be few[a]), then there will be an absolute "many"; *e.g.*, 10 will be many (if there is nothing more than 10[b]), or 10,000. How, then, in this light, can number be derived from Few and Many? Either both ought to be predicated of it, or neither; but according to this view only one or the other is predicated.

II. But we must inquire in general whether eternal things can be composed of elements. If so, they will have matter; for everything which consists of elements is composite. Assuming, then, that that 2
which consists of anything, whether it has always

Eternal things cannot be composed of elements.

1088 b ἐστίν, εἰ καὶ ἀεὶ ἔστι κἂν εἰ ἐγένετο, ἐκ τούτου γίγνεσθαι, γίγνεται δὲ πᾶν ἐκ τοῦ δυνάμει ὄντος τοῦτο ὃ γίγνεται (οὐ γὰρ ἂν ἐγένετο[1] ἐκ τοῦ ἀδυνάτου οὐδὲ ἦν), τὸ δὲ δυνατὸν ἐνδέχεται καὶ ἐνεργεῖν καὶ μή, εἰ καὶ ὅτι μάλιστα ἀεὶ ἔστιν ὁ ἀριθμὸς ἢ ὁτιοῦν ἄλλο ὕλην ἔχον, ἐνδέχοιτ' ἂν μὴ εἶναι, ὥσπερ καὶ τὸ μίαν ἡμέραν ἔχον καὶ τὸ ὁποσαοῦν ἔτη· εἰ δ' οὕτω, καὶ τὸ τοσοῦτον χρόνον οὗ μὴ ἔστι πέρας. οὐκ ἂν τοίνυν εἴη ἀΐδια, εἴπερ μὴ ἀΐδιον τὸ ἐνδεχόμενον μὴ εἶναι, καθάπερ ἐν ἄλλοις λόγοις συνέβη πραγματευθῆναι. εἰ δ' ἐστὶ τὸ λεγόμενον νῦν ἀληθὲς καθόλου, ὅτι οὐδεμία ἐστὶν ἀΐδιος οὐσία ἐὰν μὴ ᾖ ἐνέργεια,[2] τὰ δὲ στοιχεῖα ὕλη τῆς οὐσίας, οὐδεμιᾶς ἂν εἴη ἀϊδίου οὐσίας στοιχεῖα ἐξ ὧν ἐστὶν ἐνυπαρχόντων. Εἰσὶ δέ τινες οἳ δυάδα μὲν ἀόριστον ποιοῦσι τὸ μετὰ τοῦ ἑνὸς στοιχεῖον, τὸ δ' ἄνισον δυσχεραίνουσιν εὐλόγως διὰ τὰ συμβαίνοντα ἀδύνατα· οἷς τοσαῦτα μόνον ἀφῄρηται τῶν δυσχερῶν, ὅσα διὰ τὸ ποιεῖν τὸ ἄνισον καὶ τὸ πρός τι στοιχεῖον ἀναγκαῖα συμβαίνει τοῖς λέγουσιν· ὅσα δὲ χωρὶς ταύτης τῆς δόξης, ταῦτα κἀκείνοις ὑπάρχειν ἀναγκαῖον, ἐάν τε τὸν εἰδητικὸν ἀριθμὸν ἐξ αὐτῶν ποιῶσιν, ἐάν τε τὸν μαθηματικόν. Πολλὰ μὲν
1089 a οὖν τὰ αἴτια τῆς ἐπὶ ταύτας τὰς αἰτίας ἐκτροπῆς,

[1] ἐγίνετο E; ἐγίγνετο Bekker.
[2] ἐνεργείᾳ recc. Γ.

[a] IX. viii. 15-17, *De Caelo* I. xii.
[b] *Cf.* ch. i. 14-17.

existed or it came into being, must come into being (if at all) out of that of which it consists; and that everything comes to be that which it comes to be out of that which is it potentially (for it could not have come to be out of that which was not potentially such, nor could it have consisted of it); and that the potential can either be actualized or not; then however everlasting number or anything else which has matter may be, it would be possible for it not to exist, just as that which is any number of years old is as capable of not existing as that which is one day old. And if this is so, that which has existed for so long a time that there is no limit to it may also not exist. Therefore things which contain matter cannot be 3
eternal, that is, if that which is capable of not existing is not eternal, as we have had occasion to say elsewhere.[a] Now if what we have just been saying—that no substance is eternal unless it is actuality—is true universally, and the elements are the matter of substance, an eternal substance can have no elements of which, as inherent in it, it consists.

There are some who, while making the element 4
which acts conjointly with unity the indeterminate dyad, object to "the unequal," quite reasonably, on the score of the difficulties which it involves. But they are rid only of those difficulties[b] which necessarily attend the theory of those who make the unequal, *i.e.* the relative, an element; all the difficulties which are independent of this view must apply to their theories also, whether it is Ideal or mathematical number that they construct out of these elements.

However the material element is conceived, this objection still applies.

There are many causes for their resorting to these 5
explanations, the chief being that they visualized

1089 a μάλιστα δὲ τὸ ἀπορῆσαι ἀρχαϊκῶς. ἔδοξε γὰρ αὐτοῖς πάντ' ἔσεσθαι ἓν τὰ ὄντα, αὐτὸ τὸ ὄν, εἰ μή τις λύσει καὶ ὁμόσε βαδιεῖται τῷ Παρμενίδου λόγῳ

οὐ γὰρ μήποτε τοῦτο δαμῇ,[1] εἶναι μὴ ἐόντα,

ἀλλὰ ἀνάγκη εἶναι τὸ μὴ ὂν δεῖξαι ὅτι ἔστιν· οὕτω γάρ, ἐκ τοῦ ὄντος καὶ ἄλλου τινός, τὰ ὄντα ἔσεσθαι, εἰ πολλά ἐστιν. Καίτοι πρῶτον μέν, εἰ τὸ ὂν πολλαχῶς (τὸ μὲν γὰρ [ὅτι][2] οὐσίαν σημαίνει, τὸ δ' ὅτι ποιόν, τὸ δ' ὅτι ποσόν, καὶ τὰς ἄλλας δὴ κατηγορίας), ποῖον οὖν τὰ ὄντα πάντα ἕν, εἰ μὴ τὸ μὴ ὂν ἔσται; πότερον αἱ οὐσίαι, ἢ τὰ πάθη (καὶ τὰ ἄλλα δὴ ὁμοίως), ἢ πάντα,[3] καὶ ἔσται ἓν τὸ τόδε καὶ τὸ τοιόνδε καὶ τὸ τοσόνδε καὶ τἆλλα ὅσα ὄν[4] τι σημαίνει; ἀλλ' ἄτοπον, μᾶλλον δὲ ἀδύνατον, τὸ μίαν φύσιν τινὰ γενομένην αἰτίαν εἶναι τοῦ τοῦ ὄντος τὸ μὲν τόδε εἶναι, τὸ δὲ τοιόνδε, τὸ δὲ τοσόνδε, τὸ δὲ πού. Ἔπειτα ἐκ ποίου μὴ ὄντος καὶ ὄντος τὰ ὄντα; πολλαχῶς γὰρ καὶ τὸ μὴ ὄν, ἐπειδὴ καὶ τὸ ὄν· καὶ τὸ μὲν μὴ ἄνθρωπον[5] σημαίνει τὸ μὴ εἶναι τοδί, τὸ δὲ μὴ εὐθὺ τὸ μὴ εἶναι τοιονδί, τὸ δὲ μὴ τρίπηχυ τὸ μὴ εἶναι τοσονδί. ἐκ ποίου οὖν ὄντος καὶ μὴ ὄντος πολλὰ τὰ ὄντα; βούλεται μὲν δὴ τὸ ψεῦδος καὶ ταύτην τὴν φύσιν

[1] τοῦτο δαμῇ EJ Simplicius: τοῦτ' οὐδαμῇ $A^bΓ$ Syrianus, Plato: τοῦτο δαμῆς recc.
[2] Maier.
[3] ἢ πάντα JΓ: ἅπαντα EA^b: πάντα Alexander, Syrianus.
[4] ὄν Bonitz: ἕν.
[5] ἄνθρωπον εἶναι Jaeger.

[a] Fr. 7 (Diels).
[b] *Cf.* Plato, *Sophist* 237 A, 241 D, 256 E.

the problem in an archaic form. They supposed that all existing things would be one, absolute Being, unless they encountered and refuted Parmenides' dictum :

'Twill ne'er be proved that things which are not, are,[a]

i.e., that they must show that that which is not, is ; for only so—of that which is, and of something else—could existing things be composed, if they are more than one.[b]

The fundamental error of the Platonists ; they thought that the principles must be "being" and "not-being."

However, (i) in the first place, if "being" has several meanings (for sometimes it means substance, sometimes quality, sometimes quantity, and so on with the other categories), what sort of unity will all the things that are constitute, if not-being is not to be ? Will it be the substances that are one, or the affections (and similarly with the other categories), or all the categories together ? in which case the "this" and the "such" and the "so great," and all the other categories which denote some sense of Being, will be one. But it is absurd, or rather impossible, that the introduction of one thing should account for the fact that "what is" sometimes means "so-and-so," sometimes "such-and-such," sometimes "of such-and-such a size," sometimes "in such-and-such a place." 6 7

But "being" and "not-being" have several meanings. What sort of unity did Plato expect to avoid ?

(ii) Of what sort of not-being and Being do real things consist ? Not-being, too, has several senses, inasmuch as Being has ; and "not-man" means "not so-and-so," whereas "not straight" means "not such-and-such," and "not five feet long" means "not of such-and-such a size." What sort of Being and not-being, then, make existing things a plurality ? This thinker means by the not-being 8 9

1089 a λέγειν τὸ οὐκ ὄν, ἐξ οὗ καὶ τοῦ ὄντος πολλὰ τὰ ὄντα· διὸ καὶ ἐλέγετο ὅτι δεῖ ψεῦδός τι ὑποθέσθαι, ὥσπερ καὶ οἱ γεωμέτραι τὸ ποδιαίαν εἶναι τὴν μὴ ποδιαίαν· ἀδύνατον δὲ ταῦθ' οὕτως ἔχειν· οὔτε γὰρ
25 οἱ γεωμέτραι ψεῦδος οὐθὲν ὑποτίθενται (οὐ γὰρ ἐν τῷ συλλογισμῷ ἡ πρότασις), οὔτε ἐκ τοῦ οὕτω μὴ ὄντος τὰ ὄντα γίγνεται οὐδὲ φθείρεται. ἀλλ' ἐπειδὴ τὸ μὲν κατὰ τὰς πτώσεις μὴ ὂν ἰσαχῶς ταῖς κατηγορίαις λέγεται, παρὰ τοῦτο δὲ τὸ ὡς ψεῦδος λέγεται τὸ μὴ ὂν καὶ τὸ κατὰ δύναμιν, ἐκ τούτου ἡ γένεσίς ἐστιν, ἐκ τοῦ μὴ ἀνθρώπου
30 δυνάμει δὲ ἀνθρώπου ἄνθρωπος, καὶ ἐκ τοῦ μὴ λευκοῦ δυνάμει δὲ λευκοῦ λευκόν, ὁμοίως ἐάν τε ἕν τι γίγνηται ἐάν τε πολλά. Φαίνεται δὲ ἡ ζήτησις πῶς πολλὰ τὸ ὂν τὸ κατὰ τὰς οὐσίας λεγόμενον· ἀριθμοὶ γὰρ καὶ μήκη καὶ σώματα τὰ γεννώμενά ἐστιν. ἄτοπον δὴ τὸ ὅπως μὲν πολλὰ τὸ ὂν τὸ τί
35 ἐστι ζητῆσαι, πῶς δὲ ἢ ποιὰ ἢ ποσά, μή. οὐ γὰρ δὴ ἡ δυὰς ἡ ἀόριστος αἰτία οὐδὲ τὸ μέγα καὶ τὸ
1089 b μικρὸν τοῦ δύο λευκὰ ἢ πολλὰ εἶναι χρώματα ἢ χυμοὺς ἢ σχήματα· ἀριθμοὶ γὰρ ἂν καὶ ταῦτα ἦσαν καὶ μονάδες. ἀλλὰ μὴν εἴ γε ταῦτ' ἐπῆλθον, εἶδον ἂν τὸ αἴτιον καὶ τὸ ἐν ἐκείνοις· τὸ γὰρ αὐτὸ καὶ τὸ ἀνάλογον αἴτιον. Αὕτη γὰρ ἡ παρέκβασις
5 αἰτία καὶ τοῦ τὸ ἀντικείμενον ζητοῦντας τῷ ὄντι καὶ τῷ ἑνί, ἐξ οὗ καὶ τούτων τὸ ὄντα, τὸ πρός τι

[a] *Sophist.* 237 A, 240; but Aristotle's statement assumes too much.

[b] Presumably by some Platonist.

[c] *i.e.*, the validity of a geometrical proof does not depend upon the accuracy of the figure.

[d] Matter, according to Aristotle; and there is matter, or something analogous to it, in every category. *Cf.* XII. v.

which together with Being makes existing things a plurality, falsity and everything of this nature[a]; and for this reason also it was said[b] that we must assume something which is false, just as geometricians assume that a line is a foot long when it is not. But this cannot be so; for (*a*) the geometricians do not assume anything that is false (since the proposition is not part of the logical inference[c]), and (*b*) existing things are not generated from or resolved into not-being in this sense. But not only has "not-being" in its various cases as many meanings as there are categories, but moreover the false and the potential are called "not-being"; and it is from the latter that generation takes place—man comes to be from that which is not man but is potentially man, and white from that which is not white but is potentially white; no matter whether one thing is generated or many. 10

By not-"being" Plato meant falsity.

Clearly the point at issue is how "being" in the sense of the substances is many; for the things that are generated are numbers and lines and bodies. It is absurd to inquire how Being as substance is many, and not how qualities or quantities are many. Surely the indeterminate dyad or the Great and Small is no reason why there should be two whites or many colours or flavours or shapes; for then these too would be numbers and units. But if the Platonists had pursued this inquiry, they would have perceived the cause of plurality in substances as well; for the cause[d] is the same, or analogous. 11 12

The Platonists went wrong because they confined their inquiry to "being" in the sense of substance.

This deviation of theirs was the reason why in seeking the opposite of Being and unity, from which in combination with Being and unity existing things are derived, they posited the relative (*i.e.* the un- 13

1089 b καὶ τὸ ἄνισον ὑποθεῖναι, ὃ οὔτ' ἐναντίον οὔτ' ἀπόφασις ἐκείνων, μία τε φύσις τῶν ὄντων ὥσπερ καὶ τὸ τὶ καὶ τὸ ποιόν. καὶ ζητεῖν ἔδει καὶ τοῦτο, πῶς πολλὰ τὰ πρός τι ἀλλ' οὐχ ἕν. νῦν δὲ πῶς μὲν πολλαὶ μονάδες παρὰ τὸ πρῶτον ἓν ζητεῖται, πῶς δὲ πολλὰ ἄνισα παρὰ τὸ ἄνισον οὐκέτι. καίτοι χρῶνται καὶ λέγουσι μέγα μικρόν, πολὺ ὀλίγον, ἐξ ὧν οἱ ἀριθμοί, μακρὸν βραχύ, ἐξ ὧν τὸ μῆκος, πλατὺ στενόν, ἐξ ὧν τὸ ἐπίπεδον, βαθὺ ταπεινόν, ἐξ ὧν οἱ ὄγκοι· καὶ ἔτι δὴ πλείω εἴδη λέγουσι τοῦ πρός τι. τούτοις δὴ τί αἴτιον τοῦ πολλὰ εἶναι ;

Ἀνάγκη μὲν οὖν, ὥσπερ λέγομεν, ὑποθεῖναι τὸ δυνάμει ὂν ἑκάστῳ. τοῦτο δὲ προσαπεφήνατο ὁ ταῦτα λέγων, τί τὸ δυνάμει τόδε καὶ οὐσία,[1] μὴ ὂν δὲ καθ' αὑτό, ὅτι τὸ πρός τι, ὥσπερ εἰ εἶπε τὸ ποιόν, ὃ οὔτε δυνάμει ἐστὶ τὸ ἓν ἢ τὸ ὄν, οὔτε ἀπόφασις τοῦ ἑνὸς οὐδὲ τοῦ ὄντος, ἀλλ' ἕν τι τῶν ὄντων· πολύ τε μᾶλλον, ὥσπερ ἐλέχθη, εἰ ἐζήτει[2] πῶς πολλὰ τὰ ὄντα, μὴ τὰ ἐν τῇ αὐτῇ κατηγορίᾳ ζητεῖν, πῶς πολλαὶ οὐσίαι ἢ πολλὰ ποιά, ἀλλὰ πῶς πολλὰ τὰ ὄντα· τὰ μὲν γὰρ οὐσίαι, τὰ δὲ πάθη, τὰ δὲ πρός τι. ἐπὶ μὲν οὖν τῶν ἄλλων κατηγοριῶν ἔχει τινὰ καὶ ἄλληνἐπίστασιν πῶς πολλά· διὰ γὰρ

[1] *οὐσίᾳ* E[a] Bekker. [2] *ἐζητεῖτο* E Syrianus[2].

[a] *Cf.* ch. i. 6, 18, I. ix. 23.
[b] Plato. [c] § 11.

equal), which is neither the contrary nor the negation of Being and unity, but is a single characteristic of existing things, just like substance or quality. They should have investigated this question also : how it is that relations are many, and not one. As 14
it is, they inquire how it is that there are many units besides the primary unity, but not how there are many unequal things besides the Unequal. Yet they employ in their arguments and speak of Great and Small, Many and Few (of which numbers are composed), Long and Short (of which the line is composed), Broad and Narrow (of which the plane is composed), Deep and Shallow (of which solids are composed) ; and they mention still further kinds of relation.[a] Now what is the cause of plurality in these relations ?

We must, then, as I say, presuppose in the case 15
of each thing that which is it potentially. The author[b] of this theory further explained what it is that is potentially a particular thing or substance, but is not *per se* existent—that it is the relative (he might as well have said " quality ") ; which is neither potentially unity or Being, nor a negation of unity or Being, but just a particular kind of Being. And it was still more necessary, as we have said,[c] 16
that, if he was inquiring how it is that things are many, he should not confine his inquiry to things in the same category, and ask how it is that substances or qualities are many, but that he should ask how it is that things in general are many ; for some things are substances, some affections, and some relations. Now in the case of the other 17
categories there is an additional difficulty in discovering how they are many. For it may be said

It is "not-being" in the sense of the potential that is the material principle.

1089 b τὸ μὴ χωριστὰ εἶναι τῷ τὸ ὑποκείμενον πολλὰ γίγνεσθαι καὶ εἶναι ποιά τε πολλὰ εἶναι καὶ ποσά· καίτοι δεῖ γέ τινα εἶναι ὕλην ἑκάστῳ γένει, πλὴν χωριστὴν ἀδύνατον τῶν οὐσιῶν· ἀλλ' ἐπὶ τῶν τόδε τι ἔχει τινὰ λόγον, πῶς πολλὰ τὸ τόδε τι, εἰ μή τι ἔσται καὶ τόδε τι καὶ φύσις τις τοιαύτη. αὕτη δέ ἐστιν ἐκεῖθεν μᾶλλον ἡ ἀπορία, πῶς πολλαὶ ἐνεργείᾳ οὐσίαι ἀλλ' οὐ μία. Ἀλλὰ μὴν καὶ εἰ μὴ ταὐτόν ἐστι τὸ τόδε καὶ τὸ ποσόν, οὐ λέγεται πῶς καὶ διὰ τί πολλὰ τὰ ὄντα, ἀλλὰ πῶς ποσὰ πολλά. ὁ γὰρ ἀριθμὸς πᾶς ποσόν τι σημαίνει· καὶ ἡ μονάς, εἰ μὴ μέτρον, ὅτι[1] τὸ κατὰ τὸ ποσὸν ἀδιαίρετον. εἰ μὲν οὖν ἕτερον τὸ ποσὸν καὶ τὸ τί ἐστιν, οὐ
1090 a λέγεται τὸ τί ἐστιν ἐκ τίνος οὐδὲ πῶς πολλά· εἰ δὲ ταὐτό, πολλὰς ὑπομένει ὁ λέγων ἐναντιώσεις.

Ἐπιστήσειε δ' ἄν τις τὴν σκέψιν καὶ περὶ τῶν ἀριθμῶν πόθεν δεῖ λαβεῖν τὴν πίστιν ὡς εἰσίν, τῷ μὲν γὰρ ἰδέας τιθεμένῳ παρέχονταί τιν' αἰτίαν
5 τοῖς οὖσιν, εἴπερ ἕκαστος τῶν ἀριθμῶν ἰδέα τις, ἡ δ' ἰδέα τοῖς ἄλλοις αἰτία τοῦ εἶναι ὧν δή ποτε τρόπον· ἔστω γὰρ ὑποκείμενον αὐτοῖς τοῦτο· τῷ δὲ τοῦτον μὲν τὸν τρόπον οὐκ οἰομένῳ διὰ τὸ τὰς ἐνούσας δυσχερείας ὁρᾶν περὶ τὰς ἰδέας (ὥστε διά γε ταῦτα μὴ ποιεῖν ἀριθμούς), ποιοῦντι δὲ ἀριθμὸν
10 τὸν μαθηματικόν, πόθεν τε χρὴ πιστεῦσαι ὡς ἔστι

[1] ὅτι] καὶ ex comm. Ross.

[a] This, according to Aristotle, is how the Platonists regard the Ideas. See Vol. I, Introd. p. xxii.
[b] Plato and his orthodox followers.
[c] Speusippus.

that since they are not separable, it is because the substrate becomes or is many that qualities and quantities are many; yet there must be some matter for each class of entities, only it cannot be separable from substances. In the case of particular 18
substances, however, it is explicable how the particular thing can be many, if we do not regard a thing both as a particular substance and as a certain characteristic.[a] The real difficulty which arises from these considerations is how substances are actually many and not one.

Again, even if a particular thing and a quantity are not the same, it is not explained how and why existing things are many, but only how quantities are many; for all number denotes quantity, and the 19
unit, if it does not mean a measure, means that which is quantitatively indivisible. If, then, quantity and substance are different, it is not explained whence or how substance is many; but if they are the same, he who holds this has to face many logical contradictions.

Criticism of the theory of numbers.

One might fasten also upon the question with respect to numbers, whence we should derive the belief that they exist. For one[b] who posits Ideas, 20
numbers supply a kind of cause for existing things; that is if each of the numbers is a kind of Idea, and the Idea is, in some way or other, the cause of existence for other things; for let us grant them this assumption. But as for him[c] who does not hold 21
this belief, because he can see the difficulties inherent in the Ideal theory (and so has not this reason for positing numbers), and yet posits mathematical number, what grounds have we for believing his statement that there is a number of this kind, and

Why should numbers have a separate existence?

1090 a τοιοῦτος ἀριθμός, καὶ τί τοῖς ἄλλοις χρήσιμος; οὐθενὸς γὰρ οὔτε φησὶν ὁ λέγων αὐτὸν εἶναι, ἀλλ' ὡς αὐτήν τινα λέγει καθ' αὑτὴν φύσιν οὖσαν, οὔτε φαίνεται ὢν αἴτιος· τὰ γὰρ θεωρήματα τῶν ἀριθμητικῶν πάντα καὶ κατὰ τῶν αἰσθητῶν ὑπάρξει, καθάπερ ἐλέχθη.

III. Οἱ μὲν οὖν τιθέμενοι τὰς ἰδέας εἶναι καὶ ἀριθμοὺς αὐτὰς εἶναι, ⟨τῷ⟩[1] κατὰ τὴν ἔκθεσιν ἑκάστου[2] παρὰ τὰ πολλὰ λαμβάνειν [τὸ][3] ἕν τι ἕκαστον πειρῶνταί γε λέγειν πως[4] διὰ τί ἔστιν· οὐ μὴν ἀλλ' ἐπεὶ οὔτε ἀναγκαῖα οὔτε δυνατὰ ταῦτα, οὐδὲ τὸν ἀριθμὸν διά γε ταῦτα εἶναι λεκτέον· οἱ δὲ Πυθαγόρειοι διὰ τὸ ὁρᾶν πολλὰ τῶν ἀριθμῶν πάθη ὑπάρχοντα τοῖς αἰσθητοῖς σώμασιν, εἶναι μὲν ἀριθμοὺς ἐποίησαν τὰ ὄντα, οὐ χωριστοὺς δέ, ἀλλ' ἐξ ἀριθμῶν τὰ ὄντα. διὰ τί δέ; ὅτι τὰ πάθη τὰ τῶν ἀριθμῶν ἐν ἁρμονίᾳ ὑπάρχει καὶ ἐν τῷ οὐρανῷ καὶ ἐν πολλοῖς ἄλλοις. Τοῖς δὲ τὸν μαθηματικὸν μόνον λέγουσιν εἶναι ἀριθμὸν οὐθὲν τοιοῦτον ἐνδέχεται λέγειν κατὰ τὰς ὑποθέσεις, ἀλλ' ὅτι οὐκ ἔσονται αὐτῶν αἱ ἐπιστῆμαι ἐλέγετο. ἡμεῖς δὲ φαμὲν εἶναι, καθάπερ εἴπομεν πρότερον. καὶ δῆλον ὅτι οὐ κεχώρισται τὰ μαθηματικά· οὐ γὰρ ἂν κεχωρισμένων τὰ πάθη ὑπῆρχεν ἐν τοῖς σώμασιν. οἱ μὲν οὖν Πυθαγόρειοι κατὰ μὲν

[1] τῷ ex Bessarion Ross, Joachim.
[2] ἕκαστον Joachim.
[3] Maier.
[4] πως Alexander, Bullinger: πῶς EA^{b}J: πῶς καὶ recc.

[a] XIII. iii. 1.
[b] I have followed Ross's text and interpretation of this sentence. For the meaning *cf.* ii. 20.
[c] See Vol. I. Introd. p. xvii. [d] *Cf.* vi. 5. [e] *Cf.* ii. 21.

what good is this number to other things? He who maintains its existence does not claim that it is the cause of anything, but regards it as an independent entity; nor can we observe it to be the cause of anything; for the theorems of the arithmeticians will all apply equally well to sensible things, as we have said.[a]

III. Those, then, who posit the Ideas and identify them with numbers, by their assumption (in accordance with their method of abstracting each general term from its several concrete examples) that every general term is a unity, make some attempt to explain why number exists.[b] Since, however, their arguments are neither necessarily true nor indeed possible, there is no justification on this ground for maintaining the existence of number. The Pyth- 2
agoreans, on the other hand, observing that many attributes of numbers apply to sensible bodies, assumed that real things are numbers; not that numbers exist separately, but that real things are composed of numbers.[c] But why? Because the attributes of numbers are to be found in a musical scale, in the heavens, and in many other connexions.[d]

As for those who hold that mathematical number 3
alone exists,[e] they cannot allege anything of this kind[f] consistently with their hypotheses; what they did say was that the sciences could not have sensible things as their objects. But we maintain that they can; as we have said before.[g] And clearly the objects of mathematics do not exist in separation; for if they did their attributes would not be present in corporeal things. Thus in this respect the Pyth- 4

[f] *i.e.*, that things are composed of numbers.
[g] *Cf.* note on ii. 21 *ad fin.*

τὸ τοιοῦτον οὐθενὶ ἔνοχοί εἰσιν, κατὰ μέντοι τὸ ποιεῖν ἐξ ἀριθμῶν τὰ φυσικὰ σώματα, ἐκ μὴ ἐχόντων βάρος μηδὲ κουφότητα ἔχοντα κουφότητα καὶ βάρος, ἐοίκασι περὶ ἄλλου οὐρανοῦ λέγειν καὶ σωμάτων ἀλλ' οὐ τῶν αἰσθητῶν· οἱ δὲ χωριστὸν ποιοῦντες, ὅτι ἐπὶ τῶν αἰσθητῶν οὐκ ἔσται τὰ ἀξιώματα, ἀληθῆ δὲ τὰ λεγόμενα καὶ σαίνει τὴν ψυχήν, εἶναί τε ὑπολαμβάνουσι καὶ χωριστὰ εἶναι, ὁμοίως δὲ καὶ τὰ μεγέθη τὰ μαθηματικά.

Δῆλον οὖν ὅτι καὶ ὁ ἐναντιούμενος λόγος τἀναντία ἐρεῖ, καὶ ὃ ἄρτι ἠπορήθη λυτέον τοῖς οὕτω λέγουσι, διὰ τί οὐδαμῶς ἐν τοῖς αἰσθητοῖς ὑπαρχόντων τὰ πάθη ὑπάρχει αὐτῶν ἐν τοῖς αἰσθητοῖς. Εἰσὶ δέ τινες οἳ ἐκ τοῦ πέρατα εἶναι καὶ ἔσχατα τὴν στιγμὴν μὲν γραμμῆς, ταύτην δ' ἐπιπέδου, τοῦτο δὲ τοῦ στερεοῦ, οἴονται εἶναι ἀνάγκην τοιαύτας φύσεις εἶναι. δεῖ δὴ καὶ τοῦτον ὁρᾶν τὸν λόγον, μὴ λίαν ᾖ μαλακός. οὔτε γὰρ οὐσίαι εἰσὶ τὰ ἔσχατα ἀλλὰ μᾶλλον πάντα ταῦτα πέρατα (ἐπεὶ καὶ τῆς βαδίσεως καὶ ὅλως κινήσεώς ἐστί τι πέρας· τοῦτ' οὖν ἔσται τόδε καὶ οὐσία τις· ἀλλ' ἄτοπον)· οὐ μὴν ἀλλὰ εἰ καὶ εἰσί, τῶνδε τῶν αἰσθητῶν ἔσονται πάντα· ἐπὶ τούτων γὰρ ὁ λόγος εἴρηκεν· διὰ τί οὖν χωριστὰ ἔσται; Ἔτι δὲ ἐπιζητήσειεν ἄν τις μὴ λίαν εὐχερὴς ὢν περὶ

[a] See Vol. I. Introd. p. xvii.

[b] The statements of mathematics appeal so strongly to our intelligence that they must be true; therefore if they are not true of sensible things, there must be some class of objects of which they are true.

[c] The Pythagorean theory, which maintains that numbers not only are present in sensible things but actually compose them, is in itself an argument against the Speusippean view,

agoreans are immune from criticism; but in so far as they construct natural bodies, which have lightness and weight, out of numbers which have no weight or lightness, they appear to be treating of another universe and other bodies, not of sensible ones.[a] But those who treat number as separable assume that it exists and is separable because the axioms will not apply to sensible objects; whereas the statements of mathematics are true and appeal to the soul.[b] The same applies to mathematical extended magnitudes.

6 It is clear, then, both that the contrary theory[c] can make out a case for the contrary view, and that those who hold this theory must find a solution for the difficulty which was recently raised[d]—why it is that while numbers are in no way present in sensible things, their attributes are present in sensible things.

Points, lines, and planes cannot be

There are some[e] who think that, because the point is the limit and extreme of the line, and the line of the plane, and the plane of the solid, there must be entities of this kind. We must, then, examine this 7 argument also, and see whether it is not exceptionally weak. For (i.) extremes are not substances; rather all such things are merely limits. Even walking, and motion in general, has some limit; so on the view which we are criticizing this will be an individual thing, and a kind of substance. But this is absurd. And moreover (ii.) even if they are substances, they will all be substances of particular sensible things, since it was to these that the argument applied. Why, then, should they be separable?

independent substances.

8 Again, we may, if we are not unduly acquiescent, which in separating numbers from sensible things has to face the question why sensible things exhibit numerical attributes.

[d] § 3.

[e] Probably Pythagoreans. *Cf.* VII. ii. 2, III. v. 3.

1090 b
μὲν τοῦ ἀριθμοῦ παντὸς καὶ τῶν μαθηματικῶν τὸ μηθὲν συμβάλλεσθαι ἀλλήλοις τὰ πρότερα τοῖς ὕστερον· μὴ ὄντος γὰρ τοῦ ἀριθμοῦ οὐθὲν ἧττον τὰ μεγέθη ἔσται τοῖς τὰ μαθηματικὰ μόνον εἶναι φαμένοις, καὶ τούτων μὴ ὄντων ἡ ψυχὴ καὶ τὰ σώματα τὰ αἰσθητά· οὐκ ἔοικε δ' ἡ φύσις ἐπεισοδιώδης οὖσα ἐκ τῶν φαινομένων, ὥσπερ μοχθηρὰ τραγῳδία. τοῖς δὲ τὰς ἰδέας τιθεμένοις τοῦτο μὲν ἐκφεύγει· ποιοῦσι γὰρ τὰ μεγέθη ἐκ τῆς ὕλης καὶ ἀριθμοῦ, ἐκ μὲν τῆς δυάδος τὰ μήκη, ἐκ τριάδος δ' ἴσως τὰ ἐπίπεδα, ἐκ δὲ τῆς τετράδος τὰ στερεὰ ἢ καὶ ἐξ ἄλλων ἀριθμῶν· διαφέρει γὰρ οὐθέν. ἀλλὰ ταῦτά γε πότερον ἰδέαι ἔσονται, ἢ τίς ὁ τρόπος αὐτῶν, καὶ τί συμβάλλονται τοῖς οὖσιν; οὐθὲν γάρ, ὥσπερ οὐδὲ τὰ μαθηματικά, οὐδὲ ταῦτα συμβάλλεται. ἀλλὰ μὴν οὐδ' ὑπάρχει γε κατ' αὐτῶν οὐθὲν θεώρημα, ἐὰν μή τις βούληται κινεῖν τὰ μαθηματικὰ καὶ ποιεῖν ἰδίας τινὰς δόξας. ἔστι δ' οὐ χαλεπὸν ὁποιασοῦν ὑποθέσεις λαμβάνοντας μακροποιεῖν καὶ συνείρειν. Οὗτοι μὲν οὖν ταύτῃ προσγλιχόμενοι ταῖς ἰδέαις τὰ μαθηματικὰ διαμαρτάνουσιν· οἱ δὲ πρῶτοι δύο τοὺς ἀριθμοὺς ποιήσαντες, τόν τε τῶν εἰδῶν καὶ τὸν μαθηματικὸν ἄλλον, οὐδαμῶς οὔτ' εἰρήκασιν οὔτ' ἔχοιεν ἂν εἰπεῖν πῶς καὶ ἐκ τίνος ἔσται ὁ μαθηματικός. ποιοῦσι γὰρ αὐτὸν μεταξὺ τοῦ εἰδητικοῦ καὶ τοῦ αἰσθητοῦ. εἰ μὲν γὰρ ἐκ τοῦ μεγάλου καὶ μικροῦ,

[a] That the criticism is directed against Speusippus is clear from VII. ii. 4. *Cf.* XII. x. 14.

[b] Xenocrates (that the reference is not to Plato is clear from § 11).

[c] *e.g.* that of "indivisible lines."

further object with regard to all number and mathematical objects that they contribute nothing to each other, the prior to the posterior. For if number does not exist, none the less spatial magnitudes will exist for those who maintain that only the objects of mathematics exist; and if the latter do not exist, the soul and sensible bodies will exist.[a] But it does 9
not appear, to judge from the observed facts, that the natural system lacks cohesion, like a poorly constructed drama. Those[b] who posit the Ideas escape this difficulty, because they construct spatial magnitudes out of matter and a number—2 in the case of lines, and 3, presumably, in that of planes, and 4 in that of solids; or out of other numbers, for it makes no difference. But are we to regard these magnitudes as Ideas, or what is their mode of existence? and what contribution do they make to reality? They contribute nothing; just as the objects of mathematics contribute nothing. Moreover, no mathematical theorem applies to them, unless one chooses to interfere with the principles of mathematics and invent peculiar theories[c] of one's own. But it is not difficult to take any chance hypotheses and enlarge upon them and draw out a long string of conclusions. 10

These thinkers, then, are quite wrong in thus striving to connect the objects of mathematics with the Ideas. But those who first recognized two kinds of number, the Ideal and the mathematical as well, neither have explained nor can explain in any way how mathematical number will exist and of what it will be composed; for they make it intermediate between Ideal and sensible number. For if it is 12
composed of the Great and Small, it will be the same 11

Speusippus' theory gives no coherent account of reality,

and that of Xenocrates offers no explanation of the sensible universe.

Plato cannot account for the separate existence of mathematical number.

1090 b ὁ αὐτὸς ἐκείνῳ ἔσται τῷ τῶν ἰδεῶν (ἐξ ἄλλου δὲ
1091 a τίνος[1] μικροῦ καὶ μεγάλου; τὰ γὰρ μεγέθη ποιεῖ)· εἰ δ' ἕτερόν τι ἐρεῖ, πλείω τὰ στοιχεῖα ἐρεῖ· καὶ εἰ ἕν τι ἑκατέρου ἡ ἀρχή, κοινόν τι ἐπὶ τούτων ἔσται τὸ ἕν, ζητητέον τε πῶς καὶ ταῦτα πολλὰ τὸ
5 ἕν, καὶ ἅμα τὸν ἀριθμὸν γενέσθαι ἄλλως ἢ ἐξ ἑνὸς καὶ δυάδος ἀορίστου ἀδύνατον κατ' ἐκεῖνον.

Πάντα δὴ ταῦτα ἄλογα, καὶ μάχεται καὶ αὐτὰ ἑαυτοῖς καὶ τοῖς εὐλόγοις, καὶ ἔοικεν ἐν αὐτοῖς εἶναι ὁ Σιμωνίδου μακρὸς λόγος· γίγνεται γὰρ ὁ μακρὸς λόγος ὥσπερ ὁ τῶν δούλων ὅταν μηθὲν
10 ὑγιὲς λέγωσιν. φαίνεται δὲ καὶ αὐτὰ τὰ στοιχεῖα τὸ μέγα καὶ τὸ μικρὸν βοᾶν ὡς ἑλκόμενα· οὐ δύναται γὰρ οὐδαμῶς γεννῆσαι τὸν ἀριθμὸν ἀλλ' ἢ τὸν ἀφ' ἑνὸς διπλασιαζόμενον. Ἄτοπον δὲ καὶ γένεσιν ποιεῖν ἀϊδίων ὄντων, μᾶλλον δ' ἔν τι τῶν ἀδυνάτων. οἱ μὲν οὖν Πυθαγόρειοι πότερον οὐ ποιοῦσιν ἢ ποιοῦσι γένεσιν οὐδὲν δεῖ διστάζειν·
15 φανερῶς γὰρ λέγουσιν ὡς τοῦ ἑνὸς συσταθέντος, εἴτ' ἐξ ἐπιπέδων εἴτ' ἐκ χροιᾶς εἴτ' ἐκ σπέρματος εἴτ' ἐξ ὧν ἀποροῦσιν εἰπεῖν, εὐθὺς τὸ ἔγγιστα τοῦ ἀπείρου ὅτι εἴλκετο καὶ ἐπεραίνετο ὑπὸ τοῦ

[1] τίνος cl. Ross: τινος.

[a] This interpretation (Ross's second alternative, reading τίνος for τινος) seems to be the most satisfactory. For the objection *cf.* III. iv. 34.

[b] The argument may be summarized thus. If mathematical number cannot be derived from the Great-and-Small or a species of the Great-and-Small, either it has a different material principle (which is not economical) or its formal principle is in some sense distinct from that of the Ideal numbers. But this implies that unity is a kind of plurality,

as the former, *i.e.* Ideal, number. But of what other Great and Small can it be composed? for Plato makes spatial magnitudes out of a Great and Small.[a] And if he speaks of some other component, he will be maintaining too many elements; while if some one thing is the first principle of each kind of number, unity will be something common to these several kinds. We must inquire how it is that unity is these 13
many things, when at the same time number, according to him, cannot be derived otherwise than from unity and an indeterminate dyad.[b]

All these views are irrational; they conflict both with one another and with sound logic, and it seems that in them we have a case of Simonides' "long story[c]"; for men have recourse to the "long story," such as slaves tell, when they have nothing satisfactory to say. The very elements too, the Great 14
and Small, seem to protest at being dragged in; for they cannot possibly generate numbers except rising powers of 2.[d]

It is absurd also, or rather it is one of the impossi- If numbers are eternal,
bilities of this theory, to introduce generation of things which are eternal. There is no reason to 15
doubt whether the Pythagoreans do or do not intro- it is absurd that they should be generated.
duce it; for they clearly state that when the One had been constituted—whether out of planes or superficies or seed or out of something that they cannot explain—immediately the nearest part of the Infinite began to be drawn in and limited by the

and number or plurality can only be referred to the dyad or material principle.

[c] The exact reference is uncertain, but Aristotle probably means Simonides of Ceos. *Cf.* fr. 189 (Bergk).

[d] Assuming that the Great-and-Small, or indeterminate dyad, is duplicative (XIII. vii. 18).

1091 a πέρατος. ἀλλ' ἐπειδὴ κοσμοποιοῦσι καὶ φυσικῶς βούλονται λέγειν, δίκαιον αὐτοὺς ἐξετάζειν τι περὶ φύσεως, ἐκ δὲ τῆς νῦν ἀφεῖναι μεθόδου· τὰς γὰρ ἐν τοῖς ἀκινήτοις ζητοῦμεν ἀρχάς, ὥστε καὶ τῶν ἀριθμῶν τῶν τοιούτων ἐπισκεπτέον τὴν γένεσιν.

IV. Τοῦ μὲν οὖν περιττοῦ γένεσιν οὔ φασιν, ὡς δῆλον ὅτι τοῦ ἀρτίου οὔσης γενέσεως· τὸν δ' ἄρτιον πρῶτον ἐξ ἀνίσων τινὲς κατασκευάζουσι τοῦ μεγάλου καὶ μικροῦ ἰσασθέντων. ἀνάγκη οὖν πρότερον ὑπάρχειν τὴν ἀνισότητα αὐτοῖς τοῦ ἰσασθῆναι· εἰ δ' ἀεὶ ἦσαν ἰσασμένα, οὐκ ἂν ἦσαν ἄνισα πρότερον· τοῦ γὰρ ἀεὶ οὐκ ἔστι πρότερον οὐθέν· ὥστε φανερὸν ὅτι οὐ τοῦ θεωρῆσαι ἕνεκεν ποιοῦσι τὴν γένεσιν τῶν ἀριθμῶν. Ἔχει δ' ἀπορίαν καὶ εὐπορήσαντι ἐπιτίμησιν, πῶς ἔχει πρὸς τὸ ἀγαθὸν καὶ τὸ καλὸν τὰ στοιχεῖα καὶ αἱ ἀρχαί, ἀπορίαν μὲν ταύτην, πότερόν ἐστί τι ἐκείνων οἷον βουλόμεθα λέγειν αὐτὸ τὸ ἀγαθὸν καὶ τὸ ἄριστον, ἢ οὔ, ἀλλ' ὑστερογενῆ. παρὰ μὲν γὰρ τῶν θεολόγων ἔοικεν ὁμολογεῖσθαι τῶν νῦν τισίν, οἳ οὐ φασιν, ἀλλὰ προελθούσης τῆς τῶν ὄντων φύσεως καὶ τὸ ἀγαθὸν καὶ τὸ καλὸν ἐμφαίνεσθαι· τοῦτο δὲ ποιοῦσιν εὐλαβούμενοι ἀληθινὴν δυσχέρειαν ἢ συμβαίνει 1091 b τοῖς λέγουσιν, ὥσπερ ἔνιοι, τὸ ἓν ἀρχήν· ἔστι δ'

[a] *Cf. Physics* III. iv., IV. vi. *ad fin.*, and Burnet, *E.G.P.* § 53.

[b] The Platonists.

[c] This statement was probably symbolical. "They described the odd numbers as ungenerated because they likened them to the One, the principle of pure form" (Ross *ad loc.*).

[d] *Cf.* XIII. vii. 5.

[e] Aristotle speaks as a Platonist. See Vol. I. Introd. p. xxxii.

[f] The Pythagoreans and Speusippus; *cf.* XII. vii. 10.

Limit.[a] However, since they are here explaining 16
the construction of the universe and meaning to speak in terms of physics, although we may somewhat criticize their physical theories, it is only fair to exempt them from the present inquiry; for it is the first principles in unchangeable things that we are investigating, and therefore we have to consider the generation of this kind of numbers.

IV. They[b] say that there is no generation of odd numbers,[c] which clearly implies that there is generation of even ones; and some hold that the even is constructed first out of unequals—the Great and Small—when they are equalized.[d] Therefore the inequality must apply to them before they are equalized. If they had always been equalized they would not have been unequal before; for there is nothing prior to that which has always been. Hence 2
evidently it is not for the sake of a logical theory that they introduce the generation of numbers.

Relation of the first principles to the good.

A difficulty, and a discredit to those who make light of the difficulty, arises out of the question how the elements and first principles are related to the Good and the Beautiful. The difficulty is this: whether any of the elements is such as we mean when we[e] speak of the Good or the Supreme Good, or whether on the contrary these are later in generation than the elements. It would seem that there is an 3
agreement between the mythologists and some present-day thinkers,[f] who deny that there is such an element, and say that it was only after some evolution in the natural order of things that both the Good and the Beautiful appeared. They do this to avoid a real difficulty which confronts those who hold, as some do, that unity is a first principle. This 4

Some hold that goodness only appeared in the course of evolution.

1091 b ἡ δυσχέρεια οὐ διὰ τὸ τῇ ἀρχῇ τὸ εὖ ἀποδιδόναι
ὡς ὑπάρχον, ἀλλὰ διὰ τὸ τὸ ἓν ἀρχὴν καὶ ἀρχὴν
ὡς στοιχεῖον καὶ τὸν ἀριθμὸν ἐκ τοῦ ἑνός. οἱ δὲ
ποιηταὶ οἱ ἀρχαῖοι ταύτῃ ὁμοίως, ἢ βασιλεύειν
καὶ ἄρχειν φασὶν οὐ τοὺς πρώτους οἷον νύκτα καὶ
οὐρανὸν ἢ χάος ἢ ὠκεανόν, ἀλλὰ τὸν Δία. οὐ
μὴν ἀλλὰ τούτοις μὲν διὰ τὸ μεταβάλλειν τοὺς
ἄρχοντας τῶν ὄντων συμβαίνει τοιαῦτα λέγειν, ἐπεὶ
οἵ γε μεμιγμένοι αὐτῶν [καὶ][1] τῷ μὴ μυθικῶς
πάντα[2] λέγειν, οἷον Φερεκύδης καὶ ἕτεροί τινες, τὸ
γεννῆσαν πρῶτον ἄριστον τιθέασι, καὶ οἱ Μάγοι, καὶ
τῶν ὑστέρων δὲ σοφῶν, οἷον Ἐμπεδοκλῆς τε καὶ
Ἀναξαγόρας, ὁ μὲν τὴν φιλίαν στοιχεῖον, ὁ δὲ
τὸν νοῦν ἀρχὴν ποιήσας. τῶν δὲ τὰς ἀκινήτους
οὐσίας εἶναι λεγόντων οἱ μέν φασιν αὐτὸ τὸ ἓν τὸ
ἀγαθὸν αὐτὸ εἶναι· οὐσίαν μέντοι τὸ ἓν αὐτοῦ ᾤοντο
εἶναι μάλιστα. Ἡ μὲν οὖν ἀπορία αὕτη, ποτέρως
δεῖ λέγειν. θαυμαστὸν δ' εἰ τῷ πρώτῳ καὶ ἀϊδίῳ
καὶ αὐταρκεστάτῳ τοῦτ' αὐτὸ πρῶτον οὐχ ὡς
ἀγαθὸν ὑπάρχει τὸ αὔταρκες καὶ ἡ σωτηρία.
ἀλλὰ μὴν οὐ δι' ἄλλο τι ἄφθαρτον ἢ διότι εὖ ἔχει,
οὐδ' αὔταρκες, ὥστε τὸ μὲν φάναι τὴν ἀρχὴν
τοιαύτην εἶναι εὔλογον ἀληθὲς εἶναι· τὸ μέντοι
ταύτην εἶναι τὸ ἕν, ἢ εἰ μὴ τοῦτο, στοιχεῖόν γε[3]
καὶ στοιχεῖον ἀριθμῶν, ἀδύνατον· συμβαίνει γὰρ

[1] Bonitz. [2] ἅπαντα recc.
[3] γε J Syrianus: τε.

[a] Of Syros (*circa* 600–525 B.C.). He made Zeus one of the three primary beings (Diels, *Vorsokratiker* 201, 202).
[b] The Zoroastrian priestly caste.

difficulty arises not from ascribing goodness to the first principle as an attribute, but from treating unity as a principle, and a principle in the sense of an element, and then deriving number from unity. The early poets agree with this view in so far as they assert that it was not the original forces—such as Night, Heaven, Chaos or Ocean—but Zeus who was king and ruler. It was, however, on the ground 5
of the changing of the rulers of the world that the poets were led to state these theories; because those Others make goodness a first principle.
of them who compromise by not describing everything in mythological language—*e.g.* Pherecydes [a] and certain others—make the primary generator the Supreme Good; and so do the Magi,[b] and some of the later philosophers such as Empedocles and Anaxagoras: the one making Love an element,[c] and the other making Mind a first principle.[d] And 6
of those who hold that unchangeable substances exist, some [e] identify absolute unity with absolute goodness; but they considered that the essence of goodness was primarily unity.

This, then, is the problem: which of these two The latter are probably right.
views we should hold. Now it is remarkable if that 7
which is primary and eternal and supremely self-sufficient does not possess this very quality, viz. self-sufficiency and immunity, in a primary degree and as something good. Moreover, it is imperishable and self-sufficient for no other reason than because it is good. Hence it is probably true to say that the first principle is of this nature. But to say that this 8
principle is unity, or if not that, that it is an element, But to identify goodness
and an element of numbers, is impossible; for this

[c] *Cf.* III. i. 13. [d] *Cf.* I. iii. 16.
[e] Plato; *cf.* I. vi. 10.

1091 b πολλὴ δυσχέρεια, ἣν ἔνιοι φεύγοντες ἀπειρήκασιν, οἱ τὸ ἓν μὲν ὁμολογοῦντες ἀρχὴν εἶναι πρώτην καὶ στοιχεῖον, τοῦ ἀριθμοῦ δὲ τοῦ μαθηματικοῦ· ἅπασαι γὰρ αἱ μονάδες γίγνονται ὅπερ ἀγαθόν τι, καὶ πολλή τις εὐπορία ἀγαθῶν. ἔτι εἰ τὰ εἴδη ἀριθμοί, τὰ εἴδη πάντα ὅπερ ἀγαθόν τι· ἀλλὰ μὴν ὅτου βούλεται τιθέτω τις εἶναι ἰδέας· εἰ μὲν γὰρ τῶν ἀγαθῶν μόνον, οὐκ ἔσονται οὐσίαι αἱ ἰδέαι, εἰ δὲ καὶ τῶν οὐσιῶν, πάντα τὰ ζῷα καὶ τὰ φυτὰ ἀγαθὰ καὶ τὰ μετέχοντα. Ταῦτά τε δὴ συμβαίνει ἄτοπα, καὶ τὸ ἐναντίον στοιχεῖον, εἴτε πλῆθος ὂν εἴτε τὸ ἄνισον καὶ μέγα καὶ μικρόν, τὸ κακὸν αὐτό· διόπερ ὁ μὲν ἔφευγε τὸ ἀγαθὸν προσάπτειν τῷ ἑνὶ ὡς ἀναγκαῖον ὄν, ἐπειδὴ ἐξ ἐναντίων ἡ γένεσις, τὸ κακὸν τὴν τοῦ πλήθους φύσιν εἶναι, οἱ δὲ λέγουσι τὸ ἄνισον τοῦ κακοῦ φύσιν· συμβαίνει δὴ πάντα τὰ ὄντα μετέχειν τοῦ κακοῦ ἔξω ἑνὸς αὐτοῦ τοῦ ἑνός, καὶ μᾶλλον ἀκράτου μετέχειν τοὺς 1092 a ἀριθμοὺς ἢ τὰ μεγέθη, καὶ τὸ κακὸν τοῦ ἀγαθοῦ χώραν εἶναι, καὶ μετέχειν καὶ ὀρέγεσθαι τοῦ φθαρτικοῦ· φθαρτικὸν γὰρ τοῦ ἐναντίου τὸ ἐναντίον. καὶ εἰ ὥσπερ ἐλέγομεν ὅτι ἡ ὕλη ἐστὶ τὸ δυνάμει ἕκαστον, οἷον πυρὸς τοῦ ἐνεργείᾳ τὸ δυνάμει πῦρ, τὸ κακὸν ἔσται αὐτὸ τὸ δυνάμει ἀγαθόν.

[a] Speusippus and his followers; *cf.* § 3.
[b] If unity is goodness, and every unit is a kind of unity, every unit must be a kind of goodness—which is absurd.
[c] Because they are Ideas not of substances but of qualities.
[d] Because the Ideas are goods.
[e] Speusippus.
[f] Plato and Xenocrates.

involves a serious difficulty, to avoid which some thinkers[a] have abandoned the theory (viz. those who agree that unity is a first principle and element, but of *mathematical* number). For on this view all units become identical with some good, and we get a great abundance of goods.[b] Further, if the Forms are numbers, all Forms become identical with some good. Again, let us assume that there are Ideas of anything that we choose. If there are Ideas only of goods, the Ideas will not be substances[c]; and if there are Ideas of substances also, all animals and plants, and all things that participate in the Ideas, will be goods.[d]

with unity, or to make it a principle of numbers, is absurd.

8 9

Not only do these absurdities follow, but it also follows that the contrary element, whether it is plurality or the unequal, *i.e.* the Great and Small, is absolute badness. Hence one thinker[e] avoided associating the Good with unity, on the ground that since generation proceeds from contraries, the nature of plurality would then necessarily be bad. Others[f] hold that inequality is the nature of the bad. It follows, then, that all things partake of the Bad except one—absolute unity; and that numbers partake of it in a more unmitigated form than do spatial magnitudes[g]; and that the Bad is the province for the activity of the Good, and partakes of and tends towards that which is destructive of the Good; for a contrary is destructive of its contrary. And if, as we said,[h] the matter of each thing is that which is it potentially—*e.g.*, the matter of actual fire is that which is potentially fire—then the Bad will be simply the potentially Good.

10

It follows that the material principle is bad.

11 12

[g] As being more directly derived from the first principles. *Cf.* I. ix. 23 n.
[h] Ch. i. 17.

1092 a Ταῦτα δὴ πάντα συμβαίνει, τὸ μὲν ὅτι ἀρχὴν πᾶσαν στοιχεῖον ποιοῦσι, τὸ δ' ὅτι τἀναντία ἀρχάς, τὸ δ' ὅτι τὸ ἓν ἀρχήν, τὸ δ' ὅτι τοὺς ἀριθμοὺς τὰς πρώτας οὐσίας καὶ χωριστὰ[1] καὶ εἴδη.

V. Εἰ οὖν καὶ τὸ μὴ τιθέναι τὸ ἀγαθὸν ἐν ταῖς ἀρχαῖς καὶ τὸ τιθέναι οὕτως ἀδύνατον, δῆλον ὅτι αἱ ἀρχαὶ οὐκ ὀρθῶς ἀποδίδονται οὐδὲ αἱ πρῶται οὐσίαι. οὐκ ὀρθῶς δ' ὑπολαμβάνει οὐδ' εἴ τις παρεικάζει τὰς τοῦ ὅλου ἀρχὰς τῇ τῶν ζῴων καὶ φυτῶν, ὅτι ἐξ ἀορίστων ἀτελῶν τε[2] ἀεὶ τὰ τελειότερα, διὸ καὶ ἐπὶ τῶν πρώτων οὕτως ἔχειν φησίν, ὥστε μηδὲ ὂν τι εἶναι τὸ ἓν αὐτό. εἰσὶ γὰρ καὶ ἐνταῦθα τέλειαι αἱ ἀρχαὶ ἐξ ὧν ταῦτα· ἄνθρωπος γὰρ ἄνθρωπον γεννᾷ, καὶ οὐκ ἔστι τὸ σπέρμα πρῶτον. ἄτοπον δὲ καὶ τὸ τόπον ἅμα τοῖς στερεοῖς τοῖς[3] μαθηματικοῖς ποιῆσαι (ὁ μὲν γὰρ τόπος τῶν καθ' ἕκαστον ἴδιος, διὸ χωριστὰ τόπῳ, τὰ δὲ μαθηματικὰ οὐ πού), καὶ τὸ εἰπεῖν μὲν ὅτι ποὺ ἔσται, τί δέ ἐστιν ὁ τόπος μή. Ἔδει δὲ τοὺς λέγοντας ἐκ στοιχείων εἶναι τὰ ὄντα καὶ τῶν ὄντων τὰ πρῶτα τοὺς ἀριθμούς, διελομένους πῶς ἄλλο ἐξ ἄλλου ἐστίν, οὕτω λέγειν τίνα τρόπον ὁ ἀριθμός ἐστιν ἐκ τῶν ἀρχῶν. πότερον μίξει; ἀλλ'

[1] χωριστὰς A[b].
[2] Ravaisson: δέ.
[3] καὶ τοῖς E.

[a] Evidently Speusippus; *cf.* ch. iv. 3.
[b] Speusippus argued that since all things are originally imperfect, unity, which is the first principle, must be imperfect, and therefore distinct from the good. Aristotle objects that the imperfect does not really exist, and so Speusippus deprives his first principle of reality.

Thus all these objections follow because (i.) they make every principle an element; (ii.) they make contraries principles; (iii.) they make unity a principle; and (iv.) they make numbers the primary substances, and separable, and Forms. The four fundamental errors in the Platonic system.

V. If, then, it is impossible both not to include the Good among the first principles, and to include it in this way, it is clear that the first principles are not being rightly represented, nor are the primary substances. Nor is a certain thinker[a] right in his assumption when he likens the principles of the universe to that of animals and plants, on the ground that the more perfect forms are always produced from those which are indeterminate and imperfect, and is led by this to assert that this is true also of the ultimate principles; so that not even unity itself is a real thing.[b] He is wrong; for even in the 2 natural world the principles from which these things are derived are perfect and complete—for it is man that begets man; the seed does not come first.[c] It is absurd also to generate space simultaneously with the mathematical solids (for space is peculiar to particular things, which is why they are separable in space, whereas the objects of mathematics have no position) and to say that they must be somewhere, and yet not explain what their spatial position is. Objections to Speusippus' views.

Those who assert that reality is derived from ele- 3 ments, and that numbers are the primary realities, ought to have first distinguished the senses in which one thing is derived from another, and then explained in what way number is derived from the first principles. Is it by mixture? But (*a*) not How is number derived from the first principles?

[c] *Cf.* IX. viii. 5.

1092 a
οὔτε πᾶν μικτόν, τό τε γιγνόμενον ἕτερον, οὐκ ἔσται
τε χωριστὸν τὸ ἓν οὐδ' ἑτέρα φύσις· οἱ δὲ βούλον-
ται. ἀλλὰ συνθέσει, ὥσπερ συλλαβήν[1]; ἀλλὰ θέσιν
τε ἀνάγκη ὑπάρχειν, καὶ χωρὶς ὁ νοῶν νοήσει
τὸ ἓν καὶ τὸ πλῆθος. τοῦτ' οὖν ἔσται ὁ ἀριθμός,
μονὰς καὶ πλῆθος, ἢ τὸ ἓν καὶ ἄνισον. Καὶ ἐπεὶ
τὸ ἐκ τινῶν εἶναι ἔστι μὲν ὡς ἐνυπαρχόντων
ἔστι δὲ ὡς οὔ, ποτέρως ὁ ἀριθμός; οὕτως γὰρ
ὡς ἐνυπαρχόντων οὐκ ἔστιν ἀλλ' ἢ ὧν γένεσις
ἔστιν. ἀλλ' ὡς ἀπὸ σπέρματος; ἀλλ' οὐχ οἷόν τε
τοῦ ἀδιαιρέτου τι ἀπελθεῖν. ἀλλ' ὡς ἐκ τοῦ ἐναν-
τίου μὴ ὑπομένοντος; ἀλλ' ὅσα οὕτως ἔστι, καὶ
ἐξ ἄλλου τινός ἐστιν ὑπομένοντος. ἐπεὶ τοίνυν τὸ
1092 b ἓν ὁ μὲν τῷ πλήθει ὡς ἐναντίον τίθησιν, ὁ δὲ τῷ
ἀνίσῳ, ὡς ἴσῳ τῷ ἑνὶ χρώμενος, ὡς ἐξ ἐναντίων
εἴη ἂν ὁ ἀριθμός· ἔστιν ἄρα τι ἕτερον ἐξ οὗ ὑπο-
μένοντος καὶ θατέρου ἐστὶν ἢ γέγονεν. Ἔτι τί
δή ποτε τὰ μὲν ἄλλ' ὅσα ἐξ ἐναντίων ἢ οἷς ἔστιν
ἐναντία φθείρεται, κἂν ἐκ παντὸς ᾖ, ὁ δὲ ἀριθμὸς
οὔ; περὶ τούτου γὰρ οὐθὲν λέγεται. καίτοι καὶ
ἐνυπάρχον καὶ μὴ ἐνυπάρχον φθείρει τὸ ἐναντίον,

[1] συλλαβή E Alexander.

[a] *e.g.* to admit of mixture a thing must first have a separate existence, and the Great-and-Small, which is an affection or quality of number (ch. i. 14) cannot exist separately.

[b] *sc.* when it has once been mixed. *Cf. De Gen. et Corr.* 327 b 21-26.

[c] And numbers are supposed to be eternal. *Cf.* ch. ii. 1-3.

[d] *i.e.*, unity, being indivisible, cannot contribute the formal principle of generation in the way that the male parent contributes it.

[e] Speusippus; Plato. *Cf.* ch. i. 5.

[f] The objection is directed against the Platonist treatment of the principles as contraries (*cf.* iv. 12), and may be illustrated by XII. i. 5-ii. 2. Plurality, as the contrary of unity, is privation, not matter; the Platonists should have derived numbers from unity and some other principle which is truly material.

everything admits of mixture[a]; (*b*) the result of mixture is something different; and unity will not be separable,[b] nor will it be a distinct entity, as they intend it to be. Is it by composition, as we hold 4
of the syllable? But (*a*) this necessarily implies position; (*b*) in thinking of unity and plurality we shall think of them separately. This, then, is what number will be—a unit *plus* plurality, or unity *plus* the Unequal.

And since a thing is derived from elements either as inherent or as not inherent in it, in which way is number so derived? Derivation from inherent elements is only possible for things which admit of generation.[c] Is it derived as from seed? But no- 5
thing can be emitted from that which is indivisible.[d] Is it derived from a contrary which does not persist? But all things which derive their being in this way derive it also from something else which does persist. Since, therefore, one thinker[e] regards unity as contrary to plurality, and another[e] (treating it as the Equal) as contrary to the Unequal, number must be derived as from contraries. Hence there is some- 6
thing else which persists from which, together with one contrary, number is or has been derived.[f]

Further, why on earth is it that whereas all other things which are derived from contraries or have contraries perish, even if the contrary is exhausted in producing them,[g] number does not perish? Of this no explanation is given; yet whether it is inherent or not, a contrary is destructive; *e.g.*, Strife

[g] Because it may be regarded as still potentially present.

1092 b οἷον τὸ νεῖκος τὸ μῖγμα· καίτοι γε[1] οὐκ ἔδει· οὐ γὰρ ἐκείνῳ[2] γε ἐναντίον. Οὐθὲν δὲ διώρισται οὐδὲ ὁποτέρως οἱ ἀριθμοὶ αἴτιοι τῶν οὐσιῶν καὶ τοῦ εἶναι, πότερον ὡς ὅροι (οἷον αἱ στιγμαὶ τῶν μεγεθῶν, καὶ ὡς Εὔρυτος ἔταττε τίς ἀριθμὸς τίνος, οἷον ὁδὶ μὲν ἀνθρώπου ὁδὶ δὲ ἵππου, ὥσπερ οἱ τοὺς ἀριθμοὺς ἄγοντες εἰς τὰ σχήματα τρίγωνον καὶ τετράγωνον, οὕτως ἀφομοιῶν ταῖς ψήφοις τὰς μορφὰς τῶν φυτῶν), ἢ ὅτι [ὁ][3] λόγος ἡ[4] συμφωνία ἀριθμῶν, ὁμοίως δὲ καὶ ἄνθρωπος καὶ τῶν ἄλλων ἕκαστον; τὰ δὲ δὴ πάθη πῶς ἀριθμοί, τὸ λευκὸν καὶ γλυκὺ καὶ τὸ θερμόν; ὅτι δὲ οὐχ οἱ ἀριθμοὶ οὐσία[5] οὐδὲ τῆς μορφῆς αἴτιοι, δῆλον· ὁ γὰρ λόγος ἡ οὐσία, ὁ δ' ἀριθμὸς ὕλη. οἷον σαρκὸς ἢ ὀστοῦ ἀριθμὸς ἡ οὐσία οὕτω, τρία πυρός, γῆς δὲ δύο· καὶ ἀεὶ ὁ ἀριθμὸς ὃς ἂν ᾖ τινῶν ἐστίν, ἢ πύρινος ἢ γήϊνος ἢ μοναδικός, ἀλλ' ἡ οὐσία τὸ τοσόνδ' εἶναι πρὸς τοσόνδε κατὰ τὴν μῖξιν· τοῦτο δ' οὐκέτι ἀριθμὸς ἀλλὰ λόγος μίξεως ἀριθμῶν σωματικῶν ἢ ὁποιωνοῦν. οὔτε οὖν τῷ ποιῆσαι αἴτιος ὁ ἀριθμός, οὔτε ὅλως ὁ ἀριθμὸς οὔτε ὁ μοναδικός, οὔτε ὕλη οὔτε λόγος καὶ εἶδος τῶν πραγμάτων. ἀλλὰ μὴν οὐδ' ὡς τὸ οὗ ἕνεκα.

[1] γε om. recc. [2] ἐκεῖνο E. [3] Bonitz. [4] ἡ E Alexander: ἢ. [5] οὐσίαι recc.

[a] According to Empedocles, fr. 17 (Diels).

[b] The theories criticized from this point onwards to ch. vi. 11 are primarily Pythagorean. See Vol. I. Introd. p. xvii.

[c] *e.g.* the line by 2 points, the triangle (the simplest plane figure) by 3, the tetrahedron (the simplest solid figure) by 4.

[d] Disciple of Philolaus; he "flourished" in the early fourth century B.C.

destroys the mixture.[a] It should not, however, do this; because the mixture is not its contrary.

Nor is it in any way defined in which sense numbers 7
are the causes of substances and of Being; whether as bounds,[b] *e.g.* as points are the bounds of spatial magnitudes,[c] and as Eurytus[d] determined which number belongs to which thing—*e.g.* this number to man, and this to horse—by using pebbles to copy the shape of natural objects, like those who arrange numbers in the form of geometrical figures, the triangle and the square.[e] Or is it because harmony 8
is a ratio of numbers, and so too is man and everything else? But in what sense are attributes—white, and sweet, and hot—numbers?[f] And clearly numbers are not the essence of things, nor are they causes of the form; for the ratio[g] is the essence, and number[h] is matter. *E.g.* the essence of flesh 9
or bone is number only in the sense that it is three parts of fire and two of earth.[i] And the number, whatever it is, is always a number of something; of particles of fire or earth, or of units. But the essence is the proportion of one quantity to another in the mixture; *i.e.* no longer a number, but a ratio of the mixture of numbers, either of corporeal particles or of any other kind. Thus number is not an efficient cause—neither number in general, nor that which consists of abstract units—nor is it the matter, nor the formula or form of things. Nor again is it a final cause.

How can numbers be causes of things?

[e] *Cf.* Burnet, *E.G.P.* § 47.

[f] This is an objection to the view that numbers are causes as bounds.

[g] Or "formula."

[h] In the sense of a number of material particles.

[i] *Cf.* Empedocles fr. 96 (Diels).

1092 b VI. Ἀπορήσειε δ' ἄν τις καὶ τί τὸ εὖ ἐστι τὸ ἀπὸ τῶν ἀριθμῶν τῷ[1] ἐν ἀριθμῷ εἶναι τὴν μῖξιν, ἢ ἐν εὐλογίστῳ ἢ ἐν περιττῷ. νυνὶ γὰρ οὐθὲν ὑγιεινότερον τρὶς τρία ἂν ἢ τὸ μελίκρατον κεκραμένον, ἀλλὰ μᾶλλον ὠφελήσειεν ἂν ἐν οὐδενὶ λόγῳ ὂν ὑδαρὲς δὲ ἢ ἐν ἀριθμῷ ἄκρατον ὄν. ἔτι οἱ λόγοι ἐν προσθέσει ἀριθμῶν εἰσὶν οἱ τῶν μίξεων, οὐκ ἐν ἀριθμοῖς, οἷον τρία πρὸς δύο, ἀλλ' οὐ τρὶς δύο. τὸ γὰρ αὐτὸ δεῖ γένος εἶναι ἐν ταῖς πολλαπλασιώσεσιν, ὥστε δεῖ μετρεῖσθαι τῷ τε Α τὸ στοιχεῖον ἐφ' οὗ ΑΒΓ καὶ τῷ Δ τὸν ΔΕΖ· ὥστε τῷ αὐτῷ πάντα. οὔκουν[2] ἔσται πυρὸς ΒΕΓΖ, 1093 a καὶ ὕδατος ἀριθμὸς δὶς τρία. Εἰ δ' ἀνάγκη πάντα ἀριθμοῦ κοινωνεῖν, ἀνάγκη πολλὰ συμβαίνειν τὰ αὐτά, καὶ ἀριθμὸν τὸν αὐτὸν τῷδε καὶ ἄλλῳ. ἆρ' οὖν τοῦτ' αἴτιον καὶ διὰ τοῦτό ἐστι τὸ πρᾶγμα, ἢ ἄδηλον; οἷον ἔστι τις τῶν τοῦ ἡλίου 5 φορῶν ἀριθμός, καὶ πάλιν τῶν τῆς σελήνης, καὶ τῶν ζῴων γε ἑκάστου τοῦ βίου καὶ ἡλικίας· τί οὖν κωλύει ἐνίους μὲν τούτων τετραγώνους εἶναι ἐνίους δὲ κύβους, καὶ ἴσους, τοὺς δὲ διπλασίους; οὐθὲν γὰρ κωλύει, ἀλλ' ἀνάγκη ἐν τούτοις στρέφε-

[1] τῷ Alexander: τὸ EA[b].
[2] οὔκουν Bonitz: οὐκοῦν.

[a] *i.e.*, a simple ratio.
[b] It is hard to see exactly what this means. If the terms of a ratio are rational, one of them must be odd. Alexander says a ratio like 1 : 3 is meant. Oddness was associated with goodness (*cf.* I. v. 6).
[c] Apparently the Pythagoreans meant by this "three parts of water to three of honey." Aristotle goes on to criticize this way of expressing ratios.
[d] *Cf.* previous note.

VI. The question might also be raised as to what the good is which things derive from numbers because their mixture can be expressed by a number, either one which is easily calculable,[a] or an odd number.[b] For in point of fact honey-water is no more wholesome if it is mixed in the proportion "three times three"[c]; it would be more beneficial mixed in no particular proportion, provided that it be diluted, than mixed in an arithmetical proportion, but strong. Again, 2 the ratios of mixtures are expressed by the relation of numbers, and not simply by numbers; *e.g.*, it is 3 : 2, not 3×2[d]; for in products of multiplication the units must belong to the same genus. Thus the product of $1 \times 2 \times 3$ must be measurable by 1, and the product of $4 \times 5 \times 7$ by 4. Therefore all products which contain the same factor must be measurable by that factor. Hence the number of fire cannot be $2 \times 5 \times 3 \times 7$ if the number of water is 2×3.[e]

Things derive no good from number.

If all things must share in number, it must follow 3 that many things are the same; *i.e.*, that the same number belongs both to this thing and to something else. Is number, then, a cause; *i.e.*, is it because of number that the object exists? Or is this not conclusive? *E.g.*, there is a certain number of the sun's motions, and again of the moon's,[f] and indeed of the life and maturity of every animate thing. What reason, then, is there why some of these numbers should not be squares and others cubes, some equal and others double? There is no reason; 4 all things must fall within this range of numbers if,

Numerical coincidences.

[e] *sc.* because if so, a particle of fire would simply equal 35 particles of water.
[f] 5 in each case, according to Aristotle; *cf.* XII. vii. 9, 11.

1093 a σθαι, εἰ ἀριθμοῦ πάντα ἐκοινώνει, ἐνεδέχετό τε
10 τὰ διαφέροντα ὑπὸ τὸν αὐτὸν ἀριθμὸν πίπτειν· ὥστ' εἰ τισὶν ὁ αὐτὸς ἀριθμὸς συνεβεβήκει, ταὐτὰ ἂν ἦν ἀλλήλοις ἐκεῖνα τὸ αὐτὸ εἶδος ἀριθμοῦ ἔχοντα, οἷον ἥλιος καὶ σελήνη τὰ αὐτά. ἀλλὰ διὰ τί αἴτια ταῦτα; ἑπτὰ μὲν φωνήεντα, ἑπτὰ δὲ χορδαὶ ἡ ἁρμονία,[1] ἑπτὰ δὲ αἱ πλειάδες, ἐν ἑπτὰ
15 δὲ ὀδόντας βάλλει (ἔνιά γε, ἔνια δ' οὔ), ἑπτὰ δὲ οἱ ἐπὶ Θήβας. ἆρ' οὖν ὅτι τοιοσδὶ ὁ ἀριθμὸς πέφυκεν, διὰ τοῦτο ἢ ἐκεῖνοι ἐγένοντο ἑπτὰ ἢ ἡ πλειὰς ἑπτὰ ἀστέρων ἐστίν; ἢ οἱ μὲν διὰ τὰς πύλας ἢ ἄλλην τινὰ αἰτίαν, τὴν δὲ ἡμεῖς οὕτως ἀριθμοῦμεν,
20 τὴν δὲ ἄρκτον γε δώδεκα, οἱ δὲ πλείους· ἐπεὶ καὶ τὸ Ξ Ψ Ζ συμφωνίας φασὶν εἶναι, καὶ ὅτι ἐκεῖναι τρεῖς, καὶ ταῦτα τρία· ὅτι δὲ μυρία ἂν εἴη τοιαῦτα, οὐθὲν μέλει (τῷ[2] γὰρ Γ καὶ Ρ εἴη ἂν ἓν σημεῖον)· εἰ δ' ὅτι διπλάσιον τῶν ἄλλων ἕκαστον, ἄλλο δ' οὔ, αἴτιον δ' ὅτι τριῶν ὄντων τόπων ἓν ἑφ' ἑκά-
25 στου ἐπιφέρεται τῷ σίγμα, διὰ τοῦτο τρία μόνον ἐστίν, ἀλλ' οὐχ ὅτι αἱ συμφωνίαι τρεῖς, ἐπεὶ πλείους γε αἱ συμφωνίαι, ἐνταῦθα δ' οὐκέτι δύναται.

Ὅμοιοι δὴ καὶ οὗτοι τοῖς ἀρχαίοις Ὁμηρικοῖς, οἳ μικρὰς ὁμοιότητας ὁρῶσι μεγάλας δὲ παρορῶσιν.

[1] ἡ ἁρμονία E Alexandri lemma : ἢ ἁρμονίαι.
[2] τὸ Alexander, Syrianus.

[a] *Cf.* previous note. [b] In the Greek alphabet.
[c] In the old heptachord ; *cf.* note on V. xi. 4.
[d] *Cf. Hist. An.* 576 a 6.
[e] According to Alexander ζ was connected with the fourth, ξ with the fifth, and ψ with the octave.
[f] θ, φ, and χ are aspirated, not double, consonants.
[g] Palate, lips, and teeth.

as was assumed, all things share in number, and different things may fall under the same number. Hence if certain things happened to have the same number, on the Pythagorean view they would be the same as one another, because they would have the same form of number ; *e.g.*, sun and moon would be the same.[a] But why are these numbers causes ? 5 There are seven vowels,[b] seven strings to the scale,[c] seven Pleiads ; most animals (though not all[d]) lose their teeth in the seventh year ; and there were seven heroes who attacked Thebes. Is it, then, because the number 7 is such as it is that there were seven heroes, or that the Pleiads consist of seven stars ? Surely there were seven heroes because of the seven gates, or for some other reason, and the Pleiads are seven because we count them so ; just as we count the Bear as 12, whereas others count more stars in both. Indeed, they assert also 6 that Ξ, Ψ, and Z are concords,[e] and that because there are three concords, there are three double consonants. They ignore the fact that there might be thousands of double consonants—because there might be one symbol for ΓΡ. But if they say that each of these letters is double any of the others, whereas no other is,[f] and that the reason is that there are three regions[g] of the mouth, and that one consonant is combined with σ in each region, it is for this reason that there are only three double consonants, and not because there are three concords—because there are really more than three ; but there cannot be more than three double consonants.

Thus these thinkers are like the ancient Homeric 7 scholars, who see minor similarities but overlook important ones.

1092 a Λέγουσι δέ τινες ὅτι πολλὰ τοιαῦτα, οἷον αἱ
30 τε μέσαι ἡ μὲν ἐννέα ἡ δὲ ὀκτώ, καὶ τὸ ἔπος
1093 b δεκαεπτά, ἰσάριθμον τούτοις, βαίνεται δ' ἐν μὲν
τῷ δεξιῷ ἐννέα συλλαβαῖς ἐν δὲ τῷ ἀριστερῷ
ὀκτώ, καὶ ὅτι ἴσον τὸ διάστημα ἔν τε τοῖς γράμ-
μασιν ἀπὸ τοῦ Α πρὸς τὸ Ω καὶ ἀπὸ τοῦ βόμβυκος
ἐπὶ τὴν ὀξυτάτην [νεάτην][1] ἐν αὐλοῖς, ἧς ὁ ἀριθμὸς
5 ἴσος τῇ οὐλομελείᾳ τοῦ οὐρανοῦ. ὁρᾶν δὲ δεῖ μὴ
τοιαῦτα οὐθεὶς ἂν ἀπορήσειεν οὔτε λέγειν οὔθ'
εὑρίσκειν ἐν τοῖς ἀϊδίοις, ἐπεὶ καὶ ἐν τοῖς φθαρτοῖς.
Ἀλλ' αἱ ἐν τοῖς ἀριθμοῖς φύσεις αἱ ἐπαινούμεναι
καὶ τὰ τούτοις ἐναντία καὶ ὅλως τὰ ἐν τοῖς μαθή-
μασιν, ὡς μὲν λέγουσί τινες καὶ αἴτια ποιοῦσι τῆς
10 φύσεως, ἔοικεν οὐτωσί γε σκοπουμένοις διαφεύ-
γειν· κατ' οὐθένα γὰρ τρόπον τῶν διωρισμένων
περὶ τὰς ἀρχὰς οὐθὲν αὐτῶν αἴτιον. ἔστιν ὡς[2]
μέντοι ποιοῦσι φανερὸν ὅτι τὸ εὖ ὑπάρχει καὶ τῆς
συστοιχίας ἐστὶ τῆς τοῦ καλοῦ τὸ περιττόν, τὸ
15 εὐθύ, τὸ ἰσάκις ἴσον,[3] αἱ δυνάμεις ἐνίων ἀριθμῶν·
ἅμα γὰρ ὧραι καὶ ἀριθμὸς τοιοσδί· καὶ τἆλλα δὴ
ὅσα συνάγουσιν ἐκ τῶν μαθηματικῶν θεωρημάτων

[1] Diels.
[2] ὡς A[b] Alexander: ἐκεῖνο Π Syrianus: om. E.
[3] ἰσάκις ἴσον: ἰσάριθμον E: ἴσον A[b].

[a] *i.e.*, the *μέση* (fourth) and *παραμέση* (fifth), whose ratios can be expressed as 8 : 6, 9 : 6.
[b] *i.e.*, a dactylic hexameter whose sixth foot is always a spondee or trochee has nine syllables in the first three feet and eight in the last three. For *τὸ δεξιόν* meaning "the first part" of a metrical system see Bassett, *Journal of Classical Philology* xi. 458-460.
[c] Alexander suggests that the number 24 may have been made up of the 12 signs of the zodiac, the 8 spheres (fixed stars, five planets, sun and moon) and 4 elements.

Some say that there are many correspondences of this kind; *e.g.*, the middle notes[a] of the octave are respectively 8 and 9, and the epic hexameter has seventeen syllables, which equals the sum of these two; and the line scans in the first half with nine syllables, and in the second with eight.[b] And they 8
point out that the interval from α to ω in the alphabet is equal to that from the lowest note of a flute to the highest, whose number is equal to that of the whole system of the universe.[c] We must realize that no one would find any difficulty either in discovering or in stating such correspondences as these in the realm of eternal things, since they occur even among perishable things.

As for the celebrated characteristics of number, 9
and their contraries, and in general the mathematical properties, in the sense that some describe them and make them out to be causes of the natural world, it would seem that if we examine them along these lines, they disappear; for not one of them is a cause in any of the senses which we distinguished with respect to the first principles.[d] There is a sense, 10
however, in which these thinkers make it clear that goodness is predicable of numbers, and that the odd, the straight, the equal-by-equal,[e] and the powers[f] of certain numbers, belong to the series of the Beautiful.[g] For the seasons are connected with a certain kind of number[h]; and the other examples which they adduce from mathematical theorems all have

There is a certain analogy between numbers and things; but the relation is not causal.

[d] *Cf.* I. iii. 1, V. i., ii.
[e] *i.e.*, square.
[f] Probably their "power" of being represented as regular figures; *e.g.* the triangularity of 3 ∴ or 6 ∴.
[g] *Cf.* I. v. 6.
[h] *i.e.*, 4.

1093 b πάντα ταύτην ἔχει τὴν δύναμιν. διὸ καὶ ἔοικε συμπτώμασιν· ἔστι γὰρ συμβεβηκότα μέν, ἀλλ' οἰκεῖα ἀλλήλοις πάντα, ἓν δὲ τῷ[1] ἀνάλογον· ἐν ἑκάστῃ γὰρ τοῦ ὄντος κατηγορίᾳ ἐστὶ τὸ ἀνάλογον, ὡς εὐθὺ ἐν μήκει οὕτως ἐν πλάτει τὸ ὁμαλόν, ἴσως ἐν ἀριθμῷ τὸ περιττόν, ἐν δὲ χροίᾳ[2] τὸ λευκόν.

Ἔτι οὐχ οἱ ἐν τοῖς εἴδεσιν ἀριθμοὶ αἴτιοι τῶν ἁρμονικῶν καὶ τῶν τοιούτων (διαφέρουσι γὰρ ἐκεῖνοι ἀλλήλων οἱ ἴσοι εἴδει· καὶ γὰρ αἱ μονάδες)· ὥστε διά γε ταῦτα εἴδη οὐ ποιητέον. Τὰ μὲν οὖν συμβαίνοντα ταῦτά τε κἂν ἔτι πλείω συναχθείη. ἔοικε δὲ τεκμήριον εἶναι τὸ πολλὰ κακοπαθεῖν περὶ τὴν γένεσιν αὐτῶν καὶ μηδένα τρόπον δύνασθαι συνεῖραι τοῦ μὴ χωριστὰ εἶναι τὰ μαθηματικὰ τῶν αἰσθητῶν, ὡς ἔνιοι λέγουσι, μηδὲ ταύτας εἶναι τὰς ἀρχάς.

[1] τῷ] τὸ A^b. [2] χρόᾳ E.

[a] Aristotle has argued (XIII. vi.–viii.) that if the Ideal numbers differ in kind, their units must differ in kind. Hence even equal numbers, being composed of different units, must be different in kind. In point of fact, since each Ideal number is unique, no two of them could be equal.

the same force. Hence they would seem to be mere coincidences, for they are accidental; but all the examples are appropriate to each other, and they are one by analogy. For there is analogy between all the categories of Being—as "straight" is in length, so is "level" in breadth, perhaps "odd" in number, and "white" in colour. 11

Again, it is not the Ideal numbers that are the causes of harmonic relations, etc. (for Ideal numbers, even when they are equal, differ in kind, since their units also differ in kind)[a]; so on this ground at least we need not posit Forms. 12

Ideal numbers cannot even express relations.

Such, then, are the consequences of the theory, and even more might be adduced. But the mere fact that the Platonists find so much trouble with regard to the generation of Ideal numbers, and can in no way build up a system, would seem to be a proof that the objects of mathematics are not separable from sensible things, as some maintain, and that the first principles are not those which these thinkers assume. 13

Hence the Platonists are clearly mistaken with respect to the first principles.

INDEX TO
ARISTOTLE'S METAPHYSICS

Books I–XIV

INDEX TO THE METAPHYSICS

THE OECONOMICA