AGAINST THE STOICS ON COMMON CONCEPTIONS

(DE COMMUNIBUS NOTITIIS ADVERSUS STOICOS)

(1079) εἶναι μήτ' ἐξ ἀληθῶν λημμάτων μήτ' ἐκ ψευδῶν μήτ' ἐξ ⟨ἁπλῶν μήτ' ἐξ οὐχ ἁπλῶν.⟩[1]

39. Ἐπὶ δὲ τούτοις ἐπινεανιευόμενός φησι τῆς πυραμίδος ἐκ τριγώνων συνισταμένης τὰς πλευρὰς κατὰ τὴν συναφὴν ἐγκεκλιμένας[2] ἀνίσους μὲν εἶναι μὴ ὑπερέχειν[3] δὲ ᾗ μείζονές εἰσιν. οὕτως ἐτήρει τὰς ἐννοίας. εἰ γὰρ ἔστι τι μεῖζον καὶ μὴ ὑπερέχον, ἔσται τι μικρότερον καὶ μὴ ἐλλεῖπον, ὥστε καὶ ἄνισον μήθ' ὑπερέχον μήτ' ἐλλεῖπον, τουτέστιν ἴσον τὸ ἄνισον καὶ οὐ μεῖζον τὸ μεῖζον οὐδὲ μικρότερον
E τὸ μικρότερον. ἔτι τοίνυν ὅρα τίνα τρόπον ἀπήντησε Δημοκρίτῳ, διαποροῦντι φυσικῶς καὶ ἐμψύχως[4] εἰ κῶνος τέμνοιτο παρὰ τὴν βάσιν ἐπιπέδῳ, τί χρὴ διανοεῖσθαι τὰς· τῶν τμημάτων ἐπιφανείας,

[1] ⟨. . .⟩ -supplied by H. C. (*cf. S.V.F.* ii, p. 66, 28-30); ἐξ . . . vac. 10+8 -E; vac. 16 -B; ⟨ἀδυνάτων μήτ' ἐκ δυνατῶν⟩ -Pohlenz.

[2] Bernardakis; ἐκκεκλιμένας -E, B.

[3] Leonicus, Basil.; ὑπάρχειν -E, B.

[4] ἐπιτυχῶς or εὐφυῶς -Wyttenbach (εὐλόγως in *Index Graec. Plutarchi*).

[a] Both of which the Stoics would declare to be impossible, for they insisted that every proposition is either true or false (*S.V.F.* ii, frags. 166, 186, 187, 192, 193, 196; see note *b* on 1066 E *supra*) and either atomic or molecular (*S.V.F.* ii, frags. 182, 203, 205; Mates, *Stoic Logic*, pp. 28-33).

[b] *S.V.F.* ii, frag. 489 (p. 159, 31-34).

[c] Chrysippus meant that they do not protrude (*cf.* Aristotle, *Categories* 10 a 23 with Porphyry, *Categ.*, p. 134, 11-12) beyond the straight edge in which any two of the triangular faces meet and which is their common *πέρας*, although down that edge the faces become continuously larger. By *κατὰ τὴν συναφὴν ἐγκεκλιμένας* he could not have meant "inclined towards the apex," and as reported here he did not say that adjacent sides or faces are unequal to each other or refer to laminae into which the pyramid is divided by parallel sections or to any process of convergence to a

argument is made up of premises that are neither true nor false, neither ⟨atomic nor molecular.⟩[a]

39. In addition he has the audacity to say[b] that the pyramid, being composed of triangles, has its faces unequal, to be sure, as they are inclined along the juncture but without exceeding where they are larger.[c] This was his way of preserving the common conceptions. For, if there is something larger without exceeding,[d] there will be something smaller without falling short, so that there will also be something unequal without either exceeding or falling short, that is what is unequal will be equal and what is larger will not be larger or what is smaller smaller. Furthermore, look at the way in which he met[e] the difficulty raised by Democritus[f] scientifically and vividly with the question, if a cone should be cut by a plane parallel to its base,[g] what one must suppose

imit,—all of which is read into the passage by Sambursky (*Physics of the Stoics*, pp. 94 and 140-141), as some of it was by Luria before him (*Quellen und Studien zur Geschichte der Mathematik*, B ii [1933], pp. 171-172). Luria conjectured that Chrysippus had borrowed this example of the pyramid from the Atomists, whereas it is more probable that he put it forward as counter-evidence in his polemic against Democritus about the cone (1079 E-F *infra*).

[d] The word which Chrysippus had used in its meaning "to protrude" is now taken in its common mathematical sense, for which *cf.* Plato, *Phaedo* 96 E 3-4 and *Parmenides* 150 D 5–E 5; Aristotle, *Topics* 125 a 20-22; Nicomachus, *Arithmetica Introductio* I, xvii, 3 (p. 44, 13-20 [Hoche]).

[e] *S.V.F.* ii, frag. 489 (pp. 159, 34–160, 8).

[f] Democritus, frag. B 155 (D.-K.).

[g] Contrary to what Heiberg, Heath, and many others have asserted this does not imply "indefinitely near to the base"; for the expression *cf.* Aristotle, *Topics* 158 b 31 with [Alexander], *Topics*, p. 545, 7-12 and Archimedes, *De Sphaera* I, xvi, lemma 2 (I, p. 74, 1 [Heiberg]).

(1079) ἴσας ἢ ἀνίσους γιγνομένας· ἄνισοι μὲν γὰρ οὖσαι τὸν κῶνον ἀνώμαλον παρέξουσι, πολλὰς ἀποχαράξεις λαμβάνοντα βαθμοειδεῖς καὶ τραχύτητας· ἴσων δ' οὐσῶν, ἴσα τμήματα ἔσται καὶ φανεῖται τὸ τοῦ κυλίνδρου πεπονθὼς ὁ κῶνος, ἐξ ἴσων συγκείμενος καὶ οὐκ ἀνίσων κύκλων, ὅπερ ἐστὶν ἀποπώτατον. ἐνταῦθα δὴ τὸν Δημόκριτον ἀποφαίνων ἀγνοοῦντα
F τὰς μὲν ἐπιφανείας φησὶ μήτ' ἴσας εἶναι μήτ' ἀνίσους ἄνισα δὲ τὰ σώματα τῷ μήτ' ἴσας εἶναι μήτ' ἀνίσους τὰς ἐπιφανείας. τὸ μὲν δὴ νομοθετεῖν τῶν

[a] How Democritus resolved the dilemma, if he tried to do so, is not indicated here or elsewhere. Some have thought that by it he meant to prove the inapplicability of atomism to mathematics (O. Apelt, *Beiträge zur Geschichte der griechischen Philosophie* [Leipzig, 1891], pp. 265-266; A. Wasserstein, *J.H.S.*, lxxxiii [1963], p. 189). It is usually assumed, however, that the dilemma is somehow connected with the theorem concerning the volume of a pyramid (and of a cone?), the undemonstrated enunciation of which is ascribed to Democritus (Archimedes, *Opera Omnia* iterum ed. J. L. Heiberg, II, p. 430, 2-9); and on this tenuous basis some scholars have maintained that he believed the cone to consist of an infinite number of infinitely thin laminae (*e.g.* Sir Thomas Heath, *A History of Greek Mathematics* i, pp. 179-181) and others that he believed it to consist of a large but finite number of atom-thin laminae (J. Mau, *Zum Problem des Infinitesimalen bei den antiken Atomisten* [Berlin, 1954], pp. 22-25) or of sub-atomic and mathematically indivisible magnitudes (S. Luria, *Quellen und Studien zur Geschichte der Mathematik*, B ii [1933], pp. 138-148). The way in which he came to the theorem being unknown, however, it is possible that theorem and dilemma had entirely different contexts, for he may have posed the latter as a stumbling-block for Protagoras in his polemic against him (*cf.* Democritus, frags. A 114 and B 156 with Protagoras, frag. B 7 [D.-K.] and R. Philippson, *Hermes*, lxiv [1929], pp. 180-182).

[b] This does not imply, as Plutarch contends (1080 B *infra*),

the surfaces of the segments prove to be, equal or unequal :—for, if unequal, they will make the cone uneven by giving it many step-like notches and asperities ; and, if they are equal, the segments will be equal, and the cone, being composed of circles that are equal and not unequal, will manifestly have got the properties of the cylinder—which is the height of absurdity.[a] Here is just where Chrysippus declares Democritus to be in ignorance and says that the surfaces are neither equal nor unequal but the bodies are unequal in that the surfaces are neither equal nor unequal.[b] Now really, to ordain that, the

that Chrysippus posited " an intermediate between equal and unequal which is neither one nor the other." Such a *μέσον* or *τρίτον γένος* (S. Luria, *op. cit.*, p. 139 [see note *c* on 1079 C *supra*]) is ruled out by Plutarch's own unwitting testimony to the Stoic assertion that the predicates " equal " and " not-unequal " are equivalent (1080 C [page 826, note *b*] *infra*). Nor has the passage anything to do with the " limiting process " read into it by Sambursky (*Physics of the Stoics*, pp. 93-95). Chrysippus meant simply that neither of the predicates, " equal " and " unequal," is applicable to what Democritus called the " surfaces," because these are in fact just the single geometrical plane which cuts the cone into segments and is the incorporeal *πέρας* of their division and contact (see 1080 E *infra*). The " equality " or " inequality " of the surfaces in the dilemma of Democritus implies a " cut " that is not geometrical but physical and so is the removal of an intervening segment, however fine ; and this is why Chrysippus went on to say (1080 A *infra*) that the nicks envisaged in the first horn of the dilemma are produced by the inequality of the bodies (*i.e.* the segments remaining after the removal of the physical " cut ") and not by any inequality of the supposedly contiguous surfaces, which in geometrical division are the one common *πέρας*. When this is taken twice in thought, as Aristotle would say (*e.g. Physics* 263 a 23-26 and b 12-14), to be the upper surface of one segment and the lower of the next, it is because " they,"

(1079) ἐπιφανειῶν μήτ' ἴσων ⟨μήτ' ἀνίσων⟩[1] οὐσῶν τὰ σώματα συμβαίνειν ἄνισα εἶναι θαυμαστὴν ἐξουσίαν αὐτῷ[2] τοῦ γράφειν ὅ τι ἂν ἐπίῃ διδόντος ἐστί. τοὐναντίον γὰρ ὁ λόγος μετὰ τῆς ἐναργείας[3] νοεῖν δίδωσι τῶν ἀνίσων σωμάτων ἀνίσους εἶναι τὰς ἐπι-
1080 φανείας καὶ μείζονα τὴν τοῦ μείζονος, εἴ γε μὴ μέλλει τὴν ὑπεροχήν, ᾗ μεῖζόν ἐστιν, ἐστερημένην ἐπιφανείας ἕξειν. εἰ γὰρ οὐχ ὑπερβάλλουσι τὰς τῶν ἐλαττόνων ἐπιφανείας αἱ τῶν μειζόνων ἀλλὰ προαπολείπουσιν, ἔσται[4] σώματος πέρας ἔχοντος μέρος ἄνευ πέρατος καὶ ἀπεράτωτον. εἰ γὰρ λέγει ὅτι βιαζόμενος οὕτω ⟨ταύτας νοεῖσθαι σῴζει τὸν κῶνον, ἐλέγχεται φάσκων·⟩[5] "ἃς γὰρ ὑφορᾶται περὶ τὸν κῶνον ἀναχαράξεις ἡ τῶν σωμάτων ἀνισότης δήπουθεν οὐχ ἡ τῶν ἐπιφανειῶν ἀπεργάζεται." γελοῖον οὖν τὸ τὰς ἐπιφανείας ὑπεξαιρούμενον[6] ἐν τοῖς σώμασιν ἐλεγχομένην[7] ἀπολιπεῖν ἀνωμαλίαν. ἀλλ' ἂν μένωμεν ἐπὶ τῆς ὑποθέσεως,
B τί μᾶλλόν ἐστι παρὰ τὴν ἔννοιαν ἢ τὰ τοιαῦτα πλάττειν; εἰ γὰρ ἐπιφάνειαν ἐπιφανείᾳ θήσομεν μήτ' ἴσην εἶναι μήτ' ἄνισον, καὶ τὸ μέγεθος ἔσται μεγέθει φάναι[8] καὶ ἀριθμὸν ἀριθμῷ μήτ' ἴσον εἶναι

[1] μήτ' ἴσων ⟨μήτ' ἀνίσων⟩ -Bernardakis after Wyttenbach (μὴ ἴσων ⟨μήτ' ἀνίσων⟩ or μὴ ⟨ἀν⟩ίσων); μὴ ἴσων οὐσῶν -E, B.
[2] αὑτῷ -Stephanus (αὐτῷ -Basil.); αὐτὰ -E, B.
[3] Leonicus, Basil.; ἐνεργείας -E, B.
[4] ἔσται -E; ἔστω -B.
[5] ⟨. . .⟩ -supplied by H. C.; ουτω . . . vac. 14+16 . . . ἃς -E; οὕτω . . . vac. 32 . . . ἃς -B; οὕτω ⟨τὴν ἐνάργειαν ἐλέγχεται (Δημόκριτος), αὐτὸν ἐλέγχει φάσκων·⟩ "ἃς -Pohlenz.
[6] E; ἐξαιρούμενον -B.
[7] B; ἐλελεγχομένην -E.
[8] Stephanus; φᾶναι -E, B.

being really one, are neither equal nor unequal that the continuous segments so delimited can be unequal.

surfaces being neither equal ⟨nor unequal⟩, the bodies are consequently unequal is the mark of a man who gives himself amazing licence to write whatever comes into his head, for what reason together with clear apprehension[a] provides is the contrary conception that of unequal bodies the surfaces are unequal and the surface of the larger body is larger, unless, of course, this body is to have the excess by which it is larger deprived of a surface. For, if the surfaces of the larger bodies do not exceed those of the lesser but leave off before doing so, there will be of body that has a limit a part that is without limit and so limitless. For, if he says that by insisting upon such ⟨a conception of these surfaces he saves the cone, he is confuted by his own remark:⟩ "for the nicks in the cone about which he has misgivings are produced by the inequality of the bodies, surely, and not by that of the surfaces."[b] It is ridiculous, then, to exclude the surfaces and in the bodies leave unevenness confirmed. If, however, we adhere to the assumption, what is more at odds with the common conception than to imagine things like this? For, if we do affirm that surface is neither equal nor unequal to surface, it will be possible also to say of magnitude in relation to magnitude and of number in relation to number that it is neither equal nor un-

[a] See 1074 B and 1070 C (page 745, note *b*) *supra*.
[b] ἃς γὰρ . . . ἀπεργάζεται, as Pohlenz saw, are certainly the words of Chrysippus (the subject of ὑφορᾶται being Democritus); and the sentence should have been included in *S. V.F.* ii, 489. For its meaning in the reply of Chrysippus to Democritus see note *b* on 1079 F *supra*.

(1080) μήτ' ἄνισον, καὶ ταῦτ' ἴσου καὶ ἀνίσου[1] μέσον, ὃ μηδέτερόν[2] ἐστιν, οὐκ ἔχοντας εἰπεῖν οὐδὲ νοῆσαι δυναμένους. ἔτι δ' οὐσῶν ἐπιφανειῶν μήτ' ἴσων μήτ' ἀνίσων, τί κωλύει καὶ κύκλους νοεῖσθαι μήτ' ἴσους μήτ' ἀνίσους; αὐταὶ[3] γὰρ δήπουθεν αἱ τῶν[4] κωνικῶν τμημάτων ἐπιφάνειαι κύκλοι εἰσίν· εἰ δὲ κύκλους, καὶ διαμέτρους κύκλων θετέον μήτ' ἴσους μήτ' ἀνίσους· εἰ δὲ τοῦτο, καὶ γωνίας καὶ τρί-
C γωνα καὶ παραλληλόγραμμα καὶ παραλληλεπίπεδα καὶ σώματα. καὶ γὰρ εἰ μήκη ἐστὶ μήτ' ἴσα μήτ' ἄνισα ἀλλήλοις, καὶ βάθος[5] ἔσται καὶ πλάτη[6] καὶ σώματα. εἶτα πῶς τολμῶσιν ἐπιτιμᾶν τοῖς τὰς κοινότητας[7] εἰσάγουσι καὶ ἀμερῆ τινα κινήματα μαχομένως[8] μήτε κινεῖσθαι μήτε μένειν ὑποτιθεμένοις, αὐτοὶ τὰ τοιαῦτα ἀξιώματα ψευδῆ λέγοντες

[1] ταῦτα ἴσου καὶ ἀνίσου -Basil. ; ταύταις οὐκ ἀνίσου -E, B.
[2] ὃ μηδέτερόν -Wyttenbach ; ὃ μὴ δεύτερον -E, B ; τὸ μηδέτερόν -Aldine.
[3] αὐταὶ -Basil. ; αὐτὰ -E, B.
[4] αἱ τῶν -Wyttenbach ; ὄντων -E, B.
[5] βάθος -Bernardakis (βάθη -Wyttenbach) ; βάρος -E, B.
[6] πλάτη -Wyttenbach ; πληγὴ -E, B.
[7] κενότητας -Leonicus.
[8] κινήματα μαχομένως -H. C. ; καὶ μαχόμενον -E, B ; καὶ μαχόμενα -Basil. ; καὶ Ἀχιλλέα -Wyttenbach ("nisi forte complura exciderunt") ; καὶ ἐνδεχόμενον -Rasmus [*Prog.* 1872, p. 22) ; καὶ μαχόμενον <τὸ> -Pohlenz.

[a] Body being traditionally defined by the three dimensions (*cf.* Aristotle, *Topics* 142 b 24-25), though later with the addition of ἀντιτυπία to distinguish physical body from geometrical solid : *cf. Dox. Graeci*, p. 310 A 9-12 and p. 449, 6-11 ; *S.V.F.* ii, frag. 357 (with p. 127, 5-7 and p. 162, 29-31) and iii, p. 259, 24-26 ; Sextus, *Adv. Math.* i, 21 and ix, 367.

[b] τολμῶσιν . . . ὑποτιθεμένοις is one Stoic "fragment" and the rest of the sentence (αὐτοὶ . . . ἐστὶ ταῦτ' ἀλλήλοις) another, neither of which is to be found in *S.V.F.*

equal, and that too though we are unable to mention and cannot even conceive an intermediate between equal and unequal which is neither one nor the other. Moreover, given surfaces neither equal nor unequal, what's to prevent the conception of circles also neither equal nor unequal ? For the surfaces of the conic segments are themselves, I presume, circles. And, if circles, one must affirm that diameters of circles too are neither equal nor unequal ; and, if so, angles also and triangles and parallelograms and parallelepipeds and bodies, for, if lengths are neither equal nor unequal to one another, so will it also be in the case of depth and breadths and so of bodies,[a] Then how do the Stoics dare to censure [b] those who adduce the common characteristics [c] and who suppose certain indivisible movements to be self-contradictorily neither in motion nor at rest,[d] when they say themselves that propositions like the fol-

[c] On these the Epicureans based their analogical inferences against which the Stoics polemized (*cf.* P. H. and E. A. De Lacy, *Philodemus : On Methods of Inference* [Philadelphia, 1941], p. 23, n. 1 and pp. 162-171), the kind of argument used by Epicurus (*Epistle* i, 58-59) to establish the existence of the minimal and partless parts that constitute the atom and measure it (*cf.* ἡ γὰρ κοινότης . . . ἱκανὴ τὸ μέχρι τούτου συντελέσαι [pp. 17, 20–18, 1, Usener]). The "emendation" of Leonicus adopted by subsequent editors is therefore unnecessary and wrong.

[d] The text is corrupt, and the exact restoration is uncertain ; but ἀμερῆ should be governed by ὑποτιθεμένοις (*not* by εἰσάγουσι), and in view of ἀμερῆ . . . μήτε κινεῖσθαι μήτε μένειν what the Stoics are here said to censure is most probably the doctrine ascribed to Epicurus in frag. 278 (Usener), on which *cf.* J. Mau, *Philologus*, xcix (1955), pp. 99-111. According to Plutarch (1073 E—1074 A *supra*) the Stoics themselves had said that "neither at rest nor in motion" is true of τὸ πᾶν.

(1080) εἶναι· " εἴ τινα μή ἐστιν ἴσα ἀλλήλοις, ἐκεῖνα ἄνισά ἐστιν ἀλλήλοις " καὶ " οὐκ ἔστι μὲν ἴσα ταῦτ' ἀλλήλοις, οὐκ ἄνισα δ' ἐστὶ ταῦτ' ἀλλήλοις "; ἐπεὶ δέ φησιν εἶναί τι μεῖζον οὐ μὴν ὑπερέχον, ἄξιον ἀπορῆσαι πότερον ταῦτ' ἐφαρμόσει ἀλλήλοις. εἰ
D μὲν γὰρ ἐφαρμόσει, πῶς μεῖζόν ἐστι θάτερον; εἰ δ' οὐκ ἐφαρμόσει, πῶς οὐκ ἀνάγκη τὸ μὲν ὑπερέχειν τὸ δ' ἐλλείπειν; ⟨ἢ⟩[1] τῷ μηδέτερον ὑπερέχειν[2] καὶ οὐκ ἐφαρμόσει τῷ μείζονι [ἢ][3] καὶ ἐφαρμόσει τῷ[4] μεῖζον εἶναι θάτερον; ἀνάγκη γὰρ ἐν τοιαύταις ἀπορίαις γίγνεσθαι τοὺς τὰς κοινὰς ἐννοίας μὴ φυλάττοντας.

40. Καὶ μὴν τὸ μηδενὸς ἅπτεσθαι μηδὲν παρὰ

[1] ⟨ἢ⟩ -added by Madvig (*Adversaria Critica*, p. 671).
[2] Leonicus; ὑπάρχειν -E, B.
[3] [ἢ] -deleted by H. C.; τῷ μεῖζον εἶναι -Madvig (*loc. cit.*).
[4] τῷ -H. C. (τῷ ⟨μὴ⟩ -Madvig, *loc. cit.*); τὸ -E, B.

[a] The Stoics are right in calling this proposition false, for μὴ εἶναι ἴσα, " not to be equal," is not the same as εἶναι μὴ ἴσα, " to be not-equal " (*cf.* Aristotle, *Anal. Prior.* 51 b 25-28).

[b] This is the regular form of a Stoic negation of a conjunction (*cf.* 1084 D *infra* and Mates, *Stoic. Logic*, p. 31). It was inattention to this that led to the excision or " emendation " of the οὐκ before ἄνισα. Literally translated the proposition is " not (*i.e.* not both): these are equal to each other and these are not-unequal to each other." Since according to the Stoics this negation is false, they held to be true the corresponding unnegated proposition, " *both* these are equal to each other *and* these are not-unequal to each other," *i.e.* equal and not-unequal are equivalent. Plutarch, however, must have taken the negated proposition to mean " these aren't equal and not unequal " in the sense that they aren't equal without being not-unequal and the Stoics to

lowing are false: " if certain things aren't equal to each other, those things are unequal to each other " [a] and " it is not so that these things are equal to each other and are not-unequal to each other " ? [b] And, when Chrysippus says that there is something larger without, however, exceeding, it is proper to raise the question whether these things [c] will coincide with each other. For, if they will coincide, how is one larger [d]; and, if they won't, how can it fail to be necessary for one to exceed and the other to fall short? ⟨Or⟩ will it both not coincide and coincide with the larger, the former in that neither exceeds and the latter in that the other is larger? [e] For such are the difficulties into which those who do not observe the common conceptions necessarily get themselves.

40. Moreover,[f] the proposition that nothing

have declared this to be false. In short, he misinterprets the first example to mean that they denied the equivalence of οὐκ ἴσα and ἄνισα and the second to mean that they denied the equivalence of ἴσα and οὐκ ἄνισα. So the initial οὐκ before ἔστι should not be excised either, as it was by D. Konstan (*Class. Rev.*, N.S. xxii [1972], pp. 6-7), who has generously informed me by letter that he has had second thoughts about this proposal.

[c] *i.e.* the μεῖζον οὐ μὴν ὑπερέχον and the μικρότερον καὶ μὴ ἐλλεῖπον, which Plutarch thinks is implied by the former (see 1079 D *supra*).

[d] *Cf.* Euclid, *Elements* i, κοιναὶ ἔννοιαι 7.

[e] This is a sarcastic question formulated upon the pattern of ἄνισα . . . τῷ μήτ' ἴσας μήτ' ἀνίσους . . . (1079 F *supra*) and on the basis of μὴ ὑπερέχειν δὲ ἢ μείζονές εἰσιν (1079 D *supra*) as Plutarch understands it. Will Chrysippus in accordance with this, he asks, say that just because neither surface exceeds the other the two do *not* coincide and because one is larger than the other they *do*?

[f] καὶ μὴν . . . πανομένοις = *S. V. F.* ii, frag. 486.

(1080) τὴν ἔννοιάν ἐστιν. οὐχ ἧττον δὲ τοῦτο,[1] ἅπτεσθαι μὲν ἀλλήλων τὰ σώματα μηδενὶ δὲ ἅπτεσθαι. τοῦτο δ' ἀνάγκη προσδέχεσθαι τοῖς μὴ ἀπολείπουσιν ἐλάχιστα μέρη σώματος ἀλλ' ἀεί τι[2] τοῦ δοκοῦντος ἅπτεσθαι πρότερον λαμβάνουσι καὶ μηδέποτε τοῦ
E προάγειν ἐπέκεινα παυομένοις.[3] ὃ γοῦν αὐτοὶ μάλιστα προφέρουσι τοῖς τῶν ἀμερῶν προϊσταμένοις, τοῦτ' ἐστὶ τὸ μήθ' ὅλοις ὅλων ἁφὴν εἶναι μήτε μέρεσι μερῶν· τὸ μὲν γὰρ οὐχ ἁφὴν ἀλλὰ κρᾶσιν ποιεῖν, τὸ δ' οὐκ εἶναι δυνατόν, μέρη τῶν ἀμερῶν οὐκ ἐχόντων. πῶς οὖν οὐκ αὐτοὶ τούτῳ περιπίπτουσι, μηδὲν μέρος ἔσχατον μηδὲ πρῶτον ἀπολείποντες;[4] ὅτι νὴ Δία ψαύειν[5] κατὰ πέρας τὰ σώματ' ἀλλήλων, οὐ[6] κατὰ μέρος λέγουσι· τὸ δὲ πέρας σῶμα οὐκ ἔστιν. ἅψεται τοίνυν σῶμα σώματος ἀσωμάτῳ καὶ οὐχ ἅψεται πάλιν, ἀσωμάτου μεταξὺ ὄντος. εἰ

[1] τούτου ⟨τὸ⟩ -Pohlenz.
[2] ἀλλ' ἀεί τι -Wyttenbach ; ἀλλὰ εἴ τι -E, B.
[3] τοῦ . . . παυομένοις -Wyttenbach ; τοὺς . . . παυομένους -E, B.
[4] Bernardakis ; ἀπολιπόντες -E, B.
[5] νὴ Δία ψαύειν -Wyttenbach ; μὴ διαψαύειν -E, B.
[6] ἀλλήλων, οὐ -H. C. ; ὅλα ὅλων οὐ -E, B ; ⟨οὐχ⟩ ὅλα ὅλων οὐ⟨δὲ⟩ -Wyttenbach ; ⟨ἀλλ' οὐχ⟩ ὅλα ὅλων οὐ⟨δὲ⟩ -Pohlenz.

[a] *Cf.* Sextus, *Adv. Math.* ix, 258-266. This is presented here as one of the alternative absurdities implied by the Stoic theory of *πέρας* (*ἅψεται τοίνυν . . . καὶ οὐχ ἅψεται πάλιν . . .* [1080 E *infra*]) ; it does not refer, as Luria supposes, to a denial of *ἁφή* by atomists (*Quellen und Studien zur Geschichte der Mathematik*, B ii [1933], pp. 154-155 and n. 129).

[b] *i.e.* of whatever part is taken to be in contact they take a part nearer than the whole of the former to that with which it is supposed to be in contact, and they continue this process indefinitely. See page 812, note *a supra* ; and

touches anything [a] is at odds with the common conception ; and not less so is this, that bodies do touch one another but touch one another with nothing. Yet this must be accepted by those who do not admit minimal parts of body but are always taking some part before that which seems to be touching and never cease from going on beyond it.[b] At any rate, their own chief objection to the advocates of indivisibles is this,[c] that there is contact neither of wholes with wholes nor of parts with parts, for the result of the former is not contact but blending [d] and the latter is not possible, since indivisibles do not have parts.[e] How is it, then, that they do not fall into this trap themselves, since they admit no last part and no first either ? Because they say, by heaven, that bodies are in contact with one another at a limit, not at a part ; and the limit is not body.[f] Well then, body will touch body with an incorporeal [g] and, again, will not touch it, since an incorporeal is between them.[h] And, if it does touch, it will be by

cf. Sextus, *Adv. Math.* ix, 261 = *Pyrrh. Hyp.* iii, 45-46 (p. 130, 10-16 [Bekker]).

[c] *ὃ γοῦν αὐτοὶ . . . σῶμα οὐκ ἔστιν* = *S.V.F.* ii, frag. 487.

[d] *Cf.* Sextus, *Adv. Math.* ix, 260 and *Pyrrh. Hyp.* iii, 42 and 45 (p. 130, 8-10 [Bekker]) ; [Aristotle], *De Lin. Insec.* 971 a 28-30. For the contrary see 1078 B *supra* : *οὕτω γὰρ οὐ κρᾶσις ἁφὴ δὲ καὶ ψαῦσις. . . .*

[e] *Cf.* Sextus, *Adv. Math.* iii, 35 and ix, 387 ; Aristotle, *Physics* 231 b 2-6 with Simplicius, *Phys.*, p. 927, 1-9.

[f] *Cf. S.V.F.* ii, frag. 488 ; Cleomedes, *De Motu Circulari* I, i, 7 (p. 14, 1-2 [Ziegler]) ; and see note *c* on 1078 E *supra*.

[g] *Cf.* the similar inference drawn by Philoponus (*De Generatione*, pp. 158, 27–159, 3 and p. 160, 7-11) concerning the atoms of Leucippus and Democritus : . . . *διὰ τοῦ κενοῦ· τούτῳ γὰρ ἅπτονται ἀλλήλων.*

[h] *Cf.* Sextus, *Adv. Math.* ix, 265 and iii, 82 = ix, 435.

(1080) δὲ ἅψεται, καὶ ποιήσει τι καὶ πείσεται[1] τῷ ἀσω-
F μάτῳ τὸ σῶμα· ποιεῖν γάρ τι καὶ πάσχειν ὑπ' ἀλ-
λήλων τῷ[2] ἅπτεσθαι τὰ σώματα πέφυκεν. εἰ δὲ
ἁφὴν ἴσχει τῷ ἀσωμάτῳ τὸ σῶμα, καὶ συναφὴν
ἕξει καὶ κρᾶσιν καὶ συμφυΐαν. ἔστιν ἄρ'[3] ἐν ταῖς
συναφαῖς καὶ κράσεσιν ἢ μένειν ἀναγκαῖον ἢ μὴ
μένειν ἀλλ' ἐφθάρθαι τὰ πέρατα τῶν σωμάτων.
ἑκάτερον δὲ παρὰ τὴν ἔννοιάν ἐστι· φθορὰς μὲν γὰρ
ἀσωμάτων καὶ γενέσεις οὐδ' αὐτοὶ καταλείπουσι,
1081 κρᾶσις δὲ καὶ συναφὴ σωμάτων ἰδίοις χρωμένων
πέρασιν οὐκ ἂν γένοιτο. τὸ γὰρ πέρας ὁρίζει καὶ
ἵστησι τὴν τοῦ σώματος φύσιν· αἱ δὲ κράσεις εἰ μὴ
μερῶν παρὰ μέρη παραθέσεις εἰσὶν ⟨ἀλλ'⟩ ἀλλή-
λοις[4] ὅλα τὰ κιρνάμενα συγχέουσιν, ὥσπερ οὗτοι
λέγουσι, φθορὰς ἀπολειπτέον[5] περάτων ἐν ταῖς μί-
ξεσιν εἶτα γενέσεις ἐν ταῖς διαστάσεσι· ταῦτα δ'

[1] E; πήσεται -B.
[2] τῷ -Giesen (*De Plutarchi . . . Disputationibus*, Theses *ad loc.*), implied by Xylander's version; καὶ -E, B.
[3] ἔστιν ἄρ' -Pohlenz; ἔτι γὰρ -E, B.
[4] ⟨ἀλλ'⟩ ἀλλήλοις -H. C. (ἀλλήλοις ⟨ἀλλ'⟩ -Wyttenbach); ἀλλ' ὅλοις -Bernardakis.
[5] ἀπολειπτέον -E, B (but with ει superscript over η -B[1]).

[a] The change of καὶ ἅπτεσθαι to τῷ ἅπτεσθαι is required by the argument, of which Pohlenz makes nonsense by changing ποιεῖν γάρ to ποιεῖν δέ. According to the Stoics only bodies ποιεῖ καὶ πάσχει ὑπ' ἀλλήλων (see note *g* on 1073 E *supra*); but, if it is by an incorporeal limit that bodies touch one another, it must be by an incorporeal that they act upon one another, for this they do only by touching one another even according to the Stoics themselves (*S.V.F.* ii, frags. 342 and 343). With this *cf.* the sceptical arguments (Sextus, *Adv. Math.* ix, 255 and 258) that, surface being incorporeal, a material effect cannot be produced by superficial contact and that, contact being impossible, there can be neither agent nor patient.

what is incorporeal that the body produces an effect and is affected, for it is by touching that bodies naturally produce an effect and are affected by one another.[a] And, if body gets contact by what is incorporeal, so will it also have conjunction and blending and coalescence.[b] Then it is necessary that in the conjunctions and blendings the limits of the bodies either remain or not remain but have been destroyed; but either alternative is at odds with the common conception, for not even the Stoics themselves allow destruction and generation of incorporeals and there could not be blending and conjunction of bodies possessed of their own limits.[c] For the limit bounds and fixes[d] the nature of the body; and, if blendings are not the juxtapositions of parts to parts ⟨but⟩, as these men say, fuse with one another in their entirety the things being blended,[e] one must admit destruction of the limits in the minglings and then their generation in the segregations,

[b] All three of these Stoic degrees of unification are used by Plutarch in *Conjugalia Praecepta* 142 E—143 A. *Cf.* also *S.V.F.* ii, p. 302, 18-21 and iii, p. 38, 7-9; for συναφή *S.V.F.* ii, p. 124, 20-22 and p. 129, 13; and for συμφυΐα Plutarch, *Adv. Colotem* 1112 A and Philo Jud., *In Flaccum* 71 (vi, p. 133, 6 [Cohn-Reiter]).

[c] *Cf. S.V.F.* ii, p. 158, 13; Simplicius, *Categ.*, p. 125, 5-6 (on Aristotle, *Categories* 5 a 1-6).

[d] The text is sound (*pace* Sandbach, *Class. Rev.*, N.S. iv [1954], p. 249 and *Class. Quart.*, N.S. vi [1956], pp. 87-88); *cf. De Defectu Orac.* 428 F (. . . ὁρίζουσα καὶ καταλαμβάνουσα . . .), *De An. Proc. in Timaeo* 1023 C (. . . ὁρίζων καὶ περιλαμβάνων . . .) and 1015 E (. . . οὐκ ἀνέστησε τὴν ὕλην . . . ἀλλ' ἔστησεν . . .).

[e] See 1077 E-F and 1078 B-C *supra*; here too συγχέουσιν is used without regard to the Stoic distinction between σύγχυσις and κρᾶσις (see note *c* on 1078 A *supra*).

(1081) οὐδεὶς ἂν ῥᾳδίως νοήσειεν. ἀλλὰ μὴν[1] καθ' ὅ γε ἅπτεται τὰ σώματα ἀλλήλων κατὰ τοῦτο καὶ πιέζεται καὶ θλίβεται καὶ συντρίβεται ὑπ' ἀλλήλων· ἀσώματον δὲ ταῦτα πάσχειν ἢ ποιεῖν οὐ δυνατόν, ἀλλ' οὐδὲ διανοητόν[2] ἐστι. τοῦτο δὲ βιάζονται
B νοεῖν ἡμᾶς. εἰ γὰρ ἡ σφαῖρα τοῦ ἐπιπέδου κατὰ σημεῖον ἅπτεται, δῆλον ὅτι καὶ σύρεται κατὰ σημεῖον διὰ τοῦ ἐπιπέδου· κἂν ᾖ μίλτῳ[3] τὴν ἐπιφάνειαν ἀληλιμμένη,[4] μιλτίνην ἐνομόρξεται τῷ ἐπιπέδῳ γραμμήν· ⟨κἂν ᾖ⟩[5] πεπυρωμένη,[6] πυρώσει τὸ ἐπίπεδον· ἀσωμάτῳ[7] δὲ χρώζεσθαι καὶ ἀσωμάτῳ πυροῦσθαι σῶμα παρὰ τὴν ἔννοιάν ἐστιν. ἂν δὲ δὴ κεραμεᾶν[8] ἢ κρυσταλλίνην[9] σφαῖραν εἰς ἐπίπεδον φερομένην λίθινον[10] ἀφ' ὕψους νοήσωμεν, ἄλογον εἰ μὴ συντριβήσεται, πληγῆς πρὸς ἀντίτυπον γενομένης, ἀποπώτερον δὲ τὸ συντριβῆναι κατὰ πέρας καὶ σημεῖον ἀσώματον προσπεσοῦσαν. ὥστε πάν-
C τῃ[11] τὰς περὶ τῶν ἀσωμάτων καὶ σωμάτων αὐτοῖς ταράττεσθαι προλήψεις μᾶλλον δ' ἀναιρεῖσθαι, πολλὰ τῶν ἀδυνάτων παρατιθεμένοις.

[1] μὴν -Basil. ; μή τι -E ; μήτοι -B (τοι superscript).
[2] van Herwerden ; διανοητέον -E, B.
[3] ᾖ μίλτῳ -Leonicus (ἡ μίλτῳ -Basil.) ; ἡ μία τῷ -E, B.
[4] Basil. ; ἀληλιμμένην -E, B.
[5] ⟨κἂν ᾖ⟩ -supplied by Bernardakis ; γραμμὴν . . . vac. 5 -E ; vac. 7 -B . . . ; ⟨ὡσαύτως⟩ -Westman.
[6] Basil. ; πεπυρωμένην -E, B ; πεπυρρωμένη, πυρρώσει . . . πυρροῦσθαι -Bernardakis (". . . estant jaulne, elle jaulnira . . ." -Amyot).
[7] Madvig (*Adversaria Critica*, p. 671) ; ἀσώματον -E, B.
[8] Dübner ; κεραμέαν -E, B.
[9] E ; κρυσταλίνην -B.
[10] Leonicus, Basil. ; πίθινον -E, B.
[11] ἀνάγκη -Castiglioni (*Gnomon*, xxvi [1954], p. 84).

and these processes no one could easily conceive.[a] But, furthermore, it is where bodies touch each other that they are also pressed and squeezed and crushed by each other ; and for an incorporeal to do these things or have them done to it is not possible,—nay, it is not even thinkable. Yet this is the conception that they force upon us. For, if the sphere touches the plane at a point, it is also obviously drawn over the plane on a point ; and, if its surface has been smeared with ruddle, it will tinge the plane with a red line[b] ⟨and, if⟩ it has been heated, it will make the plane hot. But for body to be tinged by an incorporeal and to be made hot by an incorporeal is at odds with the common conception. And, finally, if we imagine a sphere of earthenware or of crystal falling from a height on a plane of stone, it is unreasonable that it will not be crushed at its impact upon a resistant object but more absurd for it to be crushed by impinging on a limit, that is an incorporeal point. The result is that the preconceptions about incorporeals and bodies are everyway upset or rather are annihilated by the Stoics' associating with them[c] many of their impossible notions.

[a] *Cf.* the Aristotelian position that the *πέρατα* like "forms" supervene and disappear instantaneously without being subject to the processes of becoming and perishing : Aristotle, *Metaphysics* 1002 a 28–b 11, 1044 b 21-29 (*cf.* Cherniss, *Aristotle's Criticism of Plato . . .*, notes 279 and 424) ; and *De Caelo* 280 b 6-9 with Simplicius, *Phys.*, p. 998, 16-19.

[b] *Cf.* Sextus, *Adv. Math.* iii, 27. It has been suggested that the argument derives ultimately from Protagoras (O. Apelt, *Beiträge zur Geschichte der griechischen Philosophie*, p. 263 ; S. Luria, *Quellen und Studien zur Geschichte der Mathematik*, B ii [1933], p. 119).

[c] For *παρατιθεμένοις* in this sense *cf.* Plato, *Phaedo* 65 E 8.