## ARCHIMEDES

## in the Middle Ages

## VOLUME TWO THE TRANSLATIONS FROM THE GREEK

BY WILLIAM OF MOERBEKE

PART III: VARIANT READINGS, COMMENTARY, DIAGRAMS AND INDEXES

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# Variant Readings for the Texts of William of Moerbeke's Archimedean Translations

## Variant Readings for the Liber de quam pluribus [de figuris elicis]

The readings are based on MSS O and R in toto and hyb., 12rA-14rL. A superscript number following a Latin word here and in the Commentary does not refer to a footnote but rather to the ordinal instance of that word in the cited passage. Notice once more that Moerbeke's Greek marginalia were written without breathings, accents and iota subscripts for the most part. Further, he wrote a normal sigma (o) in place of a final sigma (c). Moerbeke customarily indicated the transposition of words or phrases by the use of pairs of double strokes over the items to be transposed. I have represented such double strokes by umlauts. Thus in the variant reading for 29rP I have given "ad ipsam minorem" as an indication that Moerbeke had written double strokes over "ad" and "minorem." Moerbeke's intention here was that "ad ipsam" and "minorem" should be transposed thus: "minorem ad ipsam."

- 11vA Incipit... theorematibus rubr. m. 1 Liber Archimedis de figuris elicis sive... R (residuum non possum legere) / Archimedis: -im- corr. m. 1 (?) ex -ym- et Archi- et -e- renov. m. 3 (in atramento nigro) / supra quam pluribus scr. m. 3 volutis / [de figuris elicis] addidi / [Proemium] addidi / mittis: mandas mg. m. 3 / michi: -c- del. m. 3 / quidem renov. m. 3
- 11vB Eraclide: H- add. m. 3 Heraclide R / et<sup>2</sup>: que (?) R hic et aliubi
- 11vC metodi: -h-add. m. 3 methodi R / consuetudinem: intelligentiam supra scr.m. 3 / quamcunque: vulgarem mg. m. 3
- 11vD autem4: aut R
- 11vE insinuare R, quaedam litterae evan. in O / spera: -h- inseru. m. 3 hic et ubique / planum spatium tr. R
- 11vF Secundum autem R et in ras. m. 3
- 11vI Eraclides: H- add. m. 3
- 11vJ alicui: -cui ex corr. m. 3 aliqua R
- 11vK emioliam: h- add. m. 3
- 11vM emisperium: h-add. m. 3 / conoydalis m. 1 et R -oi- m. 3 hic et aliubi
- 11vN decise: -e ex corr. m. 3 decisum R / -[n]- R
- 11vO emiolia: h- add. m. 3 / descindentia corr. m. 1 ex decindentia
- 11vP vertice: verticibus m. 3 / post ipsorum add. m. 3 ductis / descindentia corr.
  m. 1 ex decindentia / nunc: dum m. 3; mg. m. 1 ουτω forte ουπω / elicas: helices m. 3 / -lutiones: -lutas m. 3 / volutiones vel revolutiones in ras. m. 1 / quas... vocant del. m. 3

- 11vQ aliud supra scr. m. 1
- 11vR elicem: h-add. m. 3 hic et quasi ubique / de Dico... recte mg. scr. m. 1 infra 24
- 11vS de Et... periferie mg. scr. m. 1 infra 18 / sit R fit m. 3 (?); cf. gr.
- 11vT incepit: inceperunt m, 3 / erit: fore m. 3
- 11vT-U de Et... est<sup>4</sup> mg. scr. m. 1 demonstratur infra the (theoremate?) 27
- 11vU ante fore est lac. 6 litt. in ras.
- 11vV post in 4 litt. evan. / educta in ras. m. 1
- 11vV-X de Et... excessus<sup>2</sup> mg. scr. m. 1 infra 28
- 11vW ante periferia scr. et del. m. 1 circulatione | ea que ad ex corr. m. 1 | intermedia m. 1 R intermediae m. 3 | ente: enti m. 3 | ante periferia del. m. 1 circulatione | maioris R et corr. m. 1 ex minoris | que 3... eam mg. add. m. 1 inferius
- 11vX ad<sup>1</sup>... maioris mg. add. m. 1 / in hoc libro et demonstrationes tr. R et m. 3 (i.e. m. 3 add. signa transponendi supra in hoc libro et demonstrationes)
- 11vY assumptiones corr. m. 1 ex sumptiones / ante ipsum del. m. 1 ipsorum
- 12rA 1 evan. m. 1, rep. mg. m. 3; R om. omnes numeros / in<sup>2</sup> om. R
- 12rB compositionem: -m R hyb. et in ras. plur. litt. m. 1
- 12rD post tanto add. m. 3 per(cf. hyb.) / post unamquamque mg. add. m. 3 delatum est / hec: eadem mg. m. 3 hoc R
- 12rF excedet: excedit m. 3 / proportionalis: omologus mg. m. 3 / 2 evan. m. 1, rep. m. 3
- 12rH id in ras. m. 3 eius R
- 12rI 3 evan. m. 1, rep. m. 3
- 12rJ 4 evan. m. 1, rep. m. 3
- 12rJ-K de prop. 4 mg. scr. m. 1 (vis. per u.v.) ostensum erat in primo theoremate [eius de spera et cylindro] ("eius... cylindro" non possum legere sed cf. commentum)
- 12rK quotiens R quoties (?) O / ante ipsi add. m. 3 sibi
- 12rL erit<sup>2</sup>: est m. 3 / 5 evan. m. 1, rep. m. 3
- 12rO 6 m. 1 et non rep. m. 3
- 12rP secantem R et in ras. m. 3 / eam que supra scr. m. 3 / post copulata seq. ras. 5 litt.
- 12rQ ductam ad ipsam: äd ipsam düctam O (signa transp. in m. 1) ad ipsam ductam R; in mg. MS O scr. m. 1 (vis. per u.v.) επαυταν αγμεναν
- 12rR habeat<sup>1</sup>: habebit m. 3
- 12rS mg. scr. m. 1 aliquid quod non possum legere per u.v. / supra incidere scr. m. 3 secare / GL<sup>1</sup> in ras. m. 3, om. R / 7 mg. m. 1 (vis. per u.v.); rep. m. 3 / et ea R et in ras. m. 3
- 12rT ante ad¹ mg. add. m. 3 rectam (sed non in gr.) / supra ultimo scr. m. 3 termino / supra ultimum scr. m. 3 terminum / ductam ad ipsam: äd ipsam düctam O (signa transp. in m. 1) ad ipsam ductam R hyb. / data² R, m. 1 (?) date in ras. m. 3
- 12rU igitur erit R, in ras. m. 3 / ad IN nuen-in ras. m. 3 autem ad IN (vel M?) R

- 12rU-V nuentem . . . H om. R / -tem<sup>1</sup> . . . H mg. m. 3; cf. hyb.
- 12rV 8 mg. m. 1 (vis. per u.v.); rep. m. 3 / ad contingentem hyb. et ex corr. m. 3, om. R
- 12rW ad in ras. m. 1 vel m. 3 / statutam R et in ras. m. 3 / ductam ad ipsam R ad ipsam ductam O (signa transp. in m. 1) ad ipsam ductam hyb.
- 12rX supra autem scr. m. 3 itaque / est XG in ras. m. 1 / est maior tr. R
- 12vA ab<sup>1</sup>R, m. 1(?) sub in ras. m. 3 / XIL: XI, ILR / aR, m. 1(?) sub in ras. m. 3 / ab hiis<sup>1,2</sup> R, m. I (?) sub his in ras. m. 3 / KIN: KI, IN R
- 12vC 9 m. 1 (vis. per u.v.); rep. m. 3 / ductam ad ipsam R ad ipsam ductam O (signa transp. in m. 1)
- 12vE ab hiis R, m. 1 (?) sub his in ras. m. 3 hic et ubique in ista propos. / XIL<sup>1,2</sup>: XI,  $ILR / quod^3 \dots que m. 1$  (?) quod quidem ab R ei quidem quod sub his que in ras. m.
- 12vE-F ei...  $ab^1 R$ , m. 1 (?) id quod sub in ras. m. 3
- 12vF KIN<sup>1</sup>m. I (?) KI, INR KIXm, 3 (?) / KIN<sup>2</sup>: KI, INR / Est . . . GMR, in ras. m. 3
- 12vG est<sup>3</sup> om. R / accepta: excepta m. 3
- 10 m. 1 (vis. per u.v.); rep. m. 3 / ante quelibet del. m. 1 singula
- a (ab) R, m. 1 (?) sub in ras. m. 3 (hic et ubique; omisi multa exempla)
- 12vK de Est... continentur mg. scr. m. 1 (vis. per u.v.) ex quarta secundi eu[clidis]
- 12vK etc. hiis: -i- del. m. 3 (hic et ubique; omisi multa exempla)
- 12vM utraque: unaquaque mg. m. 3
- 12vN de duo<sup>2</sup>... T<sup>4</sup> et de duo<sup>3</sup>... T<sup>6</sup> mg. scr. m. 1 bis (vis. per u.v.) ex prima secundi eu[clidis] / a<sup>4</sup> m. 1 (?) sub in ras. m. 3 ad R
- 12vO sequente linea m. 1, R sequentis lineae m. 3
- 12vQ Totiens: equaliter mg, m. 3 / ipsa<sup>1</sup>: ipsi R / in A del. m. 3
- 12vR  $D^2$  supra scr. m. 3, om. m. 1 R
- 13rA [Corollarium] addidi
- 13rC 11 m. 1, non rep. m. 3
- 13rF ante EZ del. m. 1 EX
- 13rG ante habet del. m. 1 rationem / ante sine del. m. 1 ei (?)
- 13rH sunt<sup>2</sup> om. R / post OD<sup>2</sup> del. R DK
- S % corr. R ex sit / ZM: TM R / YX: YZX R 13rJ
- 13rM post que<sup>3</sup> del. R sunt
- 13rN post hiis² del. m. 1 que / quidem om. R / sint: sunt R
- 13rO ante EC scr. et del. m. 1 c (?)
- 13rP sunt<sup>1</sup> corr. R ex que in O
- 13rO [Corollarium] addidi
- 13rS [Definitiones] addidi
- 13rS-V numeros definitionum addidi
- 13rT elicem: h-add. m. 3 ubique / post elicem eras. m. 1 d (?) / supra revolutionem scr. m. 3 volutam
- 13rU post autem² del. m. 1 circum

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13rV et<sup>2</sup> R et add. m. 1 / eandem hyb. / post que del. m. 3 ad
13rW 12 evan. m. 1, rep. m. 3 / descripta[m]: -[m] addidi
13rX ab: ad R / angulos facientes: facientes angulos facientes R
13vB 13 m. I (et numeros omnium seq. prop. dat m. I solus)
13vD sed: si R / post duo<sup>2</sup> del. m. 1 incidentis / maiores... duple: μιζ εντι η
  διπλασιαι mg. m. I
13vF ante in del. m. 1 in (?)
13vL ante et<sup>2</sup> del. m. 1 ac (?)
13vM ipsum bis scr. m. 1 et del. primum
13vS periferia corr. m. 1 ex periferie
13vT HKT<sup>1</sup> hyb. KT OR
13vU AI mg. m. 1, et in textu corr. m. 1 ex AR
13vV descriptam<sup>2</sup>: descripta R
13vX est enim tr. R
13vY circuli periferia tr. R
14rA ducatur aliqua mg. m. 1, R hyb. / AG<sup>2</sup> ex corr. m. 1
14rB TKH mg. m. 1 (?) R hyb. -KH in ras. m. 1
14rC post ZA<sup>2</sup> del. m. 1 minorem / TKH<sup>2</sup>: -KH in ras. m. 1 / TKH<sup>3</sup>: THK m. 1 hic et in
  14rF-G, THK R et gr.
14rG ante NA<sup>2</sup> del. m. 1 N / post itaque del. m. 1 si
14rI ante ab¹ del. m. I ad/ipsa R et in ras. m. 1 (forte ipsius in m. 1)/minor est del.
  m. 1
14rJ ante RA del. m. 1 A
14rK de periferia mg. scr. m. 1 scilicet tota / THK - HK in ras. m. 1
14rK-L est enim tr. R
14rN ante CZ<sup>2</sup> del. m. 1 T (?)
14rP ipsius bis R
14rQ CMN<sup>1</sup> corr. m. 1 ex MN / que quidem bis m. 1; corr. m. 1 / CR<sup>4</sup>: ER R
14rV circulatione add. m. 1
14vB ante linea del. m. 1 minor
14vC-D de Habebit... AL<sup>1</sup> scr. mg. m. 1 quia AR est equalis AD
14vE periferia DR cum mg. m. 1 / KMD<sup>1</sup>: -D ex corr. m. 1
14vI sectoribus: sector- in ras. m. 1
14vJ supra continente scr. m. 1 scilicet secto in duo
14vK equales per in ras. m. 1
14vL per<sup>1,2</sup> in ras. m. 1
14vM sectoribus: sector- in ras. m. 1
14vO [Corollarium] addidi
15rB [Corollarium] addidi
15rC dicta mg. R dca text. R
15rD
       a rectis mg. m. 1 et in textu corr. m. 1 ex recta
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15rE ducuntur corr. m. 1 ex ducitur
15rF qui corr. m. 1 ex quod
15rG circa mg. m. 1, om. R
15rH [Corollarium] addidi
15rJ [compositam] addidi
15rL donec R et mg. m. 1
15rO
      quam mg. m. l et etiam in textu
15rP excedentes: extendentes R
15rQ describuntur R et corr. m. 1 ex describantur
15vC tertia pars R et corr. m. 1 ex tertiam partem
15vH ante pauciores del. m. 1 minore / ipsis ex corr. m. 1
15vJ est ex corr. m. 1 / AZHI: -I in ras. m. 1
15vK TE<sup>2</sup>: T- in ras. m. 1
15vM ex in ras. m. 1
15vN facientes bis m. 1
15vO Quarum: quorum R
15vO AZHI<sup>1</sup> mg. m. 1
15vR ante contento del. m. 1 circum / [Corollarium] addidi
15vT
       unam R / tertia pars R et corr. m. 1 ex tertiam partem
15vU
       et rectis: et rect:: (?) m. 1, a rectis R / ductis ex corr. m. 1
       de productis mg. scr. m. 1 scilicet, a maiori et minori / quod² ex corr. m. 1 /
15vV
  ultimo: -o ex corr. m. 1
16rA concidat... ipsius scr. m. 1 etiam inf. mg. 15v / supra ipsius scr. m. 1 scilicet
  circuli
16rC
      Sit corr. m. 1 ex Si
16rD figura<sup>1</sup> R et corr. m. 1 ex figuram
16rK maxima<sup>2</sup>: -a in ras. m. 1 / excedentium: -um in ras. m. 1
16rL est in ras. m. 1 / descriptus: -us in ras. m. 1 / TE: T- in ras. m. 1
16rQ GT,TB corr. m. 1 ex GTB
16vA habeant: -ant in ras. m. 1
16vB enim mg. m. 1
16vD DT1: D- in ras. m. 1 / ergo et in ras. m. 1
16vE in add. m. 1 / DT, GE corr. m. 1 ex DTGE / TD, GE corr. m. 1 ex TDGE
16vF KLM[N]: -[N] addidi; lac. in O
16vK maioris supra scr. m. 1
16vL ad... maioris add. mg. m. 1 / in<sup>2</sup> add. mg. m. 1 / sit principium tr. R / recte
16vM HT1: AT gr. / HA1: -A add. m. 1 / NP: N- in ras. m. 1
16vP TA<sup>3</sup>: -A in ras. m. 1
16vR ab<sup>1</sup> in ras. 1 litt. m. 1
16vR-T forte de litteris falsis in istis lineis mg. scr. m. 1 ad hec stude hic usque in
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finem

#### Variant Readings for De centris gravium

O in toto, M 17rA-18rW, T 17rA-17vD

17rA Incipit... repentibus rubr. m. I / [Liber primus] addidi / Archimenidis MT / vel de: valde MT /  $ab^1$  om. T

17rA-E numeros petitionum addidi

17rC equalium: -um ex corr. m. 1 / similium: -um ex corr. m. 1 / figurarum planarum ex corr. m. 1 / adaptatarum ex corr. m. 1 ad aptatas M ad'aptatas T

17rD latera: -tera MT et in ras. m. 1 / repant: repent M

17rD-E Si... repent om. T

17rE eadem: eandem M eandem partem T / supposition is T

17rF non om. MT / repentium: repententem MT

17rG appositum est: apponitur T

17rH maior M; hic O mutil. / et equal- M; hic O mutil. / repentes: reperens MT

17rI minor M r O; hic O mutil. / equales: equalis M

17rJ et1 om. MT

17rK connectentis: contentis MT / centra: centrum T

17rL detento: dempto MT / repent: repentur T

17rM post gravitatis del. m. 1 com / centra: centrum T

17rN habeant ex corr. m. 1 / ante sint² del. m. 1 erunt / centra: centrum T

17rQ [Corollaria] [1] addidi / ante quia add. MT est / ante media del. m. 1 mag

17rR [2] addidi / connectentis: centris MT

17rS eadem ratione MT

17rT GE<sup>1</sup>: GC T / commensurata<sup>2</sup>: commensurat T / hoc est: hoc M he T / Qua[re] scripsi qua O quia MT ώστε gr. / de ponatur mg. scr. m. 1 iaceat

17rU HK<sup>2</sup>: KH MT / ita que: itaque MT hic et aliubi

17rV Z: XMT hic et ubique in ista prop. / per equale: διισου mg. m. 1 / sit²: sint MT

17rW igitur: ergo MT / in equalia: inaequalia T / que<sup>1</sup>: quam T / que<sup>2</sup>: quam T / earum: erunt MT / apponantur M

17rX E om. M (sed habet T) / ante sunt del. m. l sunt / autem om. MT / demonstrabitur: -i- ex corr. m. l demonstraretur MT

17rY adiacens: επιμειμενον mg. m. 1 / ante B del. m. 1 penes

17vA composite  $^1$  cf. gr. / que  $^2$ : quam T

17vB ipso<sup>1</sup> mg. corr. m. 1 ex ipsius quod habent MT / quidem igitur tr. MT

17vC -Z:-XMT hic et ubique in ista prop. / de Si... Dmg. scr. m. 1 in alio, si enim non equaliter repent (-n- del. m. 1), AB positum super Z, ipsi G posito super D

17vD H quo: H quomodo M quomodo T/de Et...  $G^2 mg. scr. m. 1$  hic discordant exemplaria

17vE de sit maius mg. scr. m. 1 in alio, maius est, potest equaliter repere ipsi A / ante recta del. m. 1 linea

17vF intermedia M / terminus absumpte del. (?) m. 1 sed scr. iterum in mg. / magnitudinis<sup>4</sup>: magnitudines M / ante AB del. m. 1 ipsius

17vG -Z: -X M hic et ubique / eandem: eadem M / T signum: X significari M

17vH ET: EX M / ante ipsi del. m. 1 dicte

17vJ dikhotomiam: dikhotumam M / dikhotomizata: dikhotomitata M

17vK EB: et EB M / ad invicem . . . ipsorum om. M

17vM T: IT M / est<sup>3</sup> supra scr. hic m. 1 et del. post gravitatis

17vN GD: et GD M

17vO autem<sup>1</sup> om. M / Que: quia M

17vQ -i quidem ABDM; hic O mutil. / -um Z (correxi ex X) palam M; hic O mutil. /  $quod^1$ : quidem M / -tis est me- M; hic O mutil.

17vR ad tri-M; hic O mutil. / gravitatis1: -tatis M; hic O mutil. / ducte: duc-M; hic O mutil.

17vS eiusdem rationis: ομολογοισ mg. m. 1 / Sint<sup>1</sup> (?) O Item M / ut que: uterque M / ita que: itaque M

17vT copuletur M

17vU correspondentia: cor-om. M / angulus corr. m. l ex angulis / ante EDN del. m. 1 EDH et mg. scr. H pro N et econtrario

17vV igitur: ergo M / et cetera: N, T centra M / sit corr. m. 1 ex sint habet M sin (!)

17vX que<sup>2</sup> om. M

18rA per equalem:  $\delta \iota \iota \sigma \circ \nu mg. m. l / equalem: equale M / hoc: hoc est M / et<sup>3</sup>: est M$ 

18rB eandem M / BGT: DGT M / scilicet: sed M

18rC hec: hoc M

18rD-F equidistanter m. 1 sed alias hoc est scriptum equedistanter

18rE producantur M / autem: alius M / post erit est lacuna in OM sed mg. scr. m. 1 ποκα / post T est lac. OM / -N M et mg. m. 1 -H text. O

18rF centra M

18rG  $ZG^2$  om. M / et gr., del. (?) m. 1, om. M

18rH maiorem<sup>1</sup>: minorem M / similia scr. m. 1 bis et del. primum

18rP [12.] om. O; addidi / apud: a po M / trigoni<sup>2</sup>: trigonis M

18rQ linearum: linea M / [13.] om. O; addidi

18rR lineas: linea M

18rS autem: aut M / ante AHD del. m. 1 et linea

18rT ducantur: ducatur M

18rU et om. M / ante DZ del. m. 1 DE

18rV BDG<sup>1</sup>: DBG M / ita<sup>1</sup>: ut M

18rV-W Ergo... ad PS om. M

18rW PZ: -Z in ras. m. 1

18vA [Liber secundus] addidi

18vB DEZ in ras. supra scr. m. 1

18vB-C et... T mg. m. 1

18vC DEZ<sup>1</sup> in ras. m.  $I / KH^1$  in ras. m.  $I / DEZ^2$ : -EZ supra scr. m. I

18vF post sectione del. m. 1 co (?)

18vG inscripti scematis corr. m. 1 ex inscripte figure

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18vP ita ut supra scr. m. 1 post del. quare / sint ex corr. m. 1 / minores mg. m. 1
18vR ex ex corr. m. 1
18vS scilicet ME mg. m. 1
18vV ZK<sup>1</sup> ex corr. m. 1 / post NE mg. scr. m. 1 respice aliud exemplar
18vX ad XO in ras. m. 1
19rD simul supra scr. m. 1
19rE C: vel Q mg. m. 1
19rI linea<sup>1</sup> corr. m. 1 ex lineam (?)
19rJ post gravitatis<sup>2</sup> del. m. 1 9
19rK post sectione del. m. 1 ex
19rP ante MN mg. scr. m. 1 in alio, erat plus ZH (cf. gr.)
19rS ante portio del. m. 1 puta
19rT ante equalis¹ inseru. m. 1 /: et mg. scr. in alio sic (utrumque falsum) /:
  quincupla ergo est que XE ipsius ET, hoc est, que DE ipsius ET; equalis enim
  est ipsi. Quare sexcupla est que DT ipsius TE et est ipsius DE tripla que BD,
  emiolia et cetera. / [que DE] addidi / [ipsius ET] addidi / [que BD] addidi
19vB [ad AD] addidi
          Quoniam.... AB<sup>2</sup> est probatio ex gr. MS B; vide inferius 20rA-P
19vB-R
  (In... demonstrare) quod est probatio ex gr. MS A
19vM [ad] addidi
19vO [ad] addidi / subponebatur: suponebatur (?) O
19vR ante HT del. m. 1 a / post AB est lacuna 2/3 columnae sed scr. m. 1 hic
  non est (?) intentum (?) spatium (?)
20rA-P In.... demonstrare est probatio ex gr. MS A
20rA [BD, hoc est, dupla simul utriusque AB, BG ad] addidi
20rC [et... GB] addidi
20rH DE<sup>1</sup>: ED m. l
20rM utriusque<sup>3</sup> ex corr. m. 1
20rO ex ipsa GB: vel, ex tripla ipsius GB mg. m. 1
20rP [10.] addidi
20rU ceciderit (?) m. 1
20rV principalis: αρχημη mg. m. 1 / sectionis: sec- mg. corr. m. 1 ex por- / post
  B del. m. 1 po
20rX [tres quintas] addidi, lac. O sed mg. scr. m. 1 \tau \alpha \overline{\gamma} in alio \tau \alpha \overline{\gamma} \theta'
20rZ de ON mg. scr. m. 1 in alio, ex dupla linee ON / post ergo del. m. 1 4 / a
  DH in ras. m. 1
20r\Pi supra ex<sup>2</sup> scr. m. 1 va- et supra ad<sup>2</sup> scr. -cat (mg. scr. m. 1 vacat
  secundum aliud exemplar)
20vD post que del. m. 1 MC
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#### Variant Readings for Quadratura parabole

- O in toto, MGT 20vE-21vE
- 20vE Liber... parabole rubr. m. 1 / Liber: liber incipit M et tr. post parabole / Archimedis: eiusdem Archimenidis M / [Proemium] addidi / Archymenides: Archimenides M / graviter mg. m. 1 / mirabile MGT
- 20vF theorizatum: theorematum MGT / de ab aliis mg. scr. m. 1 in alio, a nobis / mechanica: mathematicam MG mecanicam T / geometrica: geometriam MGT / sunt quidam: quidem MGT
- 20vG que quidem: οπερ mg. m. 1 / despecta sunt: κατεγνωσθεν mg. m. 1 20vH utique: ut que MGT / et1 om. MGT / epytrica MGT / inequalium: in equalium GT(M?)
- 20vI excessum: -cessum in ras. m. 1 / post invicem<sup>1</sup> del. m. 1 respc (?) / demonstrarunt (!) GT (sed non M) / ante speras add. MGT in / quod: quidem MGT / ante adhuc add. MGT Et
- 20vJ chilindri MGT / scripserunt: sumpserunt GT (sed non M)
- 20vK ante inductum del. m. 1 red / mechanica: mathematicam MG mecanicam T / hec autem tr. M (sed non GT) / qualiter: equaliter GT (sed non M) / geometricata MGT / demonstratur MGT / perscribentur MGT
- 20vL [1.] hic et deinceps numeros propositionum addidi / post autem¹ del. m. I S / sectionem <sup>1,2</sup>: sec- corr. m. 1 ex por- / paralelle MGT
- 20vM que om. GT (sed non M) hic et saepe / post contingentem scr. injuste m. 1 et delevi gentem / sectionem: sec-corr. m. 1 ex por- / post EG del. m. 1 que vero / erunt: erit MGT / equalis GT (sed non M)
- 20vN EZ1: ZE MGT / sectionem: sec- corr. m. 1 ex por-
- 20vO post G add. T in puncto T et circonferentia circuli in puncto H
- 20vP DA: AD GT (sed non M) / H: K G / HK: vel KI supra scr. m. 1, et post HK (HI, T) add. MGT aliter KI (IK, T) / longitudine ex corr. m. 1 / itaque MGT / supra -I<sup>1</sup> scr. m. 1 H et mg. scr. in alio KH / enim hoc tr. MGT / itaque<sup>2</sup> GT
- 20vQ ante BT<sup>1</sup> del. m. 1 et | BI om. MG et BI T | habet corr. m. 1 ex habebit | lineam4: lineas MGT
- 20vR ab A: A.B.A. G / ducatur<sup>2</sup> om. MGT / ZA a G: .2.A.A.G. G .z.a.a.g. T / eadem proportione ducta: eandem proportionem ducta MT eandem proportionem dicta G
- 20vS erit<sup>2</sup>: erunt GT
- 20vU post equa del. m. 1 pro sed scr. MGT pro / que1: qua MGT / AK: DK G (sed non MT)
- 20vV priore GT (sed non M) / autem<sup>2</sup>: ergo MGT
- 20vW eandem MGT / [deorsum] addidi ex gr. MS G / alteram MGT / autem<sup>3</sup> in ras. m. 1 / aliud: illud GT (sed non M) / alia in ras. m. 1
- 20vX assimulatur G (sed non MT) / producte: ducte MGT

- 20vY catheti: kathoti G katheti MT / post que¹ add. GT (sed non M) est / mechanicis: mathematicis MG mecanicis T / igitur om. MGT
- 20vZ statutum: -atu- in ras. m. 1 / kathetum MGT / BDG: BGD MGT / ante similiter del. m. 1 sp
- 21rA suspensi MGT / BDG<sup>1</sup>: DBG MGT / ergo: ego G (sed non MT)
- 21rB Sit autem trigonum GDH om. MGT / ambligonum GT (sed non M)
- 21rC nunc: autem MGT / quoddam: quidem MGT / ex: 1 MGT
- 21rD repat MGT / apprenssum G (sed non MT) / GDE: DGE GT (sed non M)
- 21rF Accipiantur MGT / GDE<sup>3</sup>: DGE GT (sed non M)
- 21rG Quare... Z om. MG Ergo spatium Z maior est T
- 21rH ambligoniam G (sed non MT) / cum: tum GT (sed non M) / habenti: habente GT (sed non M) / habeat: habet GT (sed non M)
- 21rI DBHK GT / trapezale corr. m. 1 ex trapelzale
- 21rJ Suspendatur... B, H om. MGT / BDKH2: BDHK MGT
- 21rK BD<sup>1</sup>: DB MGT / EN: e enim G en enim T / trapezat M trapezale GT / mechanicis: mathematicis MG mecanicis T
- 21rL maneat T / eade M eadem GT / hec: h' O hoc MGT αὐτά gr.
- 21rN habeat: habet GT (sed non M) / DKRT: DHRT MGT
- 21rO ipsius om. MGT / apud: a. p. d. MG / tendens MGT
- 21rP habente corr. m. 1 ex habenti (?)
- 21rQ TI in ras. m. 1 TB MGT / eadem GT (sed non M)
- 21rR eadem: eandem MGT
- 21rS tendentia: cadentia 1 MG cadentia T / katheti MGT
- 21rT habeat<sup>1,2</sup>: habet GT (sed non M)
- 21rU a<sup>2</sup> om. MGT
- 21rV que¹ om. MGT / quotcunque: quecunque MGT / ZH, HI: ZH, HR M z.h.r. G z.h.i. T
- 21rW assumatur MGT
- 21rX  $\Psi^1$ : X MGT (hic et ubique) / CH: EH MG (sed non T) / repet: repit MGT
- 21rY utique: itaque GT (sed non M)
- 21rZ EF: BE quam que SE ad lineam EF MG (sed non T) / CH: EH MG (sed non T)
- 21vA NI: HI G (sed non MT)
- 21vB ante rursum habet T theor. xv, prop. xv / BA: AB GT (sed non M)
- 21vC post ita² add. GT (sed non M) ipsum / et² om. MGT / eandem MGT / trapezali³: trapezale MGT /  $\Omega$  :  $\omega$  d G (sed non MT)
- 21vD post sunt del. m. 1 sq sed scr. MG s. q. et T scilicet
- 21vE est<sup>2</sup> om. MGT / trapezalium: trapezale MGT / spatio<sup>2</sup>: spatium GT (sed non M)

(After this point I have included no more variant readings from MGT for this tract.)

- 21vG eam: -am in ras. m. 1 / ante G<sup>1</sup> del. m. 1 b / ante a<sup>4</sup> del. m. 1 at
- 21vJ [cum] addidi / ante spatium<sup>5</sup> del. m. 1 Datu (?)
- 21vL [propositum] addidi
- 22rB BTG<sup>5</sup> corr. m. 1 ex BDG
- 22rD [coni] addidi
- 22rI ante A, G del. m. 1 AG
- 22rJ [Corollarium] addidi
- post est<sup>2</sup> del. m. 1 q 22vB
- altitudinem<sup>2</sup> corr. m. 1 ex altitudines (?) / residue mg. corr. m. 1 ex 22vC
- 22vE ante itaque del. m. 1 autem
- 22vH post est<sup>2</sup> del. m. 1 p / parabole in ras. m. 1

#### Variant Readings for Circuli Dimensio

#### OMGT in toto

- 22vI Archimedis... dimensio in ras. m. 3, om. M Archimedis Syracusani liber GT / [1] addidi / perimetur GT perimet' M
- 22vJ kathetus MGT / NX<sup>1,2</sup> hyb. et corr. m. 1 ex NZ
- 22vK perimetur<sup>1,2</sup> MGT / rectus hyb. et corr. m. 1 ex recta et habent MGT recta
- 22vL OZAM OM ORAM G OKAM T / PZA OM PRA G PKA T / post quia del. m. I quii (?)
- 22vM katheto MGT / trigoni<sup>1</sup>: trigono GT (sed non M) / [2] addidi / perimetur MGT / basi MGT / dyametro MT hic et aliubi; non cit. postea / Sit: Si M / post Sit add. MGT enim
- 22vN duplam MGT / -Z: -r GT hic et ubique / Quoniam: unde MGT / post quod² del. m. / i (?) / post quod supra scr. m. 3 e / sed: videlicet MGT / AGDZ m. 1 M -Ddel. m. 3
- 22vO kathetus MGT / excedens (vel excedere?) O excedere (?) M excedit GT / [3] addidi / diametri<sup>2</sup>: diameter G dyameter T
- 22vP post minori add mg. m. 3 quidem / post quam¹ scr. et del. M prima / primis in ras. m. 1 (?) primi M / que<sup>1,2</sup> del. m. 3 in rubore / GLZ: GK MG GR T / qui ex corr. m. 3 quia MGT / sub m. 3 / Z-: r- GT (hic et ubique) / tertia corr. m. 1 ex tertius (?) / Que<sup>1,2</sup> del. m. 3 hic et ubique in rubore; postea non cit. / EG autem m. 3 in rubore / post GZ add. m. 3 mg. maiorem
- 22vQ qui ex corr. m. 3 que MGT / sub<sup>1</sup> supra scr. m. 3 / ZH: KH G RH T / componenti et permutatim m. 3 in rubore / permutatum GT / EG<sup>2</sup> om. MG et EG T / ad<sup>8</sup> om. GT sed hab. M / post potentia add. m. 3 majorem / 349450 om. MG 349- in lac. m. 1 (?) / 23409 in lac. m. 1 13409 T / 5911/8: -1/8 mg. add. m. 3 quod om. MGT / secetur<sup>2</sup> OMGT, del. m. 3 in rubore / equa<sup>2</sup> add. m. 1 MGT / que OMGT qui ex corr. m. 1 vel m. 3

23rB maiorem<sup>1</sup>: minorem MG mimorem T / proportionem<sup>1</sup>: propotionem T / 153<sup>1</sup>: 1503 T / qui<sup>1</sup> ex corr. m. 1; etiam in MGT / longitudinem MGT / 4673½: -6- in ras. m. 1 -½ add. m. 3; hoc non habent MGT / pars ex corr. m. 1 / post recti<sup>1</sup> scr. et del. m. 1 re (?) / quater in equa MGT et corr. m. 1 ex quadruplum in / quatter M / 48<sup>a</sup> M et ex corr. m. 1 48 GT / ipsi M et ex corr. m. 1

23rC 24<sup>a</sup> M et ex corr. m. 1 / que<sup>1</sup> del. m. 1 vel m. 3 / latus (?) del. m. 1 (?) om. MGT / latera supra scr. m. 1, MGT / ostensa: extensa MGT / -½: s (semis?) m. 1, et hab. M 7 et GT .7 quod leg. 1/7

23rD 4673½ (primum): -½: s m. 1 M.5GT/667½: -½: s m. 1 M.5GT/que quidem ipsorum in ras. m. 1/4673½ (secundum): 4673s supra scr. m. 1 et hab. M (sed GT.5) δχογ L' in greco exemplari mg. m. 1 (vis. per u.v.) / quam² in ras. m. 1/perimetrum GT

23rE tertia corr. m. 1 ex tertius / ad<sup>1</sup>: ab GT / 1351: 1-m. 3 351 m. 1 MGT / ad 780: ad 780 que autem AG ad GB quam 1560 mg. m. 3 / Secetur del. m. 3 / equa supra scr. m. 1, hab. MGT et del. m. 3 (?) / qui<sup>3</sup> om. MGT / sub<sup>4</sup> om. MGT / HGB<sup>1</sup>: HAG T / HGB<sup>2</sup>: HGB ergo MGT / AHG<sup>1</sup>: HAG m. 3 / qui<sup>8</sup> ex corr. m. 1, MGT / rectus corr. m. 1 ex recta; habent MGT rectis / tertius corr. m. 1 ex tertia; habent MGT terminatis

23rF qui<sup>1</sup> corr. m. 1 ex que / equalis add. m. 3 / tertio corr. m. 1 ex tertie / que: qui MGT / GZ<sup>1,2</sup>: GR GT / simulutraque<sup>1</sup>: -utrumque G -utrunque T / Et . . . BG om. MGT / AH<sup>2</sup>: A- in ras. m. 1 / post quam del. m. 1 illa

23rF-G quidem ... minorem mg. m. 1 MGT

23rG post minorem  $^1$  mg. add. m. 3 quam illa / 3013  $\frac{1}{2}$   $\frac{1}{4}$ :  $-\frac{1}{2}$   $\frac{1}{4}$  m. 3  $-\overline{3}$   $\frac{1}{4}$  m. 1  $\gamma'\delta'$  gr. MS A et mg. m. 1 (vis. per u.v.); hab. M 3  $\overline{4}$  et GT .3.4 / qui  $^1$  ex corr. m. 1 / Que AT om. MGT / eadem: eandem MGT / 5924  $\frac{1}{2}$   $\frac{1}{4}$  corr. m. 3 ex 5324  $\overline{3}$   $\overline{4}$  m. 1 (sed pro  $\overline{3}$   $\overline{4}$  mg. scr. m. 1 [vis. per u.v.]  $\varepsilon'\delta'$ ); hab. M 5324 3  $\overline{4}$  et GT 5324.3.4 / 240: -4- ex corr. m. 3 250 m. 1 MGT / utriusque ex corr. m. 1 / 4/13 in ras. m. 3, om. MGT  $\overline{\Delta}$   $\iota\gamma'$   $\alpha'$  gr. MS A et mg. m. 1 (vis. per u.v.) / aut MGT; in ras. hab. m. 3 quam / -9/11 mg. m. 3, corr. ex  $\overline{9}$  m. 1 (hab. M  $\overline{9}$  et GT .9 et hab. gr. MS A et mg. m. 1 [vis. per u.v.]  $\theta'$ ?); post 1838 9/11 lac. O

23rH 1007: -7 ex corr. m. 1, MGT / 66 in ras. m. 3 266 m. 1 MGT / utriusque ex corr. m. 1 / post utriusque add. MGT extimo / 11/40 in ras. m. 3, om. MGT et pro 11/40. Que AG hab. gr. MS A et mg. m. 1 (vis. per u.v.) οιμαι / Que AG supra scr. m. 3, om. M / KG quam om. MGT et lac. M / KG quam 1009 ½ in ras. m. 3 / 1009 ½ 6: 1076 MGT / qui sub ex corr. m. 3 que sub MGT / LA: LI MGT / 2016 ½ 6: ½ in lac. m. 1 5 mg. m. 1 (vis. per u.v.) et M hab. 6 et hab. GT .6 / 2017 ½: ½ in lac. m. 1 δ mg. m. 1 (vis. per u.v.) et M. hab. 4 et hab. GT .4

23rI 6336: -36 in ras. m. 3 6301.6 M 6301.6 GT / 2017 ¼ (primum): 2017- in ras. m. 3 - ¼ in ras. m. 1 7012.4 M 7012 GT / ipsorum m. 1 MGT / 2017 ¼ (secundum):  $-\frac{1}{4}$  in ras. m.  $1\overline{4}$  M / et 10/71: et  $10.\overline{71}$  m. 1 710.71 GT; inter 10 et  $.\overline{71}$  del. m. I sep et hab. M lac. et mg. hab. m. I (vis. per u.v.)  $\overline{\iota}$  o'  $\alpha'$  (?)/ eius O ei MGT / triplus<sup>1</sup> m. 1 MGT tripla m. 3 / post maior<sup>2</sup> del. m. 1 quam illa /10/71 (secundum):  $10.\overline{71}$  in ras. m. 1, M / adhuc: ad hunc MGT / triplus<sup>3</sup> m. 1 MGT tripla m. 3 / maior<sup>3</sup>: -r renov. m. 3 / autem quam decem septuagesimunis add. m. 3, om. MGT

#### Variant Readings for De spera et cylindro

#### O in toto

- 23vA Mg. super. eras. m. 1 (vis. per u.v.) Incipit liber Archimenidis (?) de spera et cylindro / Liber . . . cylindro rubr. m. 1 / supra Liber add. m. 3 primus / Archimedis corr. m. 3 ex Archimenidis (?) / spera: sphera m. 3 / [Proemium] addidi
- 23vD diametro: diametro spere est emiolius etc. mg. m. 1 / est supra scr. m. 1
- 23vE et  $^1$  in ras. m. 3
- 23vF insignes: in- in ras. m. 3 / post neque est lac. 2 vel 3 litt.
- 23vH et ex corr. m. 3 (?) / [1] et seq. numeros addidi / ipsarum del. m. 1 et tr. post ultima
- 23vJ habent<sup>2</sup> corr. m. 1 ex habentes
- 23vL habent: habuerint mg. m. 2 / ita ut mg. corr. m. 1 ex quatinus
- 23vM comprehenditur<sup>1</sup>: -atur m. 2 / aut<sup>2</sup> del. m. 1 (?) / post altera<sup>2</sup> del. m. 1 superficiei / comprehenduntur: comprehenditur ex corr. m. 1 comprehendantur mg. m. 2 / habent: habeat mg. m. 2
- 23vN planam (?) ex corr. m. 1 / comprehendatur m. 2 / superficie: -cies m. 2 / supra superficie scr. m. 2 altera
- 23vO comprehenditur<sup>1</sup>: comprehendatur m. 2 / habet: habeat m. 2
- 23vO [1] m. 3
- 23vS 2 et sequentes numeros dat m. 1 (quandoque vis. per u.v.) et rep. m. 3 / datis inequalibus m. 1
- 23vT HE<sup>1</sup> in ras. m. 1 (?) / HE<sup>2</sup> corr. m. 1 (?) ex ZE (?)
- 23vV inequalibus supra scr. m. 1 (?) / est<sup>2</sup> supra scr. m. 1
- polygonii<sup>2</sup>: de similibus poligoniis intelligit mg. m. 1 / post B add. m. 3 23vW mg. quarum maior sit A
- 23vW-X mg. scr. m. 1 (vis. per u.v.)... quod fiat per premissam. Si super T describatur semicirculus et in eo accipietur a principio diametri equalis LB sub premissa (?) residuum semicirculi erit (? ente?) equalis (? equali?) LM
- 23vX GE ex corr. m. 1 vel m. 2 vel m. 3
- 23vZ post periferia scr. et del. m. 1 ea / ante equilateri del. m. 1 isopleuri

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23vΘ NG: HNG mg. m. 1 (vis. per u.v.) et etiam gr. MS A / ante eo del. m. 1
    eius / C ex corr. m. 1
 24rC ante que del. m. 1 quam
 24rD ante similiter del. m. 1 adiungatur equalis ipsi H
 24rH sicut didicimus: propositio 3ª supra mg. m. 1 (vis. per u.v.)
 24rI oppos. Et mg. scr. m. 1 (vis. per u.v.) dupla
 24rJ 6 scr. m. 1 mg. ante Demonstrandum in 24rL
 24rK quia del. m. 3 et supra scr. quod
 24rL de Demonstrandum etc. est magna rasura m. 1 mg. infer. quam non possum
   bene legere per u.v. quod dixit et pre __ per argumenta (?)... demonstr__ de
   poligoniis inscriptis... vult (?) in hac sexta conclusione demonstrare de
   circumscriptis
 24rN supra spatio scr. m. 1 B
 24rQ in mg. m. 3
 24rR ipsam corr. m. 1 ex ipsi
 24rT quidem del. m. 1 vel m. 3
24rU ADG mg. m. 3 / que<sup>3</sup> m. 1 qui m. 3
24rV post perimetro<sup>2</sup> del. m. 1 ADG / ABG<sup>2</sup> corr. m. 1 ex ADG
24rX DEZ mg. m. 3
24vA supra lineam scr. m. 1 vel m. 2 latus et del. -m in equalem / ante HA2 del.
   m. 1 catheto
24vG ADG2 corr. m. 1 vel m. 3 ex ADB
24vH sumemus: derelinquemus mg. scr. m. 2 / accepte: relicte mg. scr. m. 2
24vI ante EDB<sup>2</sup> del. m. 1 ADE
24vK ADG3: -G ex corr. m. 3
24vO sumptione: λημματι (?) mg. m. 1 (vis. per u.v.) / post ZEG mg. scr. m. 1, sed
  non in gr. MSA dupla sunt ad ipsa trigona AHE, HEZ, ZEG. Similiter quoque que
  sub cathetis et basibus trigonorum AED, DEG dupla sunt ad ipsa trigona AED,
  DEG. Minora ergo trigona AHE, HEZ, ZEG simul sumpta (del. [?] m. 2 vel m. 3)
  trigonis AED, DEG simul sumptis (del. [?] m. 2 vel m. 3)
       sit spatium Tm. 1; lac. in gr. MSA / Quod . . . due in lac. add. m. 1 et mg. scr.
  deficit in greco/post non¹ del. m. 1 (?) minus/habentis E: scr. et del. in text. m. 1
  habens E; in mg. scr. m. 1 habentis E cum ipsa trapezali HAGZ et postea del. m. 1
  (?) cum... HAGZ et scr. excepti (?)
24vQ trigoni ABG: trigono AEG mg. m. 3 / ABG<sup>2</sup>: ABE m. 2 vel m. 3 (?)
24vR ZEG<sup>2</sup> supra scr. m. 3
24vU -acceptis<sup>1,2</sup>: -derelictis m. 3
24vV AEH: A- in ras. m. 1 / trigona<sup>2</sup>: trigo- in ras. m. 3
25rC maius est: maiora sunt mg. m. 3
25rD trigona: portiones plane mg. m. 3 / bases forte corr. m. 1 ex basis / plana:
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trigonis mg. m. 3 / supra super scr. m. 3 (?) ad / concava: -a m. 1 et post -a

add. m. 3 (?) -e

- 25rE trigonis corr. m. 3 ex trigona
- 25rF post H mg. scr. m. 2 Et cylindralis ergo superficies abscisa a rectis AG, BD, et portiones plane que AE, EB, GZ, ZD maiora sunt ipso AGBD parallelogrammo et spatio H, ablate autem portiones plane AE, EB, GZ, ZD spatio H minores
- 25rH parallelogramma: -a in ras. m. 1 (?)
- 25rl parallelogrammis: -is corr. m. 1 (?) ex -a
- 25rI-L basis: cf. gr. MS A
- 25rJ -lineorum: -orum del. m. 3 et scr. -is / post GLZMD<sup>1</sup> mg. m. 2 terminum habet ipsius AGBD parallelogrammi planum, et altera alteram comprehendit et ambe ad eadem concave sunt, maior igitur est cylindralis superficies abscisa a rectis AG, BD et portiones plane que AEB, GZD. Quoniam composita superficies ex parallelogrammis, quorum bases quidem que AT, TE, EK, KB, altitudo autem eadem cum cylindro, et rectilineis que sunt ATEKB, GLZMD
- 25rK cum<sup>1</sup> supra scr. m. 1
- 25rQ post contingens mg. scr. m. 1 circulum et existens parallela ipsi AG in duo equa secta periferia ABG apud B / latere: -e del. m. 2 vel m. 3 et supra scr. -ibus / ante EH del. m. 1 EZ
- 25rR post EZ, ZG<sup>1</sup> mg. scr. m. 1 (partim vis. per u.v.) quia ergo parallelogramma que super AH, HG lineis (?) et altitudinis (?) chilindri . . . . AE, EZ, ZG (hoc non possum bene legere, sed cf. comment.) / Et del. m. 2 vel m. 3
- 25rS ante ei del. m. 1 ex superficie / secundum supra scr. m. 1
- 25vA post superficie add. m. 3 preter basim
- 25vD bases mut. m. 2 vel m. 3 in basem
- 25vF bases mut. m. 2 vel m. 3 in basem
- 25vG intelligatur: intelligitur hoc mg. m. 3 / post prisma mg. scr. m. 1 equalis altitudinis chylindro
- 25vL [ut] et [ita] addidi
- 25vN [A] addidi; cf. gr.
- 25vO-P <in>scriptum... cylindri add. dext. mg. m. 2 et iterum superius mg. m. 2 sed pro scriptum hab. inscriptum et pro igitur est circulus B hab. est etgo B circulus
- 25vP B<sup>2</sup> supra scr. m. 1 vel m. 2 vel m. 3
- 25vQ post circulo supra scr. et eras. m. 1 (?) A / sit supra scr. m. 2 vel m. 3
- 25vR eo in ras. m. 1 vel m. 2 vel m. 3 / quod corr. m. 1 ex qui
- 26rH post coni<sup>2</sup> mg. m. 1 super unum latus polygonii
- 26rI ipsum ex corr. m. 1
- 26rJ post ergo<sup>1</sup> del. m. 1 (?) magis
- 26rO supra interme-scr. m. 1 lateris scilicet
- 26vA [Lemmata] addidi / [1] hic et sequent. numeros lemmatum addidi
- 26vA-C Coni . . . sunt<sup>2</sup> mg. m. 1; et ante lemmata scr. m. 1 non est de libro, sed erat in exemplari greco ante sequens theorema et add. m. 3 ab euclide sunt demonstrata

29rF sit1 del. m. 3 et add. sit2

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26vF hoc est: scilicet supra scr. m. 3 / ET1 corr. m. 3 ex DT / post ad6 del. m. 1
  a / TD ita que ET m. 1 TE ita que DT ex injusta corr. m. 3
26vG rombo corr. m. 1 (?) ex rumbo
26vH rombus vel rombum m. 1 hic et aliubi
26vI post alius add. mg. m. 3 conus
26vJ -G supra scr. m. 1
26vN -accepto: -derelicto supra scr. m. 3; mg. scr. m. 1 τω πεφιλημματι
26vP ipsi ZH del. m. 3 / -accepto: -derelicto supra scr. m. 3
26vS cono ex corr. m. 1
27rG ante KZ del. m. 1 KLZ
27rI equidistanter: \pi\alpha\varrho\alpha (?) mg. m. 1 (vis. per u.v.)
27rK post ergo<sup>2</sup> del. m. 1 ad
27rQ post sibi mg. scr. m. 3 superficies ergo figure minor est superficie
  hemisphaerii
27rR emisperii: h- m. 3
27vA ante equalis add. m. 3 que continetur a conicis superficiebus
27vG [GD] addidi / [id] addidi
27vI apud ipsum: super ipso supra scr. m. 3
28rA de TI, LK vide gr.
28rB est del. m. 1 (?) / post habenti supra scr. m. 1 vel m. 3 equalem /
  -acceptum: -derelictum mg. m. 3
28rC coni corr. m. 1 ex cono / MN, ZH: MH, ZN m. 3 / -acceptum: -derelictum
  m. 3
28rE -accepta: -derelicta m. 3
28rI basis supra scr. m. 3
28rJ (Gr. 28) addidi
28rK ante periferia del. m. 1 superficies
28rL ante qui del. m. 1 que / ante autem³ del. m. 1 aup (?)
28rN [que latera] addidi; cf. commentum
28vA ZE<sup>1,2</sup>: ZT m. 3 / Quare . . . ZTK mg. m. 1 / [sub] addidi
28vB post L del. m. 1 major est quam quadruplus
28vD post equalem<sup>3</sup> del. m. 1 ei que a centro spere
28vE [Corollarium] addidi
28vI maximus mg. scr. m. 3
28vJ BZTD: ZBDT m. 3
28vK quam del. (?) m. 3 (?)
28vM earum: eis supra scr. m. 3 / apud: -pud del. m. 3 et supra scr.-d / vel: et
  supra scr. m. 3 / latera: -a del. m. 3 et supra scr. -ibus
28vN supra qui mg. scr. m. 1 scilicet circuli
28vO supra inscripti scr. m. 1 (?) polygoniorum / secundus del. m. 3 et scr. O
29rC ad... inscripti mg. m. 3
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- 29rG superficies cf. gr. / [ad latus inscripti] addidi
- 29rJ ante K<sup>1</sup> del. m. 1 KH / mg. infer. scr. m. 1 (vis. per u.v.) in greco deficiebat
- 29rM sumpta: λημματων mg. m. I (vis. per u.v.)
- 29rN  $post X^1 mg. scr. m. 2$  quare circumscripta ad inscriptam habet proportionem minorem quam quidem sphaera ad conum X
- 29rP minorem ad ipsam: ad ipsam minorem m. 1
- 29rQ ante proportionem³ del. m. 1 minorem
- 29rR  $H^1$ : I m. 3 / post speram mg. scr. m. 2 quare figura circumscripta ad inscriptam habet proportionem minorem quam conus X ad sphaeram
- 29rT [Corollarium] addidi
- 29vB post lateris del. m. 1 1 / [hoc est] addidi
- 29vE et1 supra scr. m. 3
- 29vF ET: -T corr. m. 1 sive m. 3 ex -Z
- 29vJ portionem: -em mut. m. 3 in -i / ABG gr. ABG O / post parium del. m. 1 laterum / portionis: figure facte (?) mg. m. 1 (vis. per u.v.)
- 29vK et<sup>2</sup> supra scr. m. 3
- 29vO post ipso mg. scr. m. 3 quod sub et mutav. ipso in ipsis / post portione supra scr. m. 3 sphaere minore hemisphaerio
- 29vP post basem<sup>2</sup> mg. add. m. 3 quidem
- 29vQ BA: BL m. 3 et mg. scr. m. 1 (vis. per u.v.) scilicet E!
- 29vR portioni: figurae mg. m. 3
- 30rC ante cono del. m. 1 cum / [habent] addidi
- 30rD [Corollarium] addidi
- 30rE quam supra scr. m. I / habens<sup>1</sup>: habenti m. 3
- 30rI -L- supra scr. m. 3
- 30rK ante NH del. m. 1 NA
- 30rL [Corollarium] addidi / circumscripte injuste del. m. 1 et mg. scr. inscripte / adhuc add. m. 3 et mg. scr. m. 1 (vis. per u.v.) επι (cf. com., 30rL) / [enim] addidi
- 30vA [Corollarium I] addidi
- 30vB [Corollarium II] addidi
- 30vG ante AL del. m. 1 EL
- 30vH polygonium: post polygo- mg. add. m. 3 -nium ad polygo-
- 30vN [Z] addidi; cf. gr.
- 30vP post Z mg. m. 3 Quare superficies figure circumscripte ad superficiem inscripte habet proportionem minorem quam quidem superficies dicte portionis ad circulum Z
- 30vR maior superficies: superficies maior m. 1 (?) / circulo: circuli m. 3
- 30vS penes: secundum mg. scr. m. 3
- 30vT GB: AB mg. m. 1 (vis. per u.v.)
- 31rB T<sup>1</sup> corr. m. 1 ex E

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31rD circumdelato bis m. 1 sed del. et eras. primum
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- 31rE ad... inscripti non in gr. sed addendum; mg. scr. m. 1 et eras. m. 3 (?) latus superficiei inscripte et supra superficiei scr. m. 1 latus
- 31rF Circumscripta... T<sup>3</sup> mg. scr. m. 2
- 31rI de ita... iidem mg. scr. m. 1 (vis. per u.v.) in greco sic, falsum puto, ut sint duo latera eadem
- 31rL [Proemium] addidi
- 31rM post quod scr. m. 3 que / post equalis del m. 1 circulus
- 31rN post ipse add. m. 3 (?) que / emiolius: h- m. 3 hic et aliubi / quia: etiam quod m. 3 (?)
- 31rQ ipsi ex corr. m. 1 / E in ras. m. 1
- 31rR contrapasse: -e corr. m. 1 (?) ex -a (?)
- 31vD post basem<sup>2</sup> supra scr. m. 3 quidem
- 31vE de primo libro scr. mg. m. 1 (vis. per u.v.) in 37° (cf. comment.)
- 31vI BGZ: BZG m. 1 / TGE: TGGE m. 1
- 31vJ ei... equalis mg. scr. m. 3
- 31vM [Corollarium] addidi
- 31vN [demonstrabimus] addidi
- 31vO de altitudinem mg. injuste scr. m. 1 no. cas. quia gr. hab. ὕψος
- 31vQ post sub<sup>1</sup> add. m. 3 ipsis / ante autem scr. (?) et. del. (?) m. 1 (?) et (?) / AE<sup>1</sup> corr. m. 1 ex DE / AE<sup>2</sup> corr. m. 1 ex TE
- 31vR ante a scr. et del. m. 1 sub
- 31vT BKZD<sup>2</sup> supra scr. m. 3 (?)
- 32rA rectum: erectum m. 3
- 32rB [data] addidi / est<sup>2</sup>... DBE<sup>2</sup> supra scr. m. 3
- 32rE data est que: rectus est qui ex corr. m. 3 et mg. scr. m. 1 aliquid quod non possum bene legere per u.v. falsum (?) non predicta (?) puto (?)
- 32rF post speram supra scr. m. 3 plano
- 32rG itaque m. 3
- 32rH simul<sup>1</sup> supra scr. m. 1
- 32rK ad<sup>8</sup> bis m. 1 sed del. sec. | post data mg. scr. m. 3 et ipsius LR ad LQ
- 32rL LD<sup>1</sup> corr. m. 3 in LQ (?) / post LD<sup>3</sup> mg. scr. m. 3 demonstratum est / BQ: ZQ m. 3 sic BX mg. m. 1 (vis. per u.v.)
- 32rN Sed . . . ZT<sup>2</sup> mg. m. 3
- 32rP DB<sup>3</sup>: AB falsum puto mg. m. I (vis. per u.v.)
- 32rQ maioris: -is supra scr. m. 1 vel m. 3 / TZ<sup>1</sup> corr. m. 1 vel m. 3 ex CZ
- 32rS post KL<sup>2</sup> del. m. 1 ad LD que BD ad DQ. Quare et ut quod a KL et post hoc est lac. 8 litt.
- 32rT de LQ<sup>2</sup> mg. scr. m. 1 (vis. per u.v.) falsum (i.e., hab. gr. MS A  $\Delta X$ )
- 32vC autem4 correxi ex aut
- 32vD autem<sup>2</sup>: itaque supra scr. m. 3
- 32vF similis<sup>1,2</sup> corr. m. 1 ex simile | post  $TK^2$  scr. et eras. m. 1  $\omega$  (vis. per u.v.) et scr. mg. m. 1 (vis. per u.v.)  $g^0$  (?) falsum

- 32vH ipsis supra scr. m. 1 / proportionales: -les in ras. m. 3
- 32vI ABGN: -GB- ex corr. m. 3 vel forte m. 1 / NC<sup>1</sup> sive <sup>2</sup>: mg. scr. m. 1 v
- 32vM AB<sup>4</sup>... diametrum mg. scr. m. 3
- 32vN post TKL<sup>2</sup> mg. scr. et eras. m. 1 (vis. per u.v.) repete figuram precedentem et add. oo
- 32vP BATG: BAĞT *m. 1*
- 32vS data<sup>1,3</sup> supra scr. m. 3
- 33rC circulo... equalis mg. scr. m. 3 / ipsi LM<sup>2</sup> in ras. m. 3
- 33rD portionis<sup>3</sup>...DEZ<sup>2</sup> mg. scr. m. 3; spere scripsi pro uniformitate, sphere m. 3 / superficiei ipsius<sup>3</sup>: ipsi ex corr. m. 1 vel m. 3 / post ABG mg. scr. m. 1 (vis. per u.v.) repete figuram precedentem
- 33rI autem<sup>4</sup> ex corr. m. 1
- 33rJ post ipsa add. m. 3 ab
- 33rQ post ZD<sup>5</sup> mg. scr. m. 3 et permutatim (sed non in gr.)
- $33rR TB^3 \dots KZ^3 mg. scr. m. 3$
- 33rS TZ, ZH: TZH m. 3
- 33rT ante KZ<sup>2</sup> add. m. 3 ergo et mut. KZ in TZ
- 33rU BTK: TBK m. 3
- 33rV in fine  $\varepsilon\pi\iota\tau\varepsilon\lambda$ ' in ras. m. 1 (vis. per u.v.)
- 33rW Sed tunc: quare mg. m. 3
- 33vB est<sup>1</sup> supra scr. m. 3 / TG: TG textu A falsum puto mg. m. 1 (vis. per u.v.) / utraque ex corr. m. 3
- 33vD HAT: HTA m. 3 / quod a<sup>1</sup> ex corr. m. 3 / TG<sup>6</sup> corr. m. 1 vel m. 3 ex HT, TG (?)
- 33vE super 1-4 ex corr. m. 3 / post TH<sup>1</sup> mg. scr. m. 3 oportet ergo demonstrare quia et del. Quod ergo / quam . . . . Sed mg. m. 3 / proportioni: proportionis m. 3
- 33vF post ergo<sup>1</sup> add. m. 3 quod et del. Quia ergo / habet... TH<sup>3</sup> mg. m. 3
- 33vG-I etiam 1-3: itaque supra scr. m. 3 et del. etiam
- 33vG ad superficiem 1,2 mg. m. 3
- 33vH de que mg. scr. m. 1 (vis. per. u.v.) proportio puto / eius 1... AT add. m. 3 in ras.
- 33vI TBG<sup>1,2</sup>: BTG m. 3 / post TBG<sup>1</sup> add. m. 3 est / ergo del. m. 3 (?) / post quod del. m. 1 sub ipsis / post AT del. m. 1 vel m. 3 ad id quod a BTG, hoc est, quod ab AT
- 33vI-J in 1-8 in ras. m. 3 forte corr. ex ad
- 33vJ ante quia del. m. 1 et
- 33vK ab . . . et mg. scr. m. 3 / post ipsam del. m. 1 (?) que / ante Reliquum del. m. 1 (?) quoniam / erat del. m. 3 et scr. nobis / post demonstrare add. m. 3 oportet (cf. gr.) / post ergo add. mg. m. 3 oportet (cf. gr.)
- 33vL GT:ŤĠ m. 1 vel m. 3
- 33vM ante que<sup>2</sup> add. m. 3 quod / post quod add. m. 3 ergo

- 33vO portionum<sup>1</sup>: por-del. m. 3 et scr. sec-/ipsarum... ergo addidi; m. 1 vel m. 3 add. signum + post equales / quod corr. m. 1 ex quia / maius corr. m. 1 ex maior / ante ZET<sup>2</sup> del. m. 1 BAD
- 33vO, Q ad del. m. 3 et scr. apud / d mg. m. 1 S textu m. 1
- 33vQ Sit... AR mg. scr. m. 3 (cf. gr.)
- 33vS itaque: autem supra scr. m. 3 / AK, GX corr. m. 3 ex AX (?)
- 33vT XKA1 corr. m. 3 ex XAK (?) / MKG m. 3 / post MKG ras. 8 vel 9 litt.
- 33vU  $a^1 \dots quod^4 mg. scr. m. 3$
- 33vV EZT gr. ËZT m. 1 / 25: cf. Heib. 3, p. XLIII qui leg. 29

## Variants for Eutokii... rememoracio in libros Archimedis de spera et chylindro

#### O in toto

- 34rA Eutokii... doctore rubr. m. 1 / supra librum scr. m. 3 primum et del. librum / chylindro: -h- del. m. 3 / ex... doctore del. m. 3 / mecanico: post -ec- add. m. 3 -h-
- 34rB provocatur: provocat 9 O
- 34rG post componatur est lacuna dimidiae columnae de qua mg. scr. m. 1 Hic de exemplari greco perditum erat unum folium
- 34rH post autem² del. m. 1 9gu (congruitur?)
- 34rI curvam m. 1 hic et aliubi; sed cf. 34vD ubi est clare concave
- 34rK ante igitur del. m. 1 itaque
- 34rM AGB ex. corr. m. 1 vel m. 3
- 34rO ante curvas del. m. 1 9 (= con?)
- 34vB AZHTK<sup>3</sup> scr. m. 1 et inj. corr. in AZHGK
- 34vE ante curve scr. et del. m. 1 9 (=con?)
- 34vF post alteram del. m. 1 ab altera
- 34vG post ipsis del. m. 1 h / si<sup>2</sup> scr. m. 1 supra utique quod del.
- 34vH ante B del. m. I angu
- 34vI ante DZG<sup>1</sup> del. m. 1 BAG / linea ex corr. m. 1
- 34vJ ante non<sup>3</sup> del. m. 1 ma | ante major del. m. 1 mag
- 34vL BAHLG: BA- in ras. m. 1
- 34vN superparticulari: επιμοφιού mg. m. I (vis. per u.v.) / superpartiente: επιμεφούσ mg. m. I (vis. per u.v.) / superparticularis corr. m. I ex superparticula et mg. scr. m. I (vis. per u.v.) επιμοφιού / superpartiens: επιμεφεσ mg. m. I (vis. per u.v.)
- 34vO ex se del. m. 3 et supra scr. inde / reponi: -po- m. 3 (?) / ZH corr. m. 3 in EZ / ZE corr. m. 3 in ZH
- 34vR fecerimus corr. m. 1 ex faciamus
- 34vS propterea quod corr. m. 3 (?) in propter / eadem corr. m. 2 vel m. 3 ex erit
- 34vU post quidem¹ lac. 5 vel 6 litt. / ante econtrario supra scr. m. 3 et

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34vV laterum in ras. m. 3
34vW -o^{1-3} corr. m. 3 ex -a (?) / protracto: constituto mg. m. 3
34vX lineam... angulum scripsi; textu et mg. m. 3 nihil hab. nisi signum Å
34vY ergo<sup>2</sup> ex corr. m. 3
34vZ per se palam: inde manifestum mg. m. 3 / OH corr. m. 1 vel m. 3 ex TH
35rA mg. super. figuram eras. m. 1 vel m. 3 / ante K del. m. 1 quam
35rB ante L del. m. 1 R
35rE ad ^4 bis m. 1
35rF primo: precedenti mg. m. 3
35rG ad: -d add. m. 3
35rH basis supra scr. m. 1
35rO rectus corr. m. 1 ex recta
35rP ad: in supra scr. m. 3 / post circulum<sup>3</sup> add. m. 3 est / inscribere: -bere:
  -bendum mg. m. 3
35rS quos sunt del. (?) m. 3
35rT ante Quare del. m. 1 et
35rU TD corr. m. 1 ex TA
35rV-W prisma... quidem<sup>1</sup> mg. scr. m. 1
35rY ante ad² add. m. 2 vel m. 3 A
35vG BD<sup>1</sup> corr. m. 1 ex BA | post BD<sup>1</sup> del. m. 1 1 | post BA est lac. 3 litt.
35vI polygonii mg. m. 1 / esset: est in ras. m. 3
35vK est<sup>2</sup> supra scr. m. 1
35vL trigono GKA mg. add. m. 3
35vN ME: supra M- scr. m. 3 H- / MA: supra M- scr. m. 3 G-
35vO arismetica: -s- del. m. 3 et scr. -th-
35vR ipsa DB mg. scr. m. 3
35vS sui<sup>2</sup> supra scr. m. 1 / excedit<sup>2</sup> corr. (?) aliquis ex excedat
35vT M<sup>2</sup> supra scr. m. 3
35vV \text{ est}^2 \text{ del. (?) } m. 1
35vW ante a del. m. 1 sub / itaque ex corr. m. 3
35vY post cui mg. scr. m. 1 scilicet, superficiei
36rG post ad4 del. m. 1 eam que a ce
36rJ de: ante supra scr. m. 3
36rL tripla[m]: tripl'a m. 1
36rN emiolius: h-supra scr. m. 3 et saepe, non cit. postea
36rO, R salvata: -er- supra scr. m. 3
36rO AG<sup>2</sup> supra scr. m. 3
36rP super corr. m. 1 ex in
36rO post basem<sup>2</sup> mg. add. m. 3 quidem
36rS ante emiolium<sup>2</sup> add. m. 3 aspirationem ' hic et aliubi
36rS-U supra tetragonum 1-3 scr. m. 3 quadratum
36rT supra tetragona scr. m. 3 quadrata
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37rO

37rR-vA et que m. 3

37vC utique in ras. m. 3 corr. ex autem (?)

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36rU ZN<sup>2</sup> corr. m. 1 ex EN (?) / tetragoni: ☐ti add. m. 3 supra
36rW supra negociatur scr. m. 3 queritur
36rY proportione: propor- del. m. 3 et supra scr. ra- / supra negotiato scr. m. 3
  invento
36vA supra gloriosorum scr. m. 3 clarorum
36vE dolabralibus del. m. 3 et mg. scr. securiclatis / firmaculis: τυλων mg. m. 1
  (vis. per u.v.) / factis del. m. 3
36vF sit<sup>2</sup> del. m. 3
36vG qualem: qual'e m. 1 / de D mg. scr. m 1 (vis. per u.v.) in greco exemplari
  puto male / Eron: H- supra scr. m. 3
36vH ante invicem add. m. 3 se / ipsarum corr. m. 1 ex ipsam (?)
36vI firmaculum: τυλον mg. m. l (vis. per u.v.)
36vJ de Ducatur... cathetus mg. scr. m. 1 (vis. per u.v.) per 12 pi eu[clidis] / de
  quod...TZ mg. scr. m. 1 (vis. per u.v.) per 6 2^i eu[clidis] / hiis<sup>1,2</sup>: his m. 3
36vK Et in ras. m. 3 / de GT... EZ^1 mg. scr. m. 1 (vis. per u.v.) per 48 (!) p^1
  eu[clidis]
36vL de Est... GZ mg. scr. m. 1 (vis. per u.v.) per 2 6<sup>1</sup> eu[clidis]
36vM Filon: supra F- scr. m. 3 Ph- / Bisanteus: -ti- m. 3
36vN secusponatur: adiaceat mg. scr. m. 3
36vO ZG: GZ m. 1
36vR Erone: H- add. m. 3
36vS Eronis: H- add. m. 3
       autem<sup>3</sup> del. m. 3 et supra scr. equidem / quam in ras. m. 3 / supra regula
  probare scr. m. 3 circino experire et de regula... Z mg. scr. m. 1 (vis. per
  u.v.) falsum est του μαρκίνω διαπειραζείν τας από του Κ ισας προς το Κ,
  Z
36vU ABG: AB, AG m. 3
36vW ante ab^2 add. m. 3 et / Erone: H- add. m. 3
37rA [pyriis... comburentibus] addidi; lac. O; et supra scr. m. Ι πυριων
37rC EL in ras. m. 3
37rD ipsi AB supra scr. m. 1
      ut<sup>1</sup> supra scr. m. 3 / post in del. m. 1 premissa / rectas: -s m. 3 (?)
37rE
37rF post linea mg. scr. m. 2 descripta
37rG \quad que^1 in \ ras. \ m. \ 3
37rI intentionem: propositionem mg. m. 2 / supra ea scr. m. 3 et ipsi
      sue m. 1; del. m. 3 / Duarum: duabus m. 3 / datarum rectarum: datis rectis
  m. 3 / inveniri corr. m. 1 ex invenire / per se: hinc supra scr. m. 3 / etiam per
  verba: his verbis m. 3
      circumiaceat mg. scr. m. 2 / Hiis: His m. 3
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que eius mg. add. m. 3 / quod¹ corr. m. 1 ex que / eius² quod mg. m. 3

- 37vD et<sup>1</sup>... DAE mg. m. 3 / ad<sup>2</sup> in ras. m. 3
- 37vG AB<sup>1,2</sup> corr. m. 1 ex AT
- 37vI A<sup>1,2</sup> mutavit m. 3 in D hic et ubique in inventione Menaechmi, non cit. postea
- 37vI-J D mutavit m. 3 in A hic et ubique in inventione Menaechmi, non cit. postea et mg. scr. m. 1 (vis. per u.v.) totum istud exemplum in greco erat multum corruptum et sic (?) ubique pro D erat A et econtrario et in aliis corruptum est
- 37vJ DZ<sup>2</sup> corr. m. 1 ex AZ / ergo ipsum T m. 3 in text. et in mg. m. 1 (vis. per u.v.) est... signum T
- 37vK D corr. m. 1 ex A / DK corr. m. 1 ex AK / A corr. m. 1 ex D / yperbola: hm. 3 / ipsum  $T^{1,2}$  ex corr. m. 3 / asymptotas: ασυμπτωτοισ mg. m. 1 (vis. per u.v.
- 37vK-L Sit autem positione m. 1 vel m. 3 / mg. scr. m. 1 (vis. per u.v.) per asymptotas... (? ambligonii?) coni yperbola dicitur sectio....
- 37vL autem latus: l'atus autem m. 1 vel m. 3 / post habentia del. m. 1 eas q / recta: erecta m. 3
- 37vM yperbola: '- add. m. 3 / DK corr. m. 1 ex AK
- 37vO sit corr. m. 1 ex sint
- 37vR ergo mg. add. m. 3
- 37vT Describitur: De-del. m. 1 vel m. 3 / diabetam: diabeta grece . . . (?) mg. m. 1 (vis. per u.v.) / kamaricorum Eronis: k-m-, H- m. 3 μακαρικών gr. MS E / Archite: -i- m. 1 -y- m. 3 (?)
- 37vU AD<sup>1,2</sup> corr. m. 1 vel m. 3 ex AB
- 38rA que<sup>1</sup> mg. m. 3 / rectus<sup>1</sup> mg. scr. m. 1
- 38rB circumferatur mg. scr. m. 3
- 38rC contra-supra scr. m. 1 vel m. 3
- 38rD ad<sup>2</sup> in ras. m. 3 / BMZ<sup>2</sup>: EMH mg. m. 1 (vis. per u.v.)
- 38rE recta: erecta m. 3 / TBZ: TB, TZ m. 3 / TAI: TA, TI m. 3 / oppos. Simile mg. scr. m. 1 aliquid quod non possum legere per u.v. / AMI ex corr. m. 3 (?)
- 38rG supra construentem scr. m. 3 litteram c, supra sepulcrum litteram d, supra Glauco litteram b, secundum ordinem gr. / post Mino supra scr. m. 3 \overline{a} requisitum del. m. 3 et supra scr. eum et mg. scr. m. 1 (vis. per u.v.)  $\pi \nu \theta$ ομενον / post autem supra add. m. 3 cum audivisset / tum risisset del. m. 3 et mg. add. utique dixisti / post risisset lac. 4 litt. / locum m. 3 in lac. σηκ mg. m. 1 / post sit add. m. 3 huius et del. ab hoc
- 38rH unumquemque: -quod-supra scr. m. 3 / colum: membrum supra scr. m. 3 / in grossicie del. m. 3 et supra scr. celeriter et mg. scr. m. 1 (vis. per u.v.) ταχει / pecasse: autem erasse m. 3 / quis corr. m. 1 ex que
- 38rI deficientibus: defici- del. m. 3 et supra scr. ambig- (?) / Hip- add. m. 3
- 38rJ Delios scr. m. 3 in lac. et mg. scr. m. 1 (vis. per u.v.) δηλιουσ / incidentes per del. m. 3 et supra scr. conatos ex / oraculum: oraculo in ras. m. 3 / Academia corr. m. 3 ex accademia (?) / velle del. m. 3 et supra scr. censere

- 38rK semicylindria: -ia del. m. 3 et scr. -os / intellecta: -a ex corr. m. 3
- 38rM et<sup>3</sup> add. m. 3
- 38rN attritiones et funes del. m. 3 et mg. scr. perforationes et annulos in quibus voluitur axis rote / debeant del. m. 3 et mg. scr. uti (?) sit et si volueris / instrumenti mg. m. 3; lac. 2 litt. in O
- 38rO ad rectos mg. add. m. 3 / ipse del. m. 3 et scr. he (?)
- 38rP compellatur: compell- ex corr. m. 3 et mg. scr. m. 1 (vis. per u.v.) συνωσθητω / IT: -T m. 3
- 38vA configatur: confi gatur m. 1 / configatur laterculus: διαπηγνυται πλινθί mg. m. 1 (vis. per u.v.) / pixidulas: pixid- del. m. 3 et supra scr. tabell- / ut¹ mut. m. 3 in et quod postea del. m. 3 et supra scr. quam / impulsate (?) in canalibus in ras. m. 3 επωστοι εν χολεδοαισ mg. m. 1 (vis. per u.v.) / supra per se scr. m. 3 sibi ipsis
- 38vB congregando pixidulas: cogendo tabellulas m. 3 / inconfusa: -fu- del. et supra scr. m. 3 -cus- (i.e. inconcussa) / supremo del. m. 3 et supra scr. oblatione / columpne: -p- del. m. 3 / adplumbatum: προσμεμολυ[6]δοχοημέν mg. m. 1 (vis. per u.v.)
- 38vC inscriptio del. m. 3 et supra scr. epigramma / supremo: oblatione m. 3 αναθηματι mg. m. 1 (vis. per u.v.) / columpna: -p- del. m. 3
- 38vD pixides del. m. 3 et scr. tabellule et mg. scr. m. 1 (vis. per u.v.) πινακασ / ipse del. m. 3 et scr. hae / ante que add. m. 3 et
- 38vE redibimus: -dibi- del. m. 3 et supra scr. -fere-
- 38vF si libet in lac. scr. m. 3 que si in ras. m. 1 (vis. per u.v.) / pixidulas: pixiddel. m. 3 et scr. tabell- / instrumento: -o del. m. 3 et scr. -ulo / post eadem hab. gr. 17 lineas poesis quas om. O et mg. scr. m. 1 (vis. per u.v.) repete figuram precedentem / Nichomedes: Nich- eras. m. 3 et scr. Nic-
- 38vG Nichomedes: -h- del. m. 3 / konchoydalibus: -h- del. m. 3 / Eratostenis: post -st- add. m. 3 -h- / Eratostenem: post -st- add. m. 3 -h-
- 38vH cavaturam: canalem m. 3 / dolabralem del. m. 3 et supra scr. securiclatum / navicula del. m. 3 et supra scr. chelonium et mg. scr. m. 1 (vis. per u.v.) εχελωντ (cf. Gr 3, 98, 15var)
- 38vI copulatum: coaptatum sit m. 3 / quod corr. m. 1 vel m. 3 in qui
- 38vJ navicule del. m. 3 et supra scr. chelonario et mg. scr. m. 1 (vis. per u.v.) χελωναριω / dolabrali del. m. 3 et supra scr. securiclato / cavatura: canali m. 3 / que: qui m. 3 / quod² corr. m. 1 vel m. 3 in qui / navicula del. m. 3 et supra scr. chelonario et mg. scr. m. 1 (vis. per u.v.) χελωναριω / ante si lac. 3 vel 4 litt. in O / moveat corr. (?) m. 1 ex moveant
- 38vK quod corr. m. 1 vel m. 3 in qui
- 38vL Nichomedes: -h- del. m. 3 / linee corr. (?) m. 1 ex linea (?) et hab. m. 3 lineae / ad minus: επελαττον mg. m. 1 (vis. per u.v.)
- 38vQ erat add. m. 3
- 38vS konkhoydealis: -k- del. m. 3 et scr. -c-

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39rC TK ipsi AD: ΘTKΔH mg. m. 1 (vis. per u.v.) / vel add. m. 1 / konkhoydealem: -k- del. m. 3 et scr. -c-
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39rD ML1: MA mg. m. 1 (vis. per u.v.)

39rE DB: DB m. 1 A-mg. m. 1 (vis. per u.v.) / HG<sup>2</sup> ex corr. m. 3 / GK corr. m. 3 ex LK (?) et de HG<sup>2</sup> ad GK mg. scr. m. 1 MG (?) ad GK

39rF BMA1: -A add. m. 3 / ab4 add. m. 3 / ante BKG2 ras. et lac. 3 litt.

39rG post GK<sup>3</sup> ras. et lac. 15 litt.

39rH ipsa add. mg. m. 3 / BE<sup>2</sup> in ras. m. 1 / et<sup>1</sup> supra scr. m. 3

39rI GB<sup>2</sup> corr. m. 1 vel m. 3 ex GTB

39rK attemptans: -p- del. m. 3 / quod<sup>1</sup> . . . libro mg. signa verb. Arch. hab. m. 1; delevi quia non sunt ipsa verba

39rL emisperio: h- add. m. 3

39rL-M signa verb. Arch. om. O; addidi

39rM [et] addidi / Que corr. m. 1 ex Quod / coni intus del. m. 3 et supra scr. intra conum

39rO post basem<sup>2</sup> supra scr. m. 3 quidem

39rP post basem¹ supra scr. m. 3 quidem

39rR est<sup>3</sup> add. m. 3

39rS post equalis add. m. 3 et

39rT BATZ: BATZ m. 1 (sed cf. gr.); BA- ex corr. m. 1

39rU ABG corr. m. 3 in ABZ

 $39rV \quad sub^1 \quad corr. \quad m. \quad l \quad vel \quad m. \quad 3 \quad ex \quad ab \quad (?)$ 

39rX TD4 corr. m. 1 ex TL

39vA ab<sup>2</sup> add. m. 3 / GA corr. m. 1 ex GD

39vB in<sup>2</sup> add. m. 3

39vC que<sup>8</sup> m. 1 quod a m. 3 / id<sup>2</sup> quod a add. m. 3 / a<sup>4</sup> addidi / signa verb. Arch. om. O et gr. MS A; addidi

39vD DG m. 1 AB m. 3 / positione tr. m. 3 (?) ante datarum

39vI LD<sup>2</sup> corr. m. 1 ex AD / DQ<sup>1</sup>: -Q in ras. m. 3

39vJ QZ<sup>2</sup>: QL *m*. 3

39vK secte spere: secta spera m. 3

39vO nihil in ras. m. 3 et add. mg. m. 3 nullum et forte scr. m. 1 nichil / ante Dico mg. add. m. 3 (?) De compositione rationum

39vP ante ut<sup>1</sup> lac. in O / denominativa: παρωνυμοσ mg. m. I (vis. per u.v.) / aiunt scr. et inj. corr. m. I in ait / Nichomachus: -h<sup>1</sup>- del. m. 3

39vQ Eron: H-m. 3 / autem corr. m. 1 ex aut sive vice versa et scr. m. 3 mg. aut / supra adhuc scr. m. 3 amplius

39vR arismetice: -s- eras. m. 3 et scr. -th- / emiolie: h- m. 3 hic et ubique / quantitas corr. m. 1 vel m. 3 ex quantitatem

39vS autem del. m. 3 et scr. quidem / Hiis: His m. 3

39vV A<sup>2</sup> ex corr. m. 1

39vW quantitate: -e del. m. 3 et scr. -is / multiplicata: -a del. m. 3 et scr. -e

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39vX ante G² add. m. 3 quam habet / et² add. m. 3 / 4¹ ex corr. m. 3 forte ex mediaevali 4
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40rC dupla: -pla del. m. 3 et scr. -o ex gr. / et<sup>5</sup> ex corr. m. 3

40rE idem: eadem m. 3 / sermo del. m. 3 et scr. ratio

40rF plures uno mg. scr. m. 3

40rH ad DO: D- ex corr. m. 1 vel m. 3

40rK ex se del. m. 3 et scr. hinc

40rL eo: -o del. m. 3 et scr. -a eius / DQ<sup>2</sup>: -Q'ex corr. m. 3 / ZQ<sup>2</sup>: -Q ex corr. m. 3 / post autem add. m. 3 eedem

40rM ZQ<sup>1,2</sup>: -Q ex corr. m. 3 / eo del. m. 3 et supra scr. ea eius / QZ<sup>1</sup>: Q- ex corr. m. 3 / DQ: -Q ex corr. m. 3 / ZQ<sup>3</sup>: Z- ex corr. m. 3

40rN QZ<sup>1</sup>: Q-ex corr. m. 3 / post que ras. m. 1 (?) / post secare supra scr. m. 3 oportet / non m. 1 ita supra scr. m. 3;  $\overset{\circ}{o}$  [=  $\overset{\circ}{o}$  τως] gr. MS A (?)

40rO ZT: BT m. 3 (?)

40rP de demonstrare mg. scr. m. 1 (vis. per u.v.) 4<sup>a</sup> (?) conclusione (?) [libri 2<sup>th</sup> de spera et cylindro]

40rQ pyriis in lac. m. 3; mg. m. 1 (vis. per u.v.) πυριων

40rS salvans: servans m. 3 / mg. m. 1 Nota / yperbole: h- m. 3

40rT corruptionum: cornu O; cf. 40rR / ante lectione del. m. 1 vel 3 littera / lectione: le- del. m. 3 et scr. di-

40rV quod a<sup>1</sup> cf. gr. MS A que in ras. m. 3

40vA sub<sup>3</sup> in ras. m. 3 / ita<sup>3</sup> in ras. m. 3

40vB possint supra scr. m. 1

40vC datum m. 3 datu lac. m. 1 / asymptotas in ras. m. 1 ασυμπτωτουσ mg. m. 1 (vis. per u.v.) / scribatur in ras. m. 3 / scribatur yperbola: γραφη υποπεριδολη (!) mg. m. 1 (vis. per u.v.) / yperbola: h- m. 3; et seq. lac. 5 vel 6 litt. / 12 mg. m. 3; vid. commentum

40vD BK: KB m. 1 non erat grece mg. m. 1 (vis. per u.v.); et scr. gr. MS A HK / yperbolam: h- m. 3 hic et aliubi

40vE similater in ras. m. 1

40vH eo ex corr. m. 3

40vI ZT: -T ex corr. m. 1 vel m. 3

40vK  $ZN^3$  ex corr. m. 1

40vL asymptotas in ras. m. 1 ασυμπτωτουσ mg. in ras. m. 1 / supra 8<sup>vi</sup> scr. m. 3 12 / post theorematis mg. add. m. 3 secundi libri

40vM asymptote in ras. m. 1 ασυμπτωτοι mg. m. 1 (vis. per u.v.) / ABZ<sup>2</sup>: -BZ ex corr. m. 3 / RO ex corr. m. 1

40vN ei ei ex corr. m. 3 / quod supra scr. m. 3 / ei quidem quod mg. m. 1 (vis. per u.v.)

40vR supra 27 scr. m. 3 26 / asymptotas in ras. m. 1 ασυμπτωτουσ mg. m. 1 (vis. per u.v.)

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40vS supra 34 scr. m. 3 33
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- 40vT est<sup>1</sup> ex corr. m. 3 / XK<sup>1</sup> ex corr. m. 1 Z- falsum mg. m. 1 (vis. per u.v.) / yperbolam<sup>1</sup>: yper- eras. m. 3 et scr. para- / asymptotarum in ras. m. 1 ασυμπτωτων mg. m. 1 (vis. per u.v.) / yperbolam<sup>2</sup>: signum aspir. 'add. m. 3 hic et aliubi
- 40vU post AB supra scr. m. 3 inter E et B/mg. infer. scr. m. 1 (vis. per u.v.) distans diametrorum (?)
- 41rA FCQ: -Q in ras. m. 1 / SK: SH m. 3 /  $\Psi$ Q: -X mg. m. 1 (vis. per u.v.)
- 41rB [quod ergo a BS] addidi; vid. commentum
- 41rD que<sup>2</sup> ex corr, m. 3
- 41rE 98: 9- ex corr. m. 1 / 8HM<sup>1</sup>: -M ex corr. m. 3
- 41rL-M signa verb. Arch. om. O et gr. MS A; addidi
- 41rM nichil: -c- del. m. 3
- 41rN signa verb. Arch. om. O et gr. MS A; addidi
- 41rO ante datam<sup>1</sup> m. 1 hab.  $\Lambda$  oportet<sup>2</sup> corr. m. 1 vel m. 3 ex oportere / signa verb. Arch. om. O et gr. MS A; addidi
- 41rP particularius: -us m. 3 seq. lac. 3 litt.
- 41rQ adhuc (?) eras. m. 3 et scr. amplius; gr. οὐκέτι / et² m. 3
- 41rS cuius et gratia del. m. 3 et mg. scr. non ingratum / corrigentes: cor-corr. m. 1 ex di- / ferebatur: fer- in ras. m. 1
- 41vC BK: B- del. m. 3 / asymptote: -ae m. 3
- 41vD supra 8 scr. m. 3 12
- 41vE ZM<sup>1</sup>: Z- ex corr. m. 3 / ZM<sup>2</sup>: -M ex corr. m. 3
- 41vF AB<sup>4</sup>: -B corr. m. 3 ex -M / ad circulum . . . BM om. gr. MS A / ergo<sup>2</sup> supra scr. m. 3
- 41vF-G circulus<sup>2</sup>...A[B] om. gr. MS A et mg. scr. m. 1 (vis. per u.v.) hoc suplevi
- 41vG ipsi<sup>1</sup> add. m. 3 / AB<sup>1</sup>: -B corr. m. 3 ex -M / AH<sup>1</sup>: -H ex corr. m. 3 / altitudo . . . ipsa: altitudinem . . . ipsam  $m. 3 / BM^2$ : B- ex corr. m. 3
- 41 vH altitudo<sup>1</sup>... ipsa<sup>1</sup>: altitudinem... ipsam m. 3 / Quoniam del. m. 3 et scr. super / enim eiusdem: eadem enim m. 3 / basis: -s del. m. 3
- 41vJ ZM ex corr. m. 1 / A ex corr. m. 3
- 41vM et ... ab MB om. gr. MS A et mg. scr. m. 1 (vis. per u.v.) hoc suplevi
- 41vO pyriis<sup>1,2</sup> in lac. m. 3; mg. m. 1 bis πυριων / de eandem mg. scr. m. 1 (vis. per u.v.) S (! falsum?)  $g^0$  (greco?)
- 41vP ipsius<sup>2</sup> supra scr. m. 1
- 41vQ EA: -A ex corr. m. 3
- 41vR et mg. forte m. 3
- 41vS ZB<sup>1</sup>: -B ex corr. m. 3
- 41vT proporcio mg. scr. m. 3
- 41vV -[K] et [K]- hic et seq. m. 3
- 41vW ergo<sup>2</sup> ex corr. m. 3 / ad<sup>7</sup> eras. m. 3 et scr. ipsi
- 41vX ad<sup>1</sup> eras. m. 3 et scr. ipsi

- 42rA simulutraque<sup>1</sup>: simul-scr. m. 1 supra / TAE<sup>1</sup>: TÁE textu et mg. scr. m. 1 (vis. per u.v.) L' falsum in greco / KA: K- in ras. m. 1 (?)
- 42rD SC<sup>2</sup>, RY: RŸ, SC O et mg. scr. m. 1 (vis. per u.v.) falsum puto, in greco SR, CY
- 42rE SCB m. 1 / est<sup>2</sup> add. m. 3 et mg. scr. m. 1 (vis. per u.v.) est (?) in greco / SB corr. m. 3 ex EB (?) / BE<sup>1</sup>: -E ex corr. m. 3
- 42rF oppos. ER<sup>1</sup> mg. scr. m. 1 (vis. per u.v.) falsum in greco ipsum, ut (?) que CO ad OYS ita que SE ad ER / OY<sup>3</sup> in ras. m. 1
- 42rH D ad del. m. 3 et mg. scr. ad D post G
- 42rI ellipsim scr. m. 1 in lac. et in ras. mg. m. 1 ελλειψιν / ea mg. m. 3 / deficientia in mg. et lac. m. 3; ελλειποντα mg. in ras. m. 1 / 20<sup>mi</sup>: 21 mg. m. 3 / YXC: YXC textu Γ in greco mg. m. 1 (vis. per u.v.)
- 42rJ ellipsim: ελληψιν (! ελληψεως in gr. MS A) mg. in ras. m. I (vis. per u.v.)
- 42rK de BE mg. scr. m. 1 (vis. per u.v.) falsum puto, MB ad AE in greco
- 42rL sub Ducatur mg. scr. m. 1 (vis. per u.v.) ellipsis, ut puto, dicitur oxygonii coni sectio (?) / existans (?) O
- 42rM D ad del. m. 3 et mg. scr. ad D post G / deficientia in lac. m. 3
- 42rN AK, KM: AK, K-ex corr. m. 3 et mg. scr. m. 1 (vis. per u.v.) in greco AB falsum puto (cf. meum commentum) / [K] A corr. m. 3 forte ex QA
- 42rO 8<sup>um</sup>: 11 (vel 12?) supra scr. m. 3
- 42rP F ad CY<sup>1,2</sup>: CY ad F m. 3 / 20<sup>um</sup>: 21 m. 3
- 42rQ SER<sup>1</sup>: SRE in greco, falsum puto mg. m. 1 (vis. per u.v.) / post ad<sup>6</sup> lac. 3 litt.
- 42rR hoc... XO mg. scr. m. 3
- 42rS est<sup>1</sup> m. 3
- 42vB ergo G<sup>2</sup>: m. 1 scripserat g quod m. 3 fecit g<sup>0</sup> (= ergo) et m. 3 add. mg. G
- 42vG BZ<sup>2</sup> corr. m. I ex TZ
- 42vH HZ ad ZT corr. m. 3 ex TZ ad ZH (?) / ponitur mg. scr. m. 3
- 42vI adiaceat del. m. 3 et supra scr. proponatur / AE: AE textu D in greco mg. m. 1 (vis. per u.v.)
- 42vJ post et<sup>2</sup> add. m. 3 ei / ei del. m. 3 et scr. id / excedentia in ras. m. 3
- 42vK ipsius supra scr. m. 1
- 42vL autem add. m. 3
- 42vM KD<sup>2</sup> corr. m. 1 ex KDB
- 42vN Z: B gr. MS A / T in ras. m. 1 corr. ex TD (?)
- 42vU ei add. m. 3 et mg. scr. m. 1 (vis. per u.v.) ei puto / data<sup>4</sup>: -a corr. m. 3 in -um / latitudo: -o corr. m. 3 in -inem
- 42vY post MH<sup>2</sup> mg. add. m. 3 data est ergo et que MH
- 43rC et  $^{1}$  m. 3
- 43rE TG<sup>1</sup>... TG ad add. mg. m. 3 / NM<sup>2</sup> in ras. m. 3 / NR<sup>1</sup>: N- ex corr. m. 1
- 43rF enim  $^{1}$  m.  $^{3}$  / post utraque mg. add. m.  $^{1}$  linea, scilicet
- 43rL quomodo iacet del. m. 3 et supra scr. ut dictum est
- 43rN DZ1: -Z ex corr. m. 3

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43rP a^6 BD corr. m. 3 ex ab A (?)
43rO ZD<sup>1</sup>: Z- ex corr. m. 3 / ZBD<sup>2</sup> corr. m. 3 ex DZB (?)
43rS recte ex corr. m. 1 / ante GZ ras. 2 litt.
43rT eo forte m. 3 / que A, B, G, ita in ras. m. 3
43rU post ZH mg. add. m. 3 hoc est, que TZ ad ZH
43rV ZK: -K ex corr. m. 1 / BZD: -Z-corr. m. 3 ex -E- (?) / BED¹ ex corr. m. 3
  / BED<sup>2</sup>: -ED ex corr. m. 3
43rW et supra scr. m. 1
43rY ZE<sup>1,3</sup> corr. m. 3 ex Z / BK corr. m. 1 ex TK
43rΘ BK<sup>1</sup> corr. m. 1 ex LB / esse del. m. 1 vel m. 3 / TZ: -Z ex corr. m. 3
43r\Pi ZK<sup>1</sup> corr. m. 1 ex ZE (?) / a^2 in ras. m. 3
43r\Phi ipsarum ex corr. m. 3
43vA proportionis ipsius<sup>1</sup> in lac. m. 3
43vD proportione mg. scr. m. 3 / eius<sup>1</sup> corr. m. 3 ex eo (?)
43vE-F quod est<sup>1,2</sup> O; signa transp. forte add. m. 3
43vF N^1 ex corr. m. 3
43vG simul duo accepti: συνδυο λαμβανομενοι (?) mg. m. 1 (vis. per u.v.)
43vH post eadem<sup>2</sup> mg. add. m. 3 proportioni / ei: eius m. 3
43vI ante quia del. m. 1 quod / est<sup>3</sup> add. m. 3
43vJ post B1 eras. m. 1 E
43vK que supra scr. m. 1
43vK-U omnia signa verb. Arch. om. O et gr. MS A; addidi
43vM ante et<sup>2</sup> mg. scr. m. 3 sphaerae
43vN Quoniam del. m. 3 et mg. scr. super eadem / eiusdem del. m. 3 / basis: -is
   del. m. 3 et scr. -es
43vO TG<sup>2</sup>... TZ m. 3 TG<sup>2</sup>... ad<sup>3</sup> mg. / ante Equiangula lac. 2 vel 3 verb.
43vR AT<sup>1</sup>: -T ex corr. m. 3 / GB<sup>1,2</sup>: \ddot{G}B O; signa transp. add. m. 3 (?)
43vS id<sup>1</sup> supra scr. m. 3 / ab<sup>1</sup> supra scr. m. 3 / GT^1 corr. m. 3 ex ET (?)
43vT TH<sup>3</sup>: -H in ras. m. 3
43vV conclusit: induxit m. 3 / super TH<sup>6</sup> supra scr. m. 3
43vW ita... AT^1 mg. scr. m. 3
43vX est<sup>2</sup> del. m. 1 vel m. 3
43vY concludit: inducit m. 3
44rA tetragoni del. m. 3 et supra scr. quadrati / tetragonum del. m. 3 et supra
   scr. quadratum / Sed... BG4 mg. scr. m. 3
44rB tetragonum: quadratum m. 3 / ad<sup>2</sup>... BG mg. scr. m. 3
44rD fit proportioni eius in lac. et mg. add. m. 3
44rG sub<sup>2</sup> in ras. m. 3
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44rH-I ante Demonstrandum et post TZ<sup>2</sup> signa verb. Arch. om. O et gr. MS A;

addidi 44rI GD corr. m. 3 in GT / quod<sup>3</sup> supra scr. m. 3

44rH ab<sup>3</sup> add. m. 3

- 44rJ sub² supra scr. m. 3 et mg. scr. m. 1 (vis. per u.v.) falsum puto (quia gr. MS A ὑπό omisit)
- 44rK-O omnia signa verb. Arch. om. O et gr. MS A; addidi
- 44rL Equalis... TB<sup>2</sup> mg. add. m. 3
- 44rN quod¹ supra scr. m. 3
- 44rO quia¹ corr. m. 1 ex quod / KL²: -L add. m. 3 / quod supra scr. m. 3 / est³ supra scr. m. 1
- 44rS a<sup>3</sup> ex corr. m. 3 / GT<sup>3</sup> corr. m. 3 ex GTB (?) / ante TZ<sup>2</sup> est ras. m. 1 / TH<sup>4</sup>:
  -H ex corr. m. 3 / Sed... GTB<sup>5</sup> mg. m. 3
- 44rT Ita del. m. 3 / ergo add. m. 3 / in TH add. m. 3 / sub<sup>1</sup> del. m. 3 et supra scr. a / ad<sup>3</sup>... eo mg. m. 3
- 44rU ante TZ del. m. 1 TH
- 44rV BG<sup>2</sup>: -G in ras. m. 3
- 44rW AT corr. m. 3 in AB
- 44rX que ab his mg. scr. m. 3 / post continent lac. 5 vel 6 litt.
- 44rY signum & in ras. m. 3 (?)
- 44rZ LE corr. m. 3 ex DE (?)
- 44vA ante est<sup>1</sup> add. m. 3 ergo
- 44vE  $quod^1 \dots ei^1 mg$ , add, m, 3 / sub ARG<sup>1</sup> in ras, m, 3
- 44vF post maius eras. m. 1 vel m. 3 eo / sub AKG<sup>1</sup> mg. scr. m. 3 / secundum del. m. 3 et supra scr. 3
- 44vG MKG corr. m. 3 ex MKT (?)
- 44vH XKA<sup>1</sup>: -KA m. 3 / GAR<sup>1,2</sup>: GA- in ras. m. 3
- 44vJ BK<sup>1</sup> corr. m. 3 ex GK (?) / BK<sup>2</sup> ex corr. m. 3 / guod<sup>8</sup> in ras. m. 3
- 44vK MK<sup>2</sup> ex corr. m. 3 / AR<sup>2</sup> corr. m. 1 ex ARK / AB<sup>3</sup> mg. m. 3 / quod quidem est in ras. m. 3 et mg. scr. m. 1 (vis. per u.v.) οπερ (?)
- 44vL ZA: -L m. 3 / LZ<sup>1</sup> corr. m. 3 ex AZ (?) / NL corr. m. 1 vel m. 3 ex NML
- 44vM ante ZT<sup>1</sup> del. m. 1 vel m. 3 B
- 44vN post basem<sup>2</sup> add. m. 3 quidem
- 44vO NTZ corr. m. 3 ex NTX (?) / signa verb. Arch. om. O; addidi / EZT O; signa transp. m. 1 vel m. 3 / BAD in ras. m. 3 EZT gr. MS A (Heiberg, 3, p. 225) et forte in textu m. 1 ante correctionem m. 3, mg. enim add. m. 1 (vis. per u.v.) in greco
- 44vP Eutokii: -k- del. m. 3 et scr. -c- / ante rememoratio scr. et del. m. 1 sub / ex traditione: -x tra- del. m. 3 / lecta del. m. 3 et supra scr. recognita / Melesio: supra -e-1 scr. m. 3 -i- / Isedoro: -e- corr. m. 3 in -i-

#### Variant Readings for De conoydalibus et speroydalibus

#### O in toto

- 45rA Liber... speroydalibus rubr. m. 1 / [Proemium] addidi
- 45rB michi: -c- del. m. 1 vel m. 3

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45rG ambligonii<sup>2</sup>: a- et -nii ex corr. m. 1
45rI vocari<sup>1</sup> corr. m. 1 ex vocare
45rM habebit: h'e bit in ras. m. 1
45rP ante contingant del. m. 1 p / factarum portionium supra scr. m. 1
45rS ante equales del. m. 1 r't
45rT utraque corr. m. 1 ex utramque / ante recto<sup>2</sup> del. m. 1 non et mg. add. in
  greco non habetur non (cf. gr.) / [non] addidi
45rU supra speroydalis<sup>1,2</sup> scr. m. 1 ge. ca (genitivus casus)
45rV abscisio corr. m. 1 ex abscisiosio
45rV, X de figura mg. scr. m. 1 no. ca (nominativus casus)
45vA portione O gr. MS A
45vC [Definitiones] addidi / concurrentibus m. 1 / absumpta<sup>1</sup> corr. m. 1 ex
  absumptam
45vG [Lemma] addidi
45vH [Propositiones] addidi
45vI ad ^4 mg. scr. m. 1
45 \text{vJ} ad<sup>2</sup> supra scr. m. 1
45vL X^1: X! m. I Z gr.
45vP superiectorum mg. repet. m. 1 / excedentia ex corr. m. 1 / de Hec mg. scr.
  m. 1 in greco deficit
45vU secusiecta in ras. m. 1 παραβληματα (?) mg. m. 1
45vX D^2, E^2: D DE m. 1
46rC de in conicis elementis mg. scr. m. 1 in tertio conici apollonii 20 theorema
  (sed sc. tract. de conicis Aristaei et Euclidis)
46rF secus...a: παραν δυνανται αι απο mg. m. 1, et infra add. m. 1 equedis-
  tanter si possunt
46rG AZ ex corr. m. 1; mg. scr. m. 1 AZ / ante penes del. m. 1 ab equalibus
46rH secuscadentia: παραπιπτοντα mg. m. 1 / et supra scr. m. 1 / AZ ex corr.
  m. 1; mg. scr. m. 1 AZ
46rJ post trigonum del. m. 1 d
46rM ante EZ<sup>2</sup> scr. et del. m. 1 GA
46rP ipsum corr. m. 1 ex ipsa
46rS AE[GZ]: -[GZ] addidi
46vE post diametris del. m. 1 tetragonorum / sectionum: -um ex corr. m. 1
46vG [Corollarium] addidi
46vJ post oxygonii<sup>2</sup> addidi [coni]
46vL post conus del. m. 1 habens
46vN ante intelligatur del. m. 1 in (?)
46vO EZ<sup>1</sup> bis et del m. 1 primum
46vP ut quidem bis m. 1 / LX: vel AX falsum mg. m. 1
46vR de ergo mg. scr. m. 1 ergo non in greco
46vV vel ellipsis sic, sed cf. gr.
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47rE sectionis supra scr. m. 1 / [non recta] addidi; cf. commentum
47rI \quad super^1 \quad corr. \quad m. \quad l \quad ex \quad in
47rJ post diametro mg. scr. m. 1 per 20 theorema primi conicorum apollonii
47rM rectus: 00000 \text{ mg}. m. 1
47rO GZ: GZ m. 1 et mg. scr. X pu[to?]
47rQ ZNH: in greco ZMH mg. m. 1
47rS equales O gr. MS A
47vC recto<sup>1</sup> supra scr. m. 1 / GA ex corr. m. 1 GD fm (falsum) mg. m. 1
47vE post sectio<sup>1</sup> del. m. I O
47vH CMB: CLB fm (falsum) mg. m. 1
47vI post est del. m. 1 rectanguli
47vO-P Similiter . . . GL cf. gr.
47vR post que<sup>4</sup> del. m. 1 BC
47vT ante enim del. m. 1 autem
47vW [14a.] addidi
47vY [14b.] addidi
48rA supra in ipsam mg. scr. m. 1 εσ αυτα
48rB
      14[c]: [c] addidi
48rG BG m. 1 forte ABG mg. m. 1 / ante super del. m. 1 secundum
48rM super contingentes enim: επι γαφ ταν επιψαυουσαν mg. m. l
48rO
      erit corr. m. 1 ex erunt
48rT
      ipsam: αυται mg. m. 1
48rU contingentes corr. m. 1 ex contingunt
      planum secans: secans planum m. 1
48rW
48rZ [recta] addidi
48vB ante NZ^1 del. m. 1 Z_ (?)
48vC in supra scr. m. 1
48vD figuram supra scr. m. 1
48vH D<sup>2</sup> ex corr. m. 1
48vK ex... compositum mg. scr. m. 1
48vL post quod<sup>3</sup> del m. 1 secuit / AG m. 1 DG falsum mg. m. 1
48vN supra speroydalis scr. m. 1 ge. ca. (genitivus casus)
48vR cylindrorum corr. m. 1 ex cylindri
49rA de portione mg. scr. m. 1 portionis
49rB supra conoydalis scr. m. 1 ge. ca. (genitivus casus)
49rF post basem<sup>1</sup> del. m. 1 cir
49rI post habentium mg. m. 1 deficit puto cf. gr.
49rJ DI m. 1 DG fm (falsum) mg. m. 1 / ante dicte del. m. 1 Dce
49rO [diametri] addidi
49rR post si del. m. 1 non / ante portio del. m. 1 a r
49rS
     [coni] addidi
49rT ipsa<sup>1</sup> supra scr. m. 1
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49rV que corr. m. 1 ex erit
49rY ducta: educta m. 1
49vA [in] addidi / post altitudinem del. m. 1 ad invicem
49vC B m. 1 BE in greco mg. m. 1
49vF supra conoydalis scr. m. 1 ge. ca (genitivus casus) / portionum corr. m. 1
  ex portiones
49vJ L^3: L' m. 1 A in greco mg. m. 1
49vK NL corr. m. 1 ex NA; mg. scr. NA
49vL NL corr. m. 1 ex NA
49vM LN<sup>1</sup>: in [greco] AN mg. m. l / LN<sup>2</sup>: AN mg. m. l / A\acute{Q} m. l A\acute{G} fm
  (falsum) mg. m. 1
49vP ante L<sup>1</sup> del. m. 1 M
49vQ ante K del. m. 1 K
49vS post planum del. m. 1 ducat
49vU BD m. 1 KD mg. m. 1
49vU-V supra conoydalis<sup>1-3</sup> scr. m. 1 ge. ca (genitivus casus)
50rH post Habebit lac. O, et in mg. m. 1 αμετρια / ΤΕ m. 1 ΤΟ fm (falsum) mg.
50rl ZDB: ZBD m. 1 / ZEB m. 1 ZOB fm (falsum) <math>mg. m. 1
50rJ [N] addidi
50rL ante ei<sup>2</sup> lac. 4 vel 5 litt. / post EB lac. 4 vel 5 litt. / M m. 1 N mg. m. 1
50rM habentem: hente m. 1
50rR post alia del. m. 1 i
50rV ante cum del. m. 1 sup / ante XN del. m. 1 N
50rY post que del. m. 1 B
50vB quoniam corr. m. 1 ex erit
50vC post existens lac. 6 vel 7 litt.; in mg. m. I αλλη sive αλλΗ / ipsa corr. m.
  1 ex ipsius / linea corr. m. 1 ex linee
50vD de invento igitur add. mg. m. I ! (cf. gr.)
50vE [que HD] addidi
50vG erit: erit (i.e. delendum?)
50vI ZDB<sup>1</sup>: ZLB fm (falsum) mg. m. 1 / ante propinquissime est lac. 6 vel 7
  litt.; mg. m. 1 hab. καθασ / ipsi supra scr. m. 1
50vJ DE1 corr. m. 1 ex BE
50vL post ad del. m. 1 invicem
50vO post conus del. m. l talis
50vR rectos supra scr. m. 1
50vY eorum del. (?) m. 1
51rE XQ supra scr. m. 1
51rJ ante ad^1 mg. add. m. 1!
51rK de hanc... tetragono mg. m. 1! (cf. gr.)
51rL trigono in ras. m. 1 / a<sup>1</sup>... tetragona in ras. m. 1 / equalis primo in ras. m. 1
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51rP ante non del. m. 1 a / contingentes corr. m. 1 ex contingentis 51rV post impossibile del. m. 1 por 51rX sectio<sup>1</sup> in ras. m. 1 51rY post B<sup>1</sup> del. m. I ad conum habentem basem 51vC post quidem<sup>1</sup> est lac. 4 vel 5 litt.; mg. m. 1 BH fm (falsum) (cf. gr.) 51vD utique similiter: ανομοιωσ mg. m. 1 51vE XO corr. m. 1 ex XT 51vG NO<sup>1</sup>: N- supra scr. m. 1 / habebunt: protrahantur for[te] mg. m. 1 51vU post ipsi1 del. m. 1 DE ad eum qui secundum ipsum cylindrum 51vW [omnia... ad] addidi; cf. commentum 52rF mg. habet m. 1 oo÷ et idem signum in figura Cs. 30 52rG TZ m. 1 DZ mg. m. 1 52rJ post cylindri del. m. 1 9 (com-) 52rM maior corr. m. 1 ex maioro (!) 52rQ TD<sup>2</sup>: TÁ mg. m. 1 ZE scripsi XE text. m. 1 for[te] mg. m. 1 52rS 52rV ZH: ZN mg. m. 1 52vA ED3: lac. text. O forte ED mg. m. 1 52vI TD m. 1 TA mg. m. 1 52vK ZE: Z text. O ZŞ (?) ZE vel Z mg. m. 1 52vL de quod continetur<sup>2</sup> supra scr. m. 1 no. ca. (nominativus casus) / de quod continetur<sup>3</sup> supra scr. m. 1 ac'. ca (accusativus casus) 52vM [minori portione ad abscisionem coni inscriptam in] addidi; cf. commen-

## Variant Readings for Euthochii Ascalonite rememoracio in libros Archymedis de equerepentibus

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O in toto, M 53rA-53vB
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- 53rA Euthochii... equerepentibus rubr. m. 1 / Aschalonite M / Archimenidis M
- 53rB Ptholomeus M / omne: enim M / adiscere M / Ptholomeo M

52vN de quoniam basem habent scr. mg. m. 1 suplevi

- 53rC ex<sup>3</sup> om. M / Archimenides M / manet corr. m. 1 ex manens
- 53rE aequidistantes M / ante ipsum del. m. 1 G / Geminus: genus M / Archymenide M / signa verb. Arch. om. O et gr. MS A; addidi
- 53rF post posita del. m. 1 Inequalium
- 53rG in equalia: inequalia m. I / itaque M
- 53rI ipsius<sup>2</sup>: ipsis M
- 53rI-J Ipso...  $L^1$  om. M
- 53rJ adaptabitur M / qui: que M / in<sup>2</sup> om. M / eadem: eandem M
- 53rK eadem<sup>1,2</sup>: eandem M / sphera M / chylindro M

- 53rL perhymetro M
- 53rM in secundo M
- 53rN Quare: quia M
- 53rO in quinto M / Hec M / longitudinem om. M
- facit<sup>1</sup>: faciunt M / aufferatur M / auffere M53rP
- 53rO sphericorum M
- 53rR BG<sup>1</sup> corr. m. 1 ex BD / ipsi<sup>2</sup> om. M / Ψ: x M hic et ubique / erit om. M / ante D $\Psi$  del. m. 1 DO (?)
- 53rT  $ab^1$ : a. b. M / ZG supra scr. m. 1
- 53rU  $hoc^2$ : hec M
- ipsas: ipsis M / equedistantes corr. m. 1 ex equedistantis /  $et^3$ ... RT om. 53rV M
- 53rW signa verb. Arch. om. O et gr. MS A; addidi / paralelogromi M
- 53rX K: H M / ZL: ZA mg. m. 1 et add. in greco ATE, KZA / TLG: ZLG M
- GDH corr. m. 1 ex GD9' / ZEH1: ZHB M / BAH1: EHA M / DE: DM M et corr. m. 1 ex DS
- 53rZ BD: BD m. 1 BT mg. m. 1
- 53vA Quare: quia M / per<sup>2</sup>: .p. M
- 53vB ipsi M / Quare: quia M / ante In add. M Euthochii
- 53vD comparare mg. corr. m. 1 ex secus iacere / hic corr. m. 1 ex huc
- 53vD. F signa verb. Arch. om. O et gr. MS A; addidi
- 53vH vertices corr. m. 1 ex verticem | ante erunt del. m. 1 non et mg. add. in greco erat non, sed falsum puto
- 53vI mg. m. 1 Noa (Nota) / ADG m. 1 ABG mg. m. 1 / EHT m. 1 ETH in greco mg. m. 1
- 53vJ de HA<sup>2</sup> mg. scr. m. 1 AD falsum / ante AD del. m. 1 AG (?)
- 53vK ante PMRS del. m. 1 PM
- 53vL post et<sup>3</sup> del. m. 1 que / mg. superiori scr. m. 1 in exemplari greco litere multum erant corrupte, quas correxi ut potui
- 53vM  $\triangle D^1 m$ . I  $\triangle D^1 m$ . I  $\triangle D^1 m$ . I  $\triangle D^2 m$ . I  $\triangle D^3 m$ . I quod ab EL] (cf. commentum)
- 53vN BL m. 1 BD falsum mg. m. 1 / DL m. 1 BL mg. m. 1
- 53vP post DB et mg. habet m. 1!
- 53vQ supra diametris add. m. 1 X et addidi [secantur] (cf. commentum)
- 53vR ante AD del. m. 1 8 / CBQZS'G m. 1 in greco GBA, falsum mg. m. 1; Heiberg (Basil.) scr. ΑΠΕΤΒΧΖςΓ
- 53vT ante rectilineum del. m. 1 in
- 54rB In sextum del. m. 1 / Centrum . . . rectilineorum mg. signa verb. Arch. falso hab. m. 1; delevi
- 54rC ante T, E del. m. 1 D, E et add. mg. Θe
- 54rE B, Ź m. 1 BDŹ mg. m. 1
- 54rH BT1: BŤ m. / BE mg. m. / / EH1: EH m. / EB mg. m. /

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54rl post BD3 del. m. 1 dupla
54rM sex<sup>1</sup>: \varepsilon \xi mg. m. 1
54rN signa verb. Arch. gr. Heiberg om. sed Moerbeke ea habet (cf. supra,
  19vB) / possebilitatem m. 1
54rX [decupla] addidi; cf. commentum
54vA [ut] addidi
54vB BD<sup>2</sup>: BD m, 1 BA mg, m, 1
54vC [...] addidi; cf. commentum
54vE ante Rursum del. m. 1 et
54vG ante ex<sup>7</sup> del. m. 1 qua
54vI post In<sup>1</sup> del. m. 1 S
54vL [tripla] addidi / [EB] addidi; mg. m. 1!
54vM, O [AB, BE... simulutriusque] addidi; cf. commentum
54vP unam facit: facit unam O / [ex] addidi / enim: vel generatur mg. m. 1 /
  quadrupla<sup>3</sup>: \alpha mg. m. 1; cf. gr.
54vR unicuique: vel unaqueque mg. m. 1 / BD<sup>1</sup> del. m. 1 sed cf. gr. / [BG]
  addidi / ut² bis et del. m. 1 secundum
54vT [dupla] addidi / ante DBA del. m. 1 DGB
54vW [quadruplam] addidi / turbata sic in O et gr. MS A, sed habet recte Crem.
  directa
54vX quadrupla<sup>1</sup> mg. corr. m. 1 ex sexcupla
55rA ipsa corr. m. 1 ex ipsam / de eadem mg. hab. m. 1 X! (cf. gr.) / de est mg.
  hab. m. 1!
55rF post ex del. m. 1 lateribus
55rG ante ipsius del. m. I ex p (?)
55rH-I signa verb. Arch. om. O et gr. MS A; addidi
55rI de DB mg. m. 1!
55rJ MN<sup>1</sup>: MN m. 1 LN mg. m. 1 / compositam rectam m. 1
55rJ-K signa verb. Arch. om. O et gr. MS A; addidi
55rM DH<sup>2</sup>: DH m. 1 ÅH mg. m. 1 / simul due accepte: \sigma v = \sigma v \delta v o
      λαμδανομεναι mg. m. 1
55rO KI mg. corr. m. 1 ex KG
55rP post antecedentium est lac. 4 litt. O; mg. m. 1 τα ε
55rR [quincupla...ex] addidi; cf. commentum / ad duplam: et ex dupla in greco
  mg. m. 1
55rS [NX] addidi; lac. in O / [NX] addidi et de MN... NC mg. habet m. 1!
55rT MO m. 1 MT mg. m. 1
55rU BH1: BH m. 1 QH mg. m. 1 / QR m. 1 QER falsum mg. m. 1
55rV [CN] addidi; lac. in O
55rV [...] addidi; cf. commentum
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#### Variant Readings for Liber de insidentibus aque

- O in toto, MTBa 55vA-56vF, Leonardo 58vK-60rA
- 55vA mg. super. scr. et eras. m. 1 (sed vis. per u.v.) Liber Archimedis de insidentibus aque / Liber... aque rubr. m. 1 / Liber Archimedis: Archimedis liber primus Ba / ante Supponatur scr. T Suppositio prima / et² om. Ba / quod del. m. 3 et om. Ba / ipsam: ipsius MT ipsum Ba
- 55vB [1] et sequentes numeros [2] [8] in m. 3; omnes numeros om. m. 1, et numerum [9] libri I et omnes numeros libri II om. m. 3 / 1: Theorema primum. Propositio prima T (et similiter pro numeris sequentium propositionum) / plano<sup>1</sup>: plane MT / post aliquod add. T (sed non M) signum / semper<sup>1,2</sup>: super Ba / facientem MTBa / peripheriam Ba / Sit: Si MT
- 55vC facientes MT / Sint: Sit T (sed non M) / que<sup>2</sup> om. MTBa
- 55vD lineam om. Ba / superficiem<sup>1</sup>: -ies T (sed non M) / immotum: in motum T
- 55vE non motum: immotum Ba / lineam<sup>1</sup>: linea T (sed non M)
- 55vF quarundam<sup>1,2</sup>: quibusdam Ba / occurentium: occurentibus Ba / habens del. (?) m. 3 / quarundam<sup>3</sup>: quorundam MT quibusdam Ba
- 55vG occurentium: occurentibus Ba / est: erit Ba / quarundam: quorundam T (sed non M) quibusdam Ba / Sit: Sint MT / que<sup>1-3</sup> om. Ba / Z-: R- T (sed non M) / ducantur MT / copulentur MT / HK: HKZ m. 3 / KEL: HEL MT / facient Ba / quedam: quidam M quidem T
- 55vH et om. MT / [et] addidi / que om. Ba / ante humido add. MT POBE / que<sup>2</sup> corr. m. 3 in quod / ZB: XOBA mg. m. 1 / BE: POBL mg. O (-OB- m. 1 P--L m. 3) / Inequaliter: aequaliter T / que<sup>3</sup> om. Ba quod MT / non<sup>1</sup> del. m. 3 / expelletur T repellentur Ba / Non ergo . . . aliquod: Non etiam ergo . . . aliquod MT ov un  $\checkmark$  ti mg. m. 1 [ $\checkmark$  =  $\mathring{\alpha}$ o $\alpha$ ]
- 55vI linea MT / esse: est MT / quomodocunque aliter in lac. m. 3 Ba, lac. M om. T και πῶσ ς' αλλωσ mg, m, I / plano secta tr. Ba / erit om. Ba / quod et tr. Ba
- 55vJ est<sup>1</sup> om. T / post superficies est lac. 3 vel 4 litt. / centrum<sup>3</sup> Ba et mg. m. 3, om. MT / per<sup>2</sup>... plano: δι ου τεμνεται τω επιπεδω mg. m. 1 (vis. per u.v.) / est<sup>3</sup> om. MT
- 55vK demisse: -e-forte m. 3 dimisse MT / superficiem: -em renov. (?) m. 3; hab. M/ excedant: -ant renov. (?) m. 3; hab. M / et in ras. m. 3 nihil et M / ferentur: referentur M / Demittatur Ba et in ras. m. 3 demostratur M demonstratur T
- 55vL eductam: et ductum Ba / que<sup>1,2</sup> om. Ba / magnitudinis<sup>1</sup>: magnitudines MT / insidentis Ba insidentia O insidentia MT οχημα mg. m. 1 σχημα gr. / K om. T (sed non M) / Sit: Sint MT / quod quidem om. Ba / quod<sup>2</sup> om. Ba / autem BEZG tr. Ba

- 55vM comprehensa: compressa MT / bassem T / habentem MT / paralelogrammum MT parallelogramum Ba / que<sup>1,2</sup> om. Ba / KM: KM (?) mg. m. 1 (vis. per u.v.) / que XOP: videlicet ex OP Ba / Secetur MT et corr. m. 1 ex secentur; seccetur que Ba et post secetur add. m. 3 -que / hec: hoc T / secundum XOP add. m. 3, om. MT secundum ex OP Ba
- 55vN que<sup>1</sup> om. Ba / ab om. T / assumpta MT / -C-: -E- MT / BHEG MT BHTG m.
- 55vO que<sup>1,3</sup> om. Ba / equo: quo MT / et non MT; del. m. 3 et scr. et / Non mg. m. 3 / enim: etiam MT / -Z: -R T (sed non M) / superficierum<sup>1</sup>: -rum corr. m. 3 ex -m (?) superficiem M superficie T / XO<sup>3</sup>: \(\mathbb{E}\) O gr. MS C et mg. scr. m. 1 (vis. per u.v.)
- 55vP inequale OMT ανισον gr. MS C; sed cf. Heiberg, 2, p. 324, lin. 16 var.
- 55vQ igitur supra scr. m. 1 / demersum: demissum Ba / fertur MT (non possum legere Ba hic)
- 55vR cum humido om. MT / humido<sup>2</sup>: humidi T (sed non M) / dimissa: demissa Ba / Sit: fit MT / demissa: -e- forte m. 3 dimissa MT
- 55vS ABGD m. 1, MTBa -D del. m. 3
- 55vT secundum<sup>1</sup>: per MT / qua Z: Z M R T (R pro Z hic et aliubi in T) / comprendens T (sed non M)
- 55vU autem<sup>2</sup> del. (?) m. 3 / post secetur add. m. 3 -que
- 55vV secundum superficiem<sup>2</sup>: superficiem M superficie T / equo: quo MT / enim om. MT / ipsam: ipsas T (sed non M) ipsum Ba
- 55vW qui<sup>1</sup>: quae Ba / AB . . . qui secundum om. Ba (sed habet Commandinus) / ante ab mg. scr. m. 3 a solida magnitudine secundum HB (non in gr. MS C) / premittitur T / continenti: -i- om. T (sed non M) / et<sup>2</sup> om. MT / magnitudine: magnitudinem T (sed non M)
- 56rA post humido est lac. 7 litt. et mg. scr. m. 1 τασ δε / autem<sup>1</sup> Ba et supra scr. m. 3, om. MT / utraque ex corr. m. 1 eritque MTBa / igitur<sup>2</sup>: ergo MT
- 56rB demergetur<sup>1</sup>: demergitur *Ba* / humido *om*. *MT* / demissa: -e-forte *m*. 3 dimissa *MT* / demerse: demersi *Ba*
- 56rC eandem MT / ipsius: eius Ba / qua: que M quae T / premuntur: premitur MT
- 56rD de humidi<sup>2</sup>... pyramide<sup>2</sup> mg. scr. m. 1 (vis. per u.v.) suplevi (?) / sine<sup>2</sup>: sive T (sed non M) / toti: tali Ba
- 56rE impressa: vi pressa MTBa / sursum: surresi M surrexi T / feruntur MT fecorr. m. 3 in refe- / quanto: quanta (?) Ba
- 56rE-F mole<sup>1,2</sup> T (sed non M)
- 56rF vi<sup>1</sup>: ubi MT / refertur MTBa referetur m. 1
- 56rG eandem: eadem MT / est levior tr. Ba / que om. T (sed non M) / molem<sup>1</sup>: mole T (sed non M) / ipsius... cum om. MT / Dimittatur m. 1 MT; corr. m. 3 in De- / demergetur: demergatur Ba
- 56rH enim om. MT / post superficies add. MT quedam et corr. m. 3 hum-ex quedam humidi (?) / Quoniam igitur: quando equaliter Ba

- 56rI post enim¹ est lac. ½ + ½ lineae et in mg. habet m. 1 ει γαρ ταυτ<sup>5</sup> δεδυκραι (?) τελειον εσειται δεδυκ° του δεδειγμενον / post tanta¹ del. m. I que D est superius / premitur tr. MT post D<sup>2</sup> / ab . . . scilicet D MTBa et mg. m. 1 / premit: premitur Ba / supponebatur: supo- m. 1 (?) supp- M
- 56rJ D: G.D MT / equale: equalem MT / ferrentur MT / donec descendant: εστ' αν καταδαντι mg. m. l / molem: mole T
- 56rK igitur om. MT / ferentur: ferretur MT / in om. Ba / donec descendant: εσταν κατ'δαντι mg. m. 1 donec descendat MT / ipsis1: ipsius MT / equo: quo MT / ipsis<sup>2</sup>: ipsas MT / gravior humido<sup>1</sup> tr. Ba / que<sup>2</sup> om. Ba
- 56rL sit: sic (?) O / sitque T
- 56rM mole aequale T (sed non M) / erit equegravis: aeque erit gravis Ba / simulutrarumque<sup>2</sup>: utrarumque simul Ba / autem<sup>3</sup> om. MT
- 56rN mole T (sed non M) / Dimissis: De-m. 3 / igitur: aequaliter Ba / neque1: nec  $MTBa / ad^{1,2}om$ .  $Ba / ferrentur MT / neque^2$ :  $nec Ba / ferretur MT / ad^3 om$ . Ba / via: via T / autem: etiam Ba
- 56rO solide supra scr. m. 1 / impresse: compresse Ba / ad om. Ba
- 56rO-P in $^3$  ... D om. MT
- 56rP feretur: fertur MT / in<sup>2</sup> om. Ba / feri MT / post producitur mg. scr. m. 1 (vis. per u.v.) opoo (?)
- 56rQ solida: sola Ba / dimittatur: de- m. 3 / trahatur: trahitur MT / si<sup>3</sup>: sed M secundum T / post restituatur mg. scr. m. 1 Et erat vacuum dimidium folium. Probatio huius theorematis deficiebat in exemplari greco, et erat finis quaterni et in principio sequentis quaterni stabant figure istius theorematis, ut puto
- 56vA [9] addidi / igitur: aequaliter Ba / demittatur Ba / demissa Ba / etiam om. Ba
- 56vB que<sup>1</sup> om. Ba / que<sup>2</sup> om. MTBa / que<sup>3</sup> om. Ba / sit que<sup>1</sup>: sit que MT / que<sup>4</sup> om. Ba / que<sup>5</sup> om. Ba / sed: secundum T (sed non M) / statuetur corr. m. 1 ex stabtuetur
- 56vC primo om. MT / terre centrum tr. MT / ducatur que: ducatur que M ducatur TBa / figura<sup>2</sup>: signa Ba / assumpta MT / habet: habens mg. m. 1 / que<sup>2</sup> om. Ba / eadem: eandem MT
- 56vD NK: NK Ba / inter om. Ba / assumpta T (sed non M) / post absumpta est lac. 7 litt.
- 56vE post perpendiculari est lac. 20 litt. / feretur: ferretur MT fertur Ba / RA mg. corr. m. 1 ex RO quod habent MTBa / ad 1-4 om. Ba / OL: OR Ba / igitur2: eius Ba / ferentur: ferrentur MT
- 56vF semper: super MT / que om. Ba / Archymedis . . . explicit om. Ba Explicit primus M Explicit de insidentibus aquae liber T / [1] addidi, et etiam numeros sequent, prop.
- (No more variants from MTBa after Book I, but in Book II, Prop. 10, there are a few variant readings from the Codice Atlantico of Leonardo.)
- 56vH ante NI<sup>3</sup> del. m. 1 NR
- 56vI post humidum<sup>2</sup> evan. 2 vel. 3 litt. / post B<sup>3</sup> del. m. 1 est equalis

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56vK post FA<sup>1</sup> est lac. 6 litt. | post proportionem<sup>2</sup> est lac. 3 vel 4 litt. | post R<sup>2</sup> est
  lac. 2 litt. et mg. scr. m. 1 RN / [non] addidi
56vN IS1: mg. corr. m. 1 ex K (K in text. et mg. HK. IS) / IS2: ISK m. 1 / NO2: NT
  mg. m. 1 | ad P des. text. Prop. 2 et est lac. 2/3 columnae OBa; mg. scr. m. 1 hic in
  exemplari erat vacuum dimidium folium et deficiebat residuum demonstrationis
57rA [non] addidi / post axem² del. m. 1 h
       PF etiam mg. m. 1
57rD post figure del. m. 1 sit G/RT<sup>1</sup> ex corr. m. 1 mg. et text. / post autem<sup>2</sup> del. m. 1
   a G, B
57rF supra ad scr. m. 1 va- et supra axe scr. -cat et sic ad . . . axe del. M (sed non
  Commandinus); mg. add. m. 1 non erat in greco, tamen (?) eu[m] (?) deficere; (cf.
  gr.)
57rH [sectionis] addidi
57rI TR: ! mg. m. 1
57rJ RM<sup>2</sup>: EM mg. m. 1 / Quoniam igitur: ε ου (= ἐπεὶ οὖν?) mg. m. 1 / ante OH
  del. m. 1 H / post est<sup>1</sup> est lac. 2 litt. / post est<sup>2</sup> lac. 5 litt.; mg. scr. m. 1 a (?)
57rK ante quo del. m. 1 quod/ante proportione del. m. 1 illa/proportione mg. m. 1
57rL post quod 3/4 lineae lac, in ras.; mg. scr. m. 1 ab NO (hic scr. Commandinus a
  PF ad tetragonum quod ab NO)
57\text{rM} Non: 00\overline{\varkappa} mg. m. 1 / quam<sup>3</sup> corr. m. 1 ex que
57rN MT: NT mg. m. 1 / perpendicularis: \Lambda mg. m. 1
57rR [portionis] addidi
57rT OH: ON mg. m. 1 / HM: NM mg. m. 1 / in gravitate supra scr. m. 1
57rU ante portio¹ del. m. 1 a (?)
57rV MT: MO for[te] mg. m. 1
57rW mg. hab. m. 1 H 🎋 (sed quamobrem?)
57vC [quam] addidi de T; est lac. O / humidum¹ supra scr. m. 1
57vE
       [sectionis] addidi / \Omega K: v'\omega mg. m. 1 et inferius scr. deficit puto
57vF
       [I] addidi
57vG post Pdel. m. 1 de (?) / [aut] addidi; est lac. O ubi hab. m. 1 + et mg. add. + /
  \Omega H: Nc^{\omega} mg. m. 1
57vI
      TR: FR mg. m. 1 / FB^2: FR mg. m. 1
57vJ
       Revolvebtur m. 1 ανακλιθησεται mg. m. 1
57vL [quam] addidi / de quam² mg. scr. m. 1 quam relativum
57vN [sectionis] addidi / sit que PF<sup>1</sup>: PF sit que m. 1
57vP
       eadem prioribus: ταυτα mg. m. 1 / RF¹: RT mg. m. 1
57vQ unum<sup>1</sup> supra scr. m. 1
57vR [quam] addidi
57vT CD etiam mg. scr. m. 1
58rA
       F: FA mg. m. 1
58rC
       de recto mg. scr. m. 1 in greco recto non
58rD
       [portionis] addidi / I\Omega: in greco B\Omega mg. m. 1
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58rE PIN: PIM (=PIY?) mg. m. 1 / post ad² lac. O et 😘 (=Y?) mg. m. 1 et
  inferius puto .\omega.v\eta\omega \frac{2}{3} / I[Y]^2: I—(?) m. I
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58rE-F [Y] addidi ubique; sunt lac. in O et mg. hab. m. 1 (\*) (=Y?)

58rF  $\Omega$ :  $\overline{AZ}$  mg. m. 1 IY gr.

58rH post proportionem¹ del. m. l hi (?)

et educatur: et sit educta mg. m. 1 / TH: TN mg. m. 1

58rK [quarum] addidi / GL: GD mg. m. 1 / [L] addidi / et supra scr. m. 1 / et secundum G delendum est / predicta corr. m. 1 ex predictam

58rL A: vel Lmg. m. 1 / inutile: ου χρηστ' mg. m. 1 εὔχρηστον (=utile) gr. MS C

58rM  $I\Omega^{1,2}$ : IY gr. G mg. m. 1 /  $\Omega I^1$ : YI gr. G mg. m. 1 /  $[\Psi R]$  addidi / post dupla<sup>2</sup> est lac.  $O \mu mg. m. 1 / [maior]$  et  $[\Omega I]$  addidi; cf. Command.; et etiam vide Command. pro sectionibus alternatis

58rN ante ipsi del. m. 1 minor quam

58rO HT mg. corr. m. 1 ex NO/ante illo del. m. 1 quam / ad humidum supra scr. m. 1

58rP  $\Omega$ I: R $\Omega$  mg. m. 1 / HM mg. corr. m. 1 ex H $\Omega$  / [H] addidi; lac. O et mg. scr. m. *l* το δε ∠ (del.) Η ∠ [=ἄρα]

58rQ enim *del. m. 1 (?) /* [quam] *addidi* 

58rR post posita del. m. 1 in humido

58rT supra tetragonum<sup>4</sup> scr. m. 1 no. ca. (nominativus casus) / supra tetragonum<sup>5</sup> scr. m. 1 ac. ca. (accusativus casus) / [quam . . . excessus] addidi; cf. Command.

58vA quod<sup>6</sup> scr. m. 1 supra autem quod del. m. 1 / portio dimissa corr. m. 1 ex portionem dimissam

58vC [sectionis] addidi / quidem supra scr. m. 1

58vG PZ: PZ m. 1 PM puto mg. m. 1 (cf. gr. quod hab.  $\Pi$ Z)

58vH TH m. 1 et mg. del. m. 1 TH et scr. TN for[te] / que<sup>4</sup> scr. m. 1 supra perpendiculares quod del. m. 1 / TN: TH mg. m. 1

58vI sine inclinatione: ακλινεσ mg. m. 1 / [deorsum . . . A] addidi; cf. Com.

58vJ post consimiliter del. m. 1 b

58νΚ quam<sup>2</sup>: τοῦ ὄν mg. m. l

58vM [portionis] addidi

58vN [sit...axem;] addidi; cf. Com. / post que est lac. O et mg. scr. m. 1 λc.LS

58vO [I] et [D] addidi; cf. gr. et Com. / ABL corr. m. 1 ex ABI / NGO mg. m. 1

58vP Os in fig. in O O et lac. 1 litt. textu O OZmg. m. 1 / post basem est lac. O et mg. scr. m. 1 HaH / post PNO est lac. 10 litt. / [NG] addidi / OG: NµH mg. m. 1 / post habet est lac. 5 litt. in ras. (forte esse in ras.)

58vQ LA<sup>1</sup> in ras. m. 1 / post LA<sup>2</sup> est lac. 2 litt. / ante DZ<sup>2</sup> del. m. 1 DA / post duple est lac. 5 litt.

58vR ante GX del. m. 1 X

58vS DS: ds d m. 1 / [Pars I] addidi

58vT axe corr. m. 1 ex axem

58vU [Pars II] addidi / ad³ del. m. 1 (?) / post basis est lac. 2 litt. in qua [ipsius non] addidi; cf. gr. et Com.

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58vW [et . . . § ] addidi; cf. Com.
59rA [Pars IV . . . humido] addidi; cf. Com. et meum commentarium
59rB [Pars V] addidi
59rC [Demonstratio . . . partis] addidi ex Com.
        🔊 correxi ex 🜴 in mg. O: est lac. in textu, om. Leo. / B' scripsi B m. 1 cB
59rE
  mg. m. 1/post que¹ est lac. 3 litt. in qua [O > dupla] addidi ou mg. m. 1/ > N
  mg. m. 1 et lac. 4 litt. textu O et Leo. / PS: PLeo. / SX: 🔄 __m. 1 / et ab om. Leo.
  / [linea...Q] addidi; cf. Com.
59rG [humidum...et] addidi de Heiberg; lac. O; hic et mg. hab. O et Leo. //
  Dimittatur: Demonstratur Leo.
59rH ante OA del. m. 1 AO / [sectionis] addidi
59rJ APO mg. corr. m. 1 ex APS quod habet Leo. / de ABLK add. m. 1!
59rK O \( \mathbb{S} \) S mg. m. 1 O et lac. textu O et Leo. / que bis Leo.
59rL reclinabitur: re-corr. m. 1 ex in-
59rM [Demonstratio . . . partis] addidi ex Com.
59rN superficiei: superficies Leo.
59rR ante auferentes del. m. 1 ai (?)
59rS post OY¹ est lac. 3 litt. et mg. scr. m. 1 K / post PN est lac. 5 litt. et mg. scr.
  m. 1 P % (?) / (% T) scripsi de gr.
59rT \mathbb{K}^{n-1}: \mathbb{K}^{n} \mathbb{K}^{n}: \mathbb{K}^{n} \mathbb{K}^{n} \mathbb{K}^{n} \mathbb{K}^{n} \mathbb{K}^{n} \mathbb{K}^{n} \mathbb{K}^{n} \mathbb{K}^{n} puto \mathbb{K}^{n} \mathbb{K}^{n}
59rU [portiones] addidi
59rV N: μ mg. m. 1 / [sit...ipsius] addidi ex Heib. / que<sup>2</sup>: qd' O / Λ mg. corr. m.
   lex H / K n mg. corr. m. lex KH
59rX [quod] addidi / HP: μP mg. m. 1
59vA [Demonstratio... partis] addidi ex Com. / supra Habeat scr. m. 1 sit
59vB XOmg. corr. m. 1 ex XT / AXD: -[X]- addidi; lac. O / post T est lac. O; mg.
  scr. m. 1 o⊖ s
59vC ante ut<sup>2</sup> del. m. 1 ita
59vD ante tangat del. m. 1 contingat
59vE HS: O mg. m. 1
59vG [L] addidi / [trigoni FCΩ] addidi; est lac. 10 litt. et mg. scr. m. 1 του \overline{\varphi}.τω \nabla
  / H & mg. m. 1 HL text. O
59vH post que¹ est lac. 4 litt.
59vJ MI: ! mg. m. 1
59vK [Demonstratio . . . partis] addidi ex Com.
59vL [ad... BD] addidi ex gr. / TN mg. corr. m. 1 ex ON
59vP HT: NO mg. m. 1
59vQ HT: NO for[te] mg. m. 1
59vR HIS: HLS (?) / I: L (?) / - % M, evan. O
59vT ante axis del. Leo. basis
59vU [non] addidi ex gr. / [que . . . SB] addidi; est lac. 12 litt. in O et 8 litt. in Leo.
  HSBIHCCB mg. m. 1 IISBIHCCB mg. Leo.
60rA Archimenidis Leo. / faciat: -at addidi / explicit: in humido Leo.
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# A Commentary to the Archimedean Translations of William of Moerbeke

#### Introduction to the Commentary

The main purpose of this Commentary is to illustrate in some detail William of Moerbeke's treatment of the Greek text as found in Greek MSS A and B.1 Needless to say there are far more comments devoted to his use of Gr MS A than to his use of Gr MS B, since, as I have said in Part I, we can for the most part reconstruct the text of Gr MS A from the copies made from it in the fifteenth and sixteenth centuries. Hence in the case of Gr MS A we can know rather precisely the text that Moerbeke confronted. Such is not true in the case of Gr MS B, long since lost and apparently never copied, for we know of the text presented by Gr MS B only through the translations of William of Moerbeke himself. Thus we must, if we comment at all, restrict ourselves to conjectures as to the text which Moerbeke translated. In view of the main purpose of this Commentary, I have kept to a minimum discussion of the mathematical content of the works of Archimedes, limiting it primarily to comments on Moerbeke's understanding or misunderstanding of the mathematics as represented by the Greek text available to him. More extended mathematical commentary, focusing on Archimedes rather than on Moerbeke's appreciation of Archimedes, can be found by the reader in the various editions, translations and paraphrases of the Syracusan's works, supplemented to some extent by my detailed treatment of the use of Moerbeke's translations in Volume 3 below.<sup>2</sup>

My references here to Moerbeke's text are located, as in the Variant Readings and indeed throughout the volume, by means of folio number and section letter. The reader may notice an occasional inconsistency between the passage to be commented on as given here and as given in the edited text. In the text all additions to it by m. 2, m. 3 and me are included within square brackets. But in quoting such additions by m. 2 and m. 3 in the Variant Readings and the Commentary I have left off the brackets lest I give the false impression that either of the Renaissance correctors used any form of bracketing. Another minor inconsistency should be noted. In the edited text I have written enunciations in majuscules

<sup>&</sup>lt;sup>1</sup>See my general discussion of the nature and contents of Gr MSS A and B and Moerbeke's use of them in Part I, Chap. 2, Sect. I. Consult also the various remarks on the capabilities of Moerbeke as a translator in Part I, Chap. 1, Sect. III.

<sup>&</sup>lt;sup>2</sup>I have cited a number of the modern translations of Archimedes' works in Part I, Chap. 2, Sect. III, n. 7, to which I should add, in general, the extensive literature listed in the Bibliography to Volume 3 below and, in particular, E. J. Dijksterhuis' very perceptive study *Archimedes* (Copenhagen, 1956), with the mathematical literature it cites.

(for the reason I explained above in Part I, Chap. 2, Sect. III). But in the Variant Readings and the Commentary I have usually given terms or phrases drawn from the enunciations in minuscules. I have done this because occasionally the term or phrase in the cited passage has occurred more than once and there is need to comment on its multiple use without excessive repetition of majuscule and minuscule forms.

I have not given every instance of orthographic change of false readings in Gr MS A implied by a correct translation by Moerbeke. For example, I have not noted every case in which the scribe of Gr MS A wrote εσειται instead of εσσειται and Moerbeke correctly rendered it as *erit*. Similarly I have not singled out every change of an incorrect definite article in Gr MS A implied by Moerbeke's correct translation of the noun to which it belongs or every change of gender (e.g. μείζον for μείζων).

In my Commentary I have used some expressions that might need explanation. After giving the reading in Moerbeke's Latin translation to be commented on, I often say "not in Gr MS A," by which I mean of course that the Greek equivalent term or phrase is not in the Greek manuscript. Similarly I repeatedly say that Heiberg has added some Greek term or terms before or after Moerbeke's reading. I of course mean that the additions are to be added before or after the Greek equivalent to Moerbeke's reading. The same holds for my comments that say that Heiberg deleted a word or words found in Moerbeke's translation. In reporting in the Commentary some crucial additions that ought to be made to the Greek text (most often on the suggestion of Heiberg), I have given an accompanying Latin translation in Moerbeke's style (see, e.g., my comments to 46vK ["recta etc."] and 50vD). I have done this for the convenience of the reader attempting to follow the argument as presented by Moerbeke. Sometimes the translation of an adjective added in parentheses after its Greek equivalent will be of a gender different from that of the Greek word. In such cases the reader will see that this is because the Latin noun which the adjective modifies differs in gender from the Greek noun which it translates. Finally I note that the reader might be momentarily puzzled by a statement like the following (see the comment to 34vL): "'KN' Moerbeke has corrected KH in Gr MS A." This means that Gr MS A had KH and that Moerbeke rejected that reading in favor of KN. As I noted in Part I, Chap. 1, Sect. III, Moerbeke sometimes wrote Gr MS A's false reading in the margin but very often he simply made the correction silently.

My knowledge of and citation to Gr MS A rest for the most part on Heiberg's splendid edition with its critical apparatus, though I have on occasion independently cited the Greek manuscripts on which it was based. I have also occasionally cited the various versions of Archimedes' works prepared in the Renaissance, though for the most part I leave the detailed consideration of these later versions to Volume 3 below. Again I remind the reader that accents and breathings were missing in Gr MS A and accordingly I have omitted them in my quotations from Gr MS A below.

I have used the following abbreviations for works frequently cited in the Commentary:

- 1. Basel ed.: Archimedis... opera quae quidem extant omnia (Basel, 1544).
- 2. Commandino: When cited in the comments to texts 1-8 below, the reference is to Archimedis opera non nulla Federico Commandino Urbinate nuper in Latinum conversa, et commentariis illustrata (Venice, 1558). When cited in the comments to text 9, the reference is to Archimedis de iis quae vehuntur in aqua libri duo a Federico Commandino Urbinate in pristinum nitorem restituti et commentariis illustrati (Bologna, 1565).
- 3. Gr 1 (or 2 or 3): Archimedis opera omnia, ed. of J. L. Heiberg, 2nd ed., 3 vols. (Leipzig, 1910-15). The volume number is followed by the page and line numbers. To the line numbers I have often added var, which indicates that the reader should consult the designated line and the appropriate variant reading or readings to that line.
- 4. Heath, Archimedes: T. L. Heath, The Works of Archimedes (Cambridge, 1897; reissued by Dover Publications, New York, 1950).
- 5. Mugler, Archimede: C. Mugler, Archimede, 4 vols. (Paris, 1970-72).
- 6. Torelli: Archimedis quae supersunt omnia cum Eutocii Ascalonitae commentariis, ed of J. Torelli (Oxford, 1792).
- 7. Ver Eecke: Les Oeuvres complètes d'Archimède, ed. of P. Ver Eecke, 2 vols. (Paris, 1960).

## Commentary on the Liber Archimedis de quam pluribus theorematibus [de figuris elicis] (11vA-16vT)

11vA "de quam pluribus theorematibus" It is a puzzle as to why Moerbeke did not simply translate the title as it appeared in Gr MS A: περὶ ἐλίκων. My best guess is that at the beginning he was hesitant about the proper translation of the Greek term ἐλίκων, for in 11vP he transliterates the term and then adds as an explanation: "circa elicas, quas latini volutiones vel revolutiones vocant." For the various terms used in the middle ages for a spiral, see below, Vol. 3, Part I, Chap. 1, Commentary. It is worth observing further that helix (as well as ellipsis, hyperbola and parabola) had appeared in Classical Latin in nonmathematical contexts. See Fr. O. Weise, Die griechischen Wörter im Latein (Leipzig, 1882), pp. 237, 410, 430, 439, 480, and G. A. E. A. Saalfeld, Tensaurus italograecus (Vienna, 1884), cc. 433, 535, 578, 814. Note that the scribe of MS R has given the title as Liber Archimedis de figuris elicis sive..., while Coner has added another term for spirals: volutis (see 11vAvar). See the first comment to 13rT below.

- 11vB "Que" This translates ποια in Gr MS A. Heiberg, Gr 2, 2, 11var, (following Barrow) gives πόσα, which could be rendered "Quot."
- 11vC "et obscura" This translates αδηλα in Gr MS A. But this makes no sense. Heiberg, Gr, 2, 2, 14var, (following Madvig) suggests ἢ δῆλα. The meaning of the whole sentence would then be, as Heath, Archimedes, p. 151 has rendered it: "Now Conon died before he had sufficient time to investigate the theorems referred to; otherwise he would have discovered and made manifest all these things and would have enriched geometry by many other discoveries besides."
- 11vD-E "Etenim... impossibilia" Moerbeke was confronted here with the following confusing text in Gr MS A (see Gr 2, 2, 23var and 25var): και γαρ συμβαινει δυο τινα των εν αυτω (1) μη κεχωρασμενα (2) τελους δε ποτεσσομεν (3), οπως οι φαμενοι μεν παντα ευρισκειν αποδειξιν δε αυτων ουδεμιαν εκφεροντες ελεγχωνται αποθωμολογηκοτες (4) ευρισμειν τα αδυνατα. It is evident from Moerbeke's translation of this text that he has failed to divine Archimedes' intention. But at least we can see that he read (1) as αὐτοῖς, (2) as κεχωρισμένα, (3) as ποτιθήσομεν and (4) as ώς ποθωμολογηκότες. Moerbeke's misunderstanding arose not only from the corrections he made in words (1)-(4) but also from his apparent belief that ουδεμιαν should not be translated. Incidentally, Heiberg and all of the recent interpreters of this passage have understood the participle represented by (4) in essentially the same way, namely that "they are confuted just as those who have professed to discover the impossible." I wonder if Archimedes meant rather that "having not confessed that they are finding the impossible, they are confuted." If this is the case, perhaps the original reading ἀποθωμολογηκότες (= ἀπροσωμολογηκότες), though strange and unknown elsewhere, might be correct, with the initial &- being a negative prefix.
- 11vE "ferentes probantes" This renders πομιζοντες δοπιμαζοντες in Gr MS A. Heiberg, Gr 2, 4, 3var, and 4var, gives πομίζομες, δοπιμάζομες.
- 11vI ''non maiorem'' This renders μη μειζονα in Gr MS A, but should rather be ''maiorem,'' with the ''non'' deleted. See Gr 2, 4, 26var.
- 11vK "minorem<sup>2</sup>" Not in Gr MS A but properly added by Moerbeke. See Gr 2, 6, 7var.
- 11vM "cono" No doubt Archimedes meant to say "conoid."
- 11vM "diameter" In Archimedean parlance the axis of a parabola is always called its "diameter" and diameters are designated as "lines parallel to the diameter."
- 11vP "non nunc" See above, Part I, Chap. 1, Sect. III, List C, item (1).
- 11vP "elicas" This was ελικας in Gr MS A. See Gr 2, 8, 14var.
- 11vP "quas... vocant" This is, of course, an addition made by Moerbeke.
- 11vS "circa idem" This translates περι το αυτο in Gr MS A. Heiberg, Gr 2, 10, 1var, (following Torelli) gives πέρατος αὐτᾶς, i.e., "the [fixed] extremity of it."

- 11vU "comprehensum est" Gr MS A, by a slip, had ποτιλαφθεν instead of περιλαφθεν. But Moerbeke realized this and translated it as if it were the latter term. For he always translated ποτιλαμβάνω by assumo and περιλαμβάνω by comprehendo. See Gr 2, 10, 13var and the Greco-Latin Glossary below.
- 11vW "maioris" Here and in 11vX Moerbeke went astray, unjustly correcting the text from "minoris." He did this because both the enunciation and proof of Proposition 28 contained the false reading (see below, the Commentary to 16vK and L).
- 11vW "que3... eam" Not in Gr MS A but properly added by Moerbeke. See also the addition of 11vX ("ad1... majoris"). Cf. Gr 2, 10, 30—12, 1var, where Moerbeke's additions are somewhat ambiguously reported by Heiberg.
- 11vY "assumptiones has" Apparently Gr MS A had λημματα ταδε. See Gr 2, 12, 7var. But the singular is required. The lemma is, of course, the celebrated Lemma of Archimedes (see my article, "Archimedes," in the Dictionary of Scientific Biography, Vol. 1, p. 215).
- 11vY "inequalium" Moerbeke has corrected ισαν in Gr MS A. See Gr 2, 12, 7var.
- 11vY "ipsum" This translates αυτα in Gr MS A. Heiberg, Gr 2, 12, 9var, changes it to αὐτὰν ξαυτα and translates sibi ipsi.
- 12rB "CD" In this and the succeeding proposition Moerbeke renders  $\Gamma$  by C, though thereafter G is used. I have suggested in Part I, Chap. 2, Sect. III, n. 4 that, having used T to represent  $\Theta$ , he realized that another letter would be required for tau, and so he decided to use C for that letter, thus requiring the use of G for  $\Gamma$ .
- 12rB "habent" Moerbeke has translated εχωντι in Gr MS A as if it were ἔχοντι. See Gr 2, 12, 22var. This occurs in a great many places in this tract hereafter, but I shall note it again only rarely.
- 12rB "CD3" Moerbeke has corrected the incorrect reading of  $A\Delta$  found in Gr MS A. See Gr 2, 12, 22var.
- 12rD "hec" Moerbeke has read ταυτα in Gr MS A as if it were ταῦτα. Coner by his change to "eadem" would read it as ταὐτά. See 12rDvar and Gr 2, 14, 8var.
- 12rF "ipsum" Moerbeke has so rendered αυτω in Gr MS A. Heiberg, Gr 2, 14, 23var, (following Gr MS G) prefers αὐτοῦ.
- 12rH "autem" Not in Gr MS A but added by Moerbeke. See Gr 2, 16, 4var.
- "NX3" Moerbeke has corrected ME in Gr MS A. See Gr 2, 16, 16var. 12rI
- 12rI "habent" Moerbeke has correctly read εχωντι in Gr MS A as if it were ἔχοντι. See Gr 2, 16, 17var.
- 12rJ-K Moerbeke's marginal reference to the "first theorem of On the Sphere and the Cylinder' he took from the scholium in Gr MS A. See 12rJ-Kvar and Gr 3, p. 322. I have added "eius... cylindro" from that scholium though I cannot read it in the erased comment.

- 12rL After "minor" Heiberg, Gr 2, 18, 8-10, adds the rest of the argument missing in the manuscripts. In Latin the addition reads: "sin minor est recta, si unam partem ad ambitum adiicimus, summa rursus minore linea maior erit, maiore autem minor."
- 12rN "extensa" This is not a good translation of νεύουσα since it does not render the key idea of "verging." See Gr 2, 20, 1.
- 12rP "partem" This translates μερος in Gr MS A. It should rather be πέρας (=terminum). See Gr 2, 20, 20var.
- 12rQ "ductam ad ipsam" See 12rQvar and above, Part I, Chap. 1, Sect. III, List C, item (2).
- 12rS "KG" Thus in Gr MS A. It should rather be KB. See Gr 2, 22, 10var.
- 12rU "nuentem" In the addition Coner translates νεύουσαν more felicitously than Moerbeke had in 12rN. I do not know why Moerbeke omitted "nuentem.... H" for it was in Gr MS A. See Gr 2, 24, 2.
- 12rX "autem" Translates δε in Gr MS A. It should rather be  $\delta \dot{\eta}$  (=itaque). See Gr 2, 24, 27var.
- 12vA "tendentem" Here Moerbeke has improved his earlier translation of νεύουσαν. See Gr 2, 24, 31.
- 12vA After " $GL^1$ " Heiberg, Gr 2, 26, 3-5, (following Commandino) adds to the text τὸν αὐτὸν ἔχει λόγον, ὃν ἁ IN ποτὶ ΓΛ. This is obviously needed to complete the proposition. It was missing in Gr MS A.
- 12vB "eandem proportionem" Gr MS A had αυτον εχει λογον, and Moerbeke quite properly has not translated εχει. See Gr 2, 26, 17var.
- 12vB "H" Gr MS A improperly had H λογον. See Gr 2, 26, 18var.
- 12vC "quam" Not in Gr MS A but properly added by Moerbeke. See Gr 2, 26, 26var.
- 12vE "vergentem" Another and even better translation of νεύουσαν. See Gr 2, 28, 12.
- 12vE "IL, KE" Moerbeke has justly corrected this from ΛKE in Gr MS A. See Gr 2, 28, 15var.
- 12vL "continentur" Moerbeke has properly read περιεχομένων in Gr MS A as if it were περιεχομένοις. See Gr 2, 32, 1var.
- 12vL ''itaque'' This translates  $\delta \eta$  in Gr MS A; it ought to be  $\delta \dot{\epsilon}$  (=autem). See Gr 2, 32, 2var.
- 12vL "O assumentia" Moerbeke has correctly read the false ΟΠ οτιλαδοντα of Gr MS A as if it were Ο ποτιλαδόντα. See Gr 2, 32, 8var.
- 12vM "utraque" See Coner's correction to "unaquaque" (12vMvar). See Gr 2, 32, 14var.
- 12vP "impari" This was in the Greek text but ought to be deleted. See Gr 2, 34, 1var.
- 12vP "omnibus" In the Greek text but ought to be deleted. See Gr 2, 34, 6var.
- 12vO "in A" Coner has deleted this. See 12vOvar and Gr 2, 34, 8var.

- 12vQ "A, B, G..." "A" should be deleted. See Gr 2, 34, 11var.
- 12vQ Before "B<sup>2</sup>" Moerbeke has properly omitted A in Gr MS A. See Gr 2, 34, 12var.
- 12vR "D<sup>2</sup>" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 12vRvar and Gr 2, 34, 17var.
- 13rB After "maxime" Heiberg, Gr 2, 36, 8-9, (following Commandino) adds τὰ εἴδεα τὰ ἀπὸ τᾶν ἰσᾶν τῷ μεγίστα as necessary to complete the demonstration.
- 13rD "tetragoni" Moerbeke, by his translation, has corrected τετραγωνω in Gr MS A. See Gr 2, 36, 25var.
- 13rE "autem<sup>6</sup>" Notice that Gr MS A had δη, which Moerbeke saw must rather be δέ. See Gr 2, 38, 7var. This kind of correction is very common.
- 13rE "uno excessu" It would have been better had the dative been used, i.e. "uni excessui." It looks as if the "uno" has been tampered with; so perhaps he intended to write "uni excessui." No doubt Gr MS A had υπεροχα, without accent or iota subscript. See Gr 2, 38, 7.
- 13rG "NX2" Moerbeke has corrected the "N-" from "H-" in Gr MS A. See Gr 2, 38 16var.
- 13rI "RT" Moerbeke has corrected the "-T" from "-O" in Gr MS A. See Gr 2, 38, 31var.
- 13rL "YN1" Moerbeke has repeated the erroneous reading of Gr MS A. See Gr 2, 40, 19var.
- 13rM "' $H\Omega$ " Moerbeke has corrected the "H-" from "M-" in Gr MS A. See Gr 2, 40, 29var.
- 13rM "I > " Moerbeke has corrected P > in Gr MS A. See Gr 2, 40, 29var.
- 13rM "N $\Omega$ " Thus in Gr MS A. Should be  $H\Omega$ . See Gr 2, 40, 31var.
- 13rN "linee" Moerbeke has correctly read γραμμαις in Gr MS A as if it were γραμμάς. See Gr 2, 42, 6var.
- 13rN "GO" Moerbeke has corrected this from  $\Gamma\Theta$  in Gr MS A. See Gr 2, 42, 6var.
- 13rN After the last "L's" Heiberg, Gr 2, 42, 8-10, (following Torelli) adds  $\mu \epsilon i \zeta$ ονά ἐντι τοῦ τρίτου  $\mu \epsilon \rho \epsilon \circ \zeta$  τῶν ἀπὸ τᾶν OX(=OQ),  $\Pi \Psi(=PC)$ ,  $P\Omega(=R\Omega)$ ,  $\Sigma \gg (=S \gg)$ , T's (=Z s), YN. The magnitudes in parentheses represent the letters adopted by Moerbeke.
- 13rO After the last "L  $\Gamma$ " Heiberg, Gr 2, 42, 17-18, (following Commandino) adds the following:  $\kappa\alpha$   $\tau$   $\tilde{\sigma}$   $\tilde{\sigma}$
- 13rP After "NX2" Moerbeke omitted a line and a half from the Greek text in MS A (see Gr 2, 42, 21-23var).
- 13rQ "describantur" Moerbeke has properly translated αναγραφεντι in Gr MS A as if it were ἀναγραφέωντι. See Gr 2, 44, 4var.
- 13rQ After "ab4" Moerbeke and Gr MS A omitted a necessary phrase (Gr 2, 44,

- 6-7var). Heiberg, following Torelli, added the phrase.
- 13rS "equevelociter" Moerbeke has correctly read ισοταχει ως in Gr MS A as if it were ἰσοταχέως. See Gr 2, 44, 18var.
- 13rS "sibi ipsi" Moerbeke has properly translated εαυτο in Gr MS A as if it were ξαυτώ. See Gr 2, 44, 21var.
- 13rT "i.e. revolutionem" This is a common practice of Moerbeke, namely to give an alternate, more common Latin rendering after introducing the transcription of a technical term. At first he used the terms elix and revolutio interchangeably, though from Proposition 15 onward he used revolutio exclusively.
- 13rT "principium<sup>2</sup>... quidem" For Moerbeke's errors in rendering this passage, see above, Part I, Chap. 1, Sect. III, List G, item (1).
- 13rW "quidem<sup>2</sup>" This appeared because Gr MS A had τα μεν. Heiberg, Gr 2, 46, 23var, thought it ought to be τὰν ἐν.
- 13rW "descripta[m]" I have added "-[m]". Moerbeke was faithfully translating Gr MS A. See Gr 2, 46, 24var.
- 13rX "excedunt" Moerbeke, by his translation, has corrected υπερεχωντι in Gr MS A. See Gr 2, 46, 26var.
- 13vA "AG3" Moerbeke corrected this from  $\Gamma\Delta$  in Gr MS A after perhaps first writing GD. See Gr 2, 48, 14var.
- 13vD "AT<sup>4</sup>" Heiberg, Gr 2, 50, 1var, would delete τᾶς AΘ here, though it is in both Gr MSS A and C. The sentence would then mean "but they (i.e. AH and AG) are more than double the bisector of angle [GAH] in triangle [AGH]." Cf. Gr 2, 51, n. 1.
- 13vD "maiores" Gr MS A had μιζ (=μειζων) and Moerbeke corrected it (see above, Part I, Chap. 1, Sect. III, List C, item [3]). Heiberg, Gr 2, 50, 2var, accepts Moerbeke's correction. But Moerbeke's literal translation of what follows (i.e. "Palam... A") certainly obscures the meaning, which is as follows: "It is clear therefore that the point at which line AT intersects line GH lies between points T and A." Hence line EZ cuts the spiral, since some point in line GTH is inside the spiral. But EZ was posited as a tangent. Hence the contradiction. Accordingly the proposition follows.
- 13vE "EZ2" This was EH in Gr MS A. Moerbeke's correction has been accepted by Heiberg, Gr 2, 50, 7var.
- 13vF "quam" Moerbeke has corrected ων in Gr MS A. See Gr 2, 50, 14var.
- 13vI-J "ostensum... primis" Heiberg, Gr 2, 52, 11-12, would delete this.
- 13vJ "idem accidit" Heiberg overlooked this in MS O, for he claims that τὸ αὐτὸ συμβαίνει was omitted by Moerbeke. Cf. Gr 2, 52, 15var.
- 13vJ After "Si" Gr MS A had  $\delta \varepsilon$ , which Moerbeke did not translate. See Gr 2, 52, 17var.
- 13vL "equali" Moerbeke has corrected ooω in Gr MS A. See Gr 2, 52, 29var.
- 13vL "secundum E" This translates κατα το E in Gr MS A. It should be καὶ τὸ  $\Theta$  (=et T). See Gr 2, 54, 3var.

- 13vN "dicta periferia" Thus in Gr MS A, but should be "dicte periferie." See Gr 2, 54, 16var.
- 13vN "totiens" Moerbeke has properly read τοσαυτας in Gr MS A as if it were τοσαυτάχις. See Gr 2, 54, 17var.
- 13vN "uno" Moerbeke has properly corrected εν in Gr MS A. See Gr 2, 54, 18var.
- 13vN "utraque" This translates εκατερα in Gr MS A. Heiberg, Gr 2, 54, 19var, changes this to ἑτέρα, i.e., altera.
- 13vP "DEZ" Thus in Gr MS A. Should be EDZ. See Gr 2, 56, 5var.
- 13vR "ab<sup>2</sup>" Moerbeke has properly read α in Gr MS A as if it were ἀπό. See Gr 2, 56, 27var.
- 13vT "[H]KT" Notice that the author of hyb. made this proper correction from KT in Moerbeke's text (and also in Gr MS A). Gr MSS C and D<sup>2</sup> also had the correct reading. Cf. Gr 2, 58, 8var.
- 13vU After "impossibile" Gr MS A had  $\iota\sigma\alpha$   $\gamma\alpha\varrho$   $\alpha$  PA  $\tau\alpha$  A $\Delta$ , which Moerbeke did not translate. But Heiberg, Gr 2, 59, n. 3, thought that this was perhaps an interpolation that should be deleted.
- 13vV "EZ" Moerbeke has corrected AZ in Gr MS A. See Gr 2, 58, 22var.
- 13vW "revolutionis intra" Moerbeke's retention of the genitive makes this translation somewhat ambiguous. It would have been clearer had he translated it "intra revolutionem."
- 13vX "ad²" Heiberg, Gr 2, 60, 7var, would delete the  $\pi o \tau \iota$  of Gr MS A, and indeed this would be less confusing since the consequent term of the ratio is (DRN + DNC).
- 13vY "periferia4" Moerbeke has corrected περιφερειαν in Gr MS A. See Gr 2, 60, 20var.
- 13vZ "equalis... AQ" Heiberg, Gr 2, 61, n. 3, would delete this.
- 13vΘ "circulatione" Moerbeke has properly added this, though its Greek equivalent was missing in Gr MS A. See Gr 2, 62, 2var.
- 14rB "TKH" Here and throughout the first half of the proof Gr MS A had ΘHK, as did Moerbeke at first (i.e. THK). But later he corrected it to TKH, perhaps thinking that he should order the letters of the circle in the same forward direction in which the letters of the spiral are given. He did not make the corrections in the second half of the proof.
- 14rG "ergo" Moerbeke adds, though it is missing in Gr MS A. See Gr 2, 64, 23var.
- 14rG Before "Sit" Gr MS A falsely added the proposition number "19," which Moerbeke correctly ignored. This threw off all the succeeding numbers in Gr MS A except for the number of the last proposition, which Gr MS A omitted. See Gr 2, 64, 28var.
- 14rK ''THK<sup>3</sup>'' Moerbeke has corrected ΘNK in Gr MS A. See Gr 2, 66, 22var.
- 14rM "principii" Moerbeke has correctly rendered αρχας και in Gr MS A as if

- it were ἀρχᾶς alone. See Gr 2, 68, 9var.
- 14rN ''[ea] ipsi'' I have added ''[ea]'' because the Greek should be αὕτα instead of Gr MS A's τα αυτα. See Gr 2, 68, 16var.
- 14rO "descripta" This translates γεγραμμενα in Gr MS A. Heiberg has corrected to γραμμά δεδομένα. See Gr 2, 68, 25var.
- 14rQ "CMN1" Moerbeke has corrected MN in Gr MS A. See Gr 2, 70, 7var.
- 14rV ''quam'' Moerbeke has correctly read o in Gr MS A as if it were αν. See Gr 2, 72, 14var.
- 14rV "circulatione" Moerbeke has properly added this, though it was missing from Gr MS A. See Gr 2, 72, 18var.
- 14rV "EDZ" Moerbeke altered the incorrect reading of AEZ in Gr MS A. Gr MS C more properly has EZ. See Gr 2, 72, 19var.
- 14vA "iste" Moerbeke has properly read ουτω(ς) in Gr MS A as if it were οὖτος. See Gr 2, 72, 22var.
- 14vD "DR1" Gr MS A incorrectly had AP. See Gr 2, 74, 13var.
- 14vE "DR cum KMD" Gr MS A had KMP, as did Moerbeke at first. See Gr 2, 74, 20 and 14vEvar. I am not sure why Moerbeke made his change, since KMR = DR + KMD.
- 14vF "concidentis" Moerbeke, by his translation, has corrected συμπιπτουσα in Gr MS A. See Gr 2, 74, 31var.
- 14vF "principii" Heiberg has incorrectly reported Moerbeke's reading as "principium" (see Gr 2, 74, 31var).
- 14vG "circulatione" Moerbeke, by his translation, has corrected  $\pi \epsilon \varrho \iota \varphi o \varrho \alpha \varsigma$  in Gr MS A. See Gr 2, 76, 4var.
- 14vG "secundum numerum minorem eo". This renders Gr MS A's κατα τον ελασσονα αριθμον του, and this is understandable. But Gr MS C is more specific and adds ένί before ἐλάσσονα (=uno minorem), i.e. the line AZ = (n-1) circum. of circ. of rad. AD + arc KMNR, if we adapt the letters of the figure to a spiral of n revolutions. See Gr 2, 76, 8var.
- 14vH "accepta periferia" This translates λαμδανομένας in Gr MS A. For Heiberg's suggested correction, see Gr 2, 76, 10var.
- 14vJ "itaque<sup>2</sup>" Moerbeke has thus translated δη ουν in Gr MS A, i.e. by suppressing ouv. Gr MS G corrected it to δη αί. See Gr 2, 78, 3var.
- 14vJ ''in equales angulos qui continentur a lineis AT, TK'' This translates Gr MS A accurately, but Gr MS A was faulty. Heiberg, Gr 2, 78, 5var, (following Torelli) changes Gr MS A's τας περιεχομένας to τῷ περιεχομένα and thus the Latin text ought to read ''in angulos ei equales qui continetur a lineis AT, TK.''
- 14vK "per" This translates εσ την κατα in Gr MS A. Heiberg would write ἔστε ποτί and delete the preceding "equales" since it was not in Gr MS A. See Gr 2, 78, 6var.

- 14vK "itaque<sup>2</sup>" Moerbeke has read δι in Gr MS A as δη. Heiberg prefers δέ (=autem). See Gr 2, 78, 9var.
- 14vK "periferia" Moerbeke has corrected περιφερειαι in Gr MS A. See Gr 2, 78, 10var.
- 14vK "et<sup>3</sup>" This is Moerbeke's effort to translate εσται καν in Gr MS A. Heiberg has written ἔστε κα (=usque eo ut). See Gr 2, 78, 11var. Cf. also "et<sup>4</sup>" in 14vL and Gr 2, 78, 16var.
- 14vL "apud O que OM" Heiberg, Gr 2, 78, 12, would delete this.
- 14vL "TN" This is correct, but see the divergent readings in the Gr MSS cited in Gr 2, 78, 15var.
- 14vL After "circuli" the sense demands an "ipsi TK." This was omitted by Gr MS A and thus by Moerbeke. It was added by Gr MS G. See Gr 2, 78, 17var.
- 14vM "unaqueque" Moerbeke has corrected εκαστας in Gr MS A. See Gr 2, 78, 21var.
- 14vM "prepositi spatii" Moerbeke has obscured the meaning by translating the Greek genitive of comparison by a Latin genitive. He would have rendered it more clearly if he had translated the phrase in the same way that he translated it in the enunciation, namely "quam prepositum spatium." The meaning, of course, is that the circumscribed figure exceeds the inscribed by an area that is less than any assigned space. The argument proves this by showing that the circumscribed figure is greater than the inscribed figure by the area of sector AKT. But the area of sector AKT was constructed as less than any assigned space. The same literal translation of Greek genitives appears also in 14vO, P and Q, 15rB, D, E, G, H and K.
- 14vR ''AZHI'' This was simply AZH in Gr MS A. See Gr 2, 80, 28.
- 15rB "excessu" Moerbeke, by his translation, has corrected α υπεροχα in Gr MS A. See Gr 2, 82, 8var.
- 15rD-E "a rectis" and "ducuntur" See above, Part I, Chap. 1, Sect. III, List F, item (1).
- 15rG "circa" Though missing in Gr MS A, Moerbeke has properly added this. See 15rGvar and Gr 2, 84, 19var. Heiberg ignored the marginal reading and thus reported it as missing from Moerbeke's translation.
- 15rH "planum" That is, "a plane figure" (see Gr 2, 84, 30var).
- 15rH After "spatii" Archimedes would certainly have added that it is also possible to inscribe a figure such that the assigned area exceeds the inscribed figure by an area less than any assigned space. But this was missing in Gr MSS A and C. Heiberg, Gr 2, 86, 3-5var, added it from Rivault.
- 15rI "AKZHI" Moerbeke has properly written "-K-" instead of "-N-" as in Gr MS A. See Gr 2, 86, 14var.
- 15rJ After "sectoribus" one would expect "compositam" though that was missing in Gr MS A. See Gr 2, 86, 27var.

- 15rK "autem<sup>2</sup>" This translates  $\delta \epsilon$  in Gr MS A. It should be  $\delta \dot{\eta}$  (=itaque). See Gr 2, 88, 4var.
- 15rL ''maior' This translates Gr MS A, but 'maxima' is intended. Similarly for 'minor' (correctly rendering Gr MS A) 'minima' is intended. Compare 15rQ. See Gr 2, 88, 8var and 9var.
- 15rN "AKZHI" Moerbeke has corrected AZHIK in Gr MS A. Heiberg prefers AZHI. See Gr 2, 88, 22var.
- 15rO "-E-" Missing from Gr MS A but properly added by Moerbeke. See Gr 2, 90, 3var.
- 15rP "minor" Thus in Gr MS A, but "minima" is required. See Gr 2, 90, 8var.
- 15rP "OTE" Moerbeke has corrected ΘE in Gr MS A. See Gr 2, 90, 9var.
- 15rP "quod" Missing from Gr MS A. See Gr 2, 90, 9var.
- 15vA "a" Moerbeke has properly read υπο in Gr MS A as if it were ἀπό. See Gr 2, 92, 2var.
- 15vA "ABGDET" Moerbeke has properly corrected ABHEΘ in Gr MS A. See Gr 2, 92, 8var.
- 15vA "comprehenso... AT" Heiberg, Gr 2, 92, 9-10, properly deletes this since it is the space and not the circle which is the subject of "est." Cf. Gr 2, 93, n. 1.
- 15vB "Spatium" Thus in Gr MS A, but it should be "Spatium comprehensum" (see Gr 2, 92, 12var).
- 15vC "tertia pars" See above, Part I, Chap. 1, Sect. III, List F, item (2).
- 15vG "excedit" Moerbeke has properly corrected περεχει in Gr MS A. See Gr 2, 94, 16var.
- 15vH "pauciores" See above, Part I, Chap. 1, Sect. III, List D, item (4).
- 15vI "invicem<sup>2</sup>" Moerbeke has properly translated αλλαν in Gr MS A as if it were ἀλλαλᾶν. See Gr 2, 96, 7var.
- 15vJ "AZHI" Moerbeke has corrected this from AZH in Gr MS A. See Gr 2, 96, 14var.
- 15vK "TE2" Moerbeke has corrected this from AE in Gr MS A. See Gr 2, 96, 21var.
- 15vM Before "Neque" Gr MS A added another proposition number  $(\varkappa \eta')$ , which Moerbeke properly ignored. See Gr 2, 96, 30var.
- 15vN "TKR" For the divergent readings in the Gr MSS, see Gr 2, 98, 8var.
- 15vQ "a1" Moerbeke has correctly read υπο in Gr MS A as if it were ἀπό. See Gr 2, 98, 27var.
- 15vQ "AZHI" Moerbeke has added this for clarification. The circle was not specified in Gr MS A.
- 15vS "secundum<sup>2</sup>" Moerbeke has correctly read ποτι in Gr MS A as if it were κατά. See Gr 2, 100, 16var.

- 15vU "termino" This renders Gr MS A correctly, but it should be "terminis" (i.e. περάτων). See Gr 2, 102, 3var.
- 15vU "equalem2" Moerbeke has translated α εστι in Gr MS A as if it were τσαν. See Gr 2, 102, 5var.
- 15vV ''ultimo'' Moerbeke's error. Gr MS A had περατων and thus should have been translated by ''ultimis'' or ''terminis.'' See Gr 2, 102, 7.
- 16rD "maior<sup>2</sup>" and "minor<sup>1</sup>" As in Gr MS A, but should have been "maximus" and "minimus." See Gr 2, 104, 11var and 12var.
- 16rG "que" Thus in Gr MS A (i.e. τα), but it should have been τό and translated by quod. See Gr 2, 104, 30var.
- 16rH " $Q^{1,2}$ " This correctly renders Gr MS A, but earlier the sector was designated QS. See Gr 2, 106, 9var and 10var.
- 16rI Before "Neque" Gr MS A again adds a proposition number  $(\lambda')$ , which Moerbeke rightly ignores. See Gr 2, 106, 14var.
- 16rJ "minori" Moerbeke has corrected ελασσον in Gr MS A. See Gr 2, 106, 20var.
- 16rJ "maior" and "minor" Cf. the comment to 16rD and see Gr 2, 106, 25var and 26var.
- 16rJ "TOE" Moerbeke has corrected this from ΘE in Gr MS A. See Gr 2, 106, 26var.
- 16rJ "inscripta" Moerbeke has translated γεγραμμενον in Gr MS A as if it were ἐγγεγραμμένον. See Gr 2, 106, 27var.
- 16rJ "Q" Cf. the comment to 16rH and see Gr 2, 106, 28var.
- 16rK "maxima" Moerbeke has properly translated ταν μεγισταν as if it were τᾶς μεγίστας. See Gr 2, 108, 6var.
- 16rL "TE" Moerbeke has corrected AE in Gr MS A. See Gr 2, 108, 12var.
- 16rM " $Q^{1-3}$ " Cf. the comment to 16rH and see Gr 2, 108, 14var, 15var and 17var.
- 16rM "Equalia" This translates ισα in Gr MS A. Gr MS C correctly has ἴσος. See Gr 2, 108, 19var.
- 16rM "27" Heiberg, Gr 2, 108, 20var, indicates incorrectly that this is missing in MS O, for it can be clearly seen.
- 16rN "tertium" Here and elsewhere in the proposition Gr MS A wrongly had  $\overline{\gamma}$  (= triplum). See Gr 2, 108, 22var.
- 16rN "proposita" Moerbeke has properly read προκειμένω in Gr MS A as if it were προκειμένα. See Gr 2, 108, 28var.
- 16rO "Et sit" Simply εστω in Gr MS A. Heiberg would write ἔστω δέ. See Gr 2, 108, 30var.
- 16rP "triplum" Moerbeke has properly corrected the nonsensical  $\overline{\eta}\gamma\pi$  in Gr MS A. He has converted the  $\overline{\eta}$  into the preceding N. See Gr 2, 110, 4var.
- 16rQ "L" Moerbeke has corrected this from A in Gr MS A. See Gr 2, 110, 15var.

- 16rQ "GT, TB" Here is a case where Moerbeke has expanded the Greek syncopated form  $\Gamma\Theta B$  found in Gr MS A. See Gr 2, 110, 20.
- 16rR After "tetragoni... AB" Heiberg, Gr 2, 110, 27-30, has added the Greek corresponding to the following proportion: "And therefore  $(K + L + M)/(K + L) = [(GT \cdot TB) + \frac{1}{3}GB^2]/[(BT \cdot TA) + \frac{1}{3}AB^2]$ ." Cf. Gr 2, 111, n. 3.
- 16vA After "19 ad 7" Moerbeke has failed to translate from the Greek (Gr 2, 112, 1-2) the following proportion: "(K + L + M)/(L + K) = 19/7." It seems that he deliberately made this omission because of the absence from Gr MS A of the proportion noted in the preceding comment. I suspect that Moerbeke had lost track of the argument.
- 16vA "igitur quod" Moerbeke has correctly transposed στι συν in Gr MS A. See Gr 2, 112, 5var.
- 16vB "KLMNX" This is a correction by Moerbeke of Gr MS A's HKΛMNΞ. See Gr 2, 112, 7var.
- 16vD " $DT^1$ " Moerbeke has corrected A $\Theta$  in Gr MS A. See Gr 2, 112, 21var.
- 16vD After "ED" Gr MS A must have omitted something like the addition given by Heiberg, Gr 2, 112, 25-26: καὶ τοῦ ὑπὸ τᾶν  $\Delta\Theta$ ,  $\Theta\Gamma$  μετὰ τοῦ τρίτου μέρεος τοῦ ἀπὸ τᾶς  $\Gamma\Delta$ ." The whole subtracted proportion, then, is the following:  $X / (K + L + M + N) = \{[(ET \cdot TD) + \frac{1}{3}ED^2] [(DT \cdot TG) + \frac{1}{3}DG^2]\} / [(DT \cdot TG) + \frac{1}{3}DG^2]$ . All of these proportions can be readily followed in Heiberg's Latin translation.
- 16vF After "TG, BD ad id quod" Heiberg, Gr 2, 114, 12, adds ὑπὸ ΘΓ,  $B\Delta$  καὶ τὸ ὑπὸ. The whole proportion is as follows:  $N/(K+L+M+N)=(TG \cdot BD)/(TG \cdot BD)+(TG \cdot TB)+\frac{1}{3}GB^2$ . Cf. Gr 2, 115, n. 1. Without Heiberg's addition of  $TG \cdot TB$  to the fourth term, the proportion is a mere repetition of that just expressed in 16vE-F, at least with N added in Moerbeke's lacuna. Finally we should note that Heiberg would delete "econtrario" at the end of the proportion.
- 16vF "hec" This refers to the full fourth term as restored by Heiberg. See the preceding comment. Thus we have the equation  $(TG \cdot BD) + (TG \cdot TB) + \frac{1}{3}GB^2 = (DT \cdot TG) + \frac{1}{3}GD^2$ .
- 16vG "spatia" This translates τα in Gr MS A. But τό (i.e. spatium) would be better. See Gr 2, 114, 19var.
- 16vH "ad ea que" This translates ποτι τα in Gr MS A. It should be ποτὶ τὸ and rendered by "ad id quod." See Gr 2, 114, 21var.
- 16vH "TD<sup>2</sup>" Moerbeke has corrected ΘA in Gr MS A. See Gr 2, 114, 24var.
- 16vI "ET" Thus in Gr MS A, but, as Heiberg, Gr 2, 116, 1var, notes, it should be deleted. It does not correspond to any space.
- 16vK "intermedia" This translates τας μεταξυ in Gr MS A. It should have been τᾶν μεταξύ (=intermediarum). See Gr 2, 116, 11var.

- 16vK "revolutionis... et recte educte" Moerbeke's translation of the last two genitives dependent on ὑπό by Latin genitives after his translation of the first by an ablative will certainly leave the reader puzzled. Furthermore, the end of the enunciation in Gr MS A was defective (as indeed was the succeeding specification of the enunciation), and so it is not surprising that Moerbeke reconstructed it incorrectly, twice suggesting the radius of the greater circle when it is the radius of the lesser circle that is intended. See the succeeding comments.
- 16vK "maioris" This was incorrectly added by Moerbeke. It should rather have been "minoris." The word was missing in Gr MS A. See Gr 2, 116, 16var.
- 16vL "ad... maioris" Added by Moerbeke, missing in Gr MS A. See 16vLvar and Gr 2, 116, 19-20var. Again Moerbeke erred in introducing "majoris" in the addition. This error arose from the fact that in the proof which follows Gr MS A had HT (or TH), i.e. the radius of the larger circle, where it should have had AT (or TA), the radius of the smaller circle. Thus the proof should show that space X / space  $P = (TA + \frac{1}{3}HA) / (TA + \frac{1}{3}HA)$ . In Gr MS A and Moerbeke's translation of this formulation, HT replaced TA. See Gr 2, 116, 28var; 118, 2var.
- 16vL "in<sup>2</sup>" Moerbeke added this in the margin, though it was not in Gr MS A. See 16vLvar and Gr 2, 116, 22var.
- 16vL "recte" Moerbeke added this in the margin, though it was not in Gr MS A. See 16vLvar and Gr 2, 116, 25.
- 16vM "HA1" Moerbeke has corrected this from H in Gr MS A. See Gr 2, 118, lvar.
- 16vM "HA2" Moerbeke has corrected this from MA in Gr MS A. See Gr 2, 118, 2var.
- 16vO "NHX<sup>1,2</sup>" Thus in Gr MS A. It should be NPX. See Gr 2, 118, 11var and 14*var*.
- 16vO "sectorem3" Missing from Gr MS A but added by Moerbeke. See Gr 2, 118, 16var.
- 16vP "P" Moerbeke has corrected this from ΠΛ in Gr MS A. See Gr 2, 118, 19var.
- 16vP "HA2" Moerbeke has corrected this from MA in Gr MS A. See Gr 2, 118, 21var.
- 16vP "ad3" Moerbeke has correctly added this. It was not in Gr MS A. See Gr 2, 118, 21var.
- 16vP "TA3" Moerbeke has corrected this from  $\Theta E$  in Gr MS A. See Gr 2, 118, 21var.
- 16vR ''TH'' Thus in Gr MS A. It should be TA. See Gr 2, 120, 8var. This is true for all of the THs that follow in 16vS and T.
- 16vT "N" Thus in Gr MS A. It should be P. See Gr 2, 120, 17var.

## Commentary on the Liber Archimedis de centris gravium vel de planis eque repentibus (17rA-20vD)

- 17rA "de centris... repentibus" This apparently represents the title order given by Gr MS B. In Gr MS A the alternate titles were reversed. See Gr 2, 124, 1-2.
- 17rE "(Gr. 1)" Omitted by Gr MSS A and B, but added by Jacobus Cremonensis (see Vol. 3, Appendix IV, Sect. 1, Text B) and adopted from Torelli by Heiberg (Gr 2, 126, 5var). The same is true for the next proposition.
- 17rH "1. (Gr. 3)" With this proposition, Moerbeke, following Gr MSS B and A, began to number the propositions successively. Cremonensis, Torelli and Heiberg added numbers that exceed those in the Greek manuscripts by 2.
- 17rI "autem" This renders δε in Gr MS A. Heiberg, Gr 2, 126, 24var, corrects this to  $\delta \dot{\eta}$  (=itaque).
- 17rI "equales... longitudinibus" Heiberg, Gr 2, 128, 3, would delete this. Cf. Gr 2, 129, n. 1.
- 17rJ After "repunt" Heiberg, Gr 2, 128, 5var, (following Torelli) adds ἐπὶ τό.
- 17rL "eius... magnitudinibus<sup>2</sup>" Heiberg, Gr 2, 128, 21-22, would delete this. Cf. Gr 2, 129, n. 3.
- 17rL "Quod... preostensum est." Heiberg, Gr 2, 128, 22-23, would delete this. Cf. Gr 2, 129, n. 3.
- 17rM "equales... repunt" Heiberg, Gr 2, 128, 27—130, 1, would delete this. Moerbeke's "repunt" no doubt translates Gr MS B's ἰσορροπέοντι. Gr MS A had ισορροπεωντι. See Gr 2, 130, 1var.
- 17rP After "Palam" Gr MS G reasonably added οὖν (=igitur), but this was not in Gr MSS A and B. Cf. Gr 2, 130, 19var.
- 17rQ "centri" Thus in Gr MSS A and B, but should be plural. See Gr 2, 130, 27var.
- 17rR After "medie ipsarum" Heiberg, Gr 2, 132, 7-8, properly adds καὶ τὰ ἴσα ἀπέχοντα ἀπ' αὐτῶν since not only must the two middle magnitudes be equal but also all of the magnitudes equally distant from them on each side. Cf. 17vL below where the corollary is repeated and the clause "et omnes ex utraque parte mediarum ipseque equales sunt" appears. Torelli, Archimedis quae supersunt omnia, p. 5, has made a similar addition to his Latin translation of the corollary: "et quae utrinque a mediis aequo intervallo distant." So far as I can determine, no one before Torelli called attention to this deficiency in the text.
- 17rU "utramque horum" It obviously should be "utramque harum." It looks as if Moerbeke has corrected the "utramque," probably from "utrumque," and that he overlooked changing the "horum" to "harum." The source of the error was the reading of εκατεφον in Gr MSS A and B. See Gr 2, 134, 3var.

- 17rX After "multitudine" Heiberg, Gr 2, 134, 24-25, has added καὶ τὰ ἐφ' έκάτερα τοῦ Ε ἴσα τῷ πλήθει, which can be translated "et que in utraque [parte] puncti E [positae sunt] equales [sunt] magnitudine." If we take this with the clause that precedes it, the whole sentence can be rendered in English: "For all the magnitudes taken together are even in number and all the magnitudes which are placed on each side of point E are equal in magnitude because LE =HE.
- 17vA "composite" Heiberg, Gr 2, 136, 8var, would delete this.
- 17vD ''H'' Notice that both Gr MSS A and B accepted this as a magnitude. See Gr 2, 136, 28var. It should rather be  $\mathring{\eta}$  (=aut). Furthermore, the following ov was rendered by Moerbeke as quo. It is, of course, or (=non).
- 17vD Before "ut" Gr MS G had  $\mathring{\eta}$  (=quam). See Gr 2, 138, 2var. Cf. 17vDvar ("Et . . .  $G^2$ ").
- 17vE "sit maius" Gr MS A had μειζον εστιν. Cf. 17vEvar and Gr 2, 138,8var.
- 17vE "centrum" Though thus in Gr MSS A and B, this should be "centrum gravitatis" (see Gr 2, 138, 11 and Heiberg's Latin translation).
- 17vF "absumpte alicuius" Moerbeke has incorrectly left this as a genitive in Latin. Like the preceding genitive absolute (translated "educta recta etc.") it should have been translated in Latin by an ablative absolute so that it would be parallel with the preceding statement.
- 17vH After "magnitudinibus" Heiberg has added in his Latin translation, Gr 2, 141, a step omitted in the text. In English it would read: "But point G is placed in line EZ so divided that its parts are in the inverse ratio of the magnitudes [AD] and DH]."
- 17vH "proportionalem". This is the literal translation of ἀνάλογον, but it would have been less ambiguous had he translated it "correspondentem."
- 17vI "eius lateris quod" This correctly translates Gr MSS A and B, but the Greek should have had plurals, with a consequent translation of "eorum laterum que' (see Gr 2, 140, 19var).
- 17vJ After " $EZ^2$ " we are to understand "in aliquo puncto I."
- 17vK "Parallelogrammorum... adaptatorum" This would have been clearer if Moerbeke had translated the genitive absolute by an ablative absolute. Cf. 17vO ("Quare2... trigonis") where Moerbeke has correctly rendered the genitive absolute by an ablative absolute.
- 17vN "hec" Heiberg, Gr 2, 144, 1var, would read this in MS O as "hoc," but Moerbeke often used the abbreviation h' for hec as well as hoc. Gr MS A correctly had ταυτα, and I suppose that Gr MS B also had it.
- 17vR-S "Similiter<sup>2</sup>... rationis." Heiberg, Gr 2, 147, n. 1, (following Barrow) rejected this definition as an interpolation.
- 17vS "ad4...DEZ" Heiberg, Gr 2, 147, n. 3, rejected this as an interpolation.
- 17vU "quare... singulis" Heiberg, Gr 2, 147, n. 4, rejected this as an interpolation.

- 17vU "EDN1" Cf. 17vUvar and Gr 2, 146, 28var.
- 17vU ''quia... N'' Heiberg, Gr 2, 147, n. 4, suspected that this too was an interpolation.
- 17vU "EDH" and "EDN2" Cf. the penultimate comment and Gr 2, 148, 1var and 2var.
- 17vV "et cetera" No doubt in Gr MS B, missing in Gr MS A.
- 17vX "BT" Thus in Gr MSS A and B. Ought to be AT. See Gr 2, 148, 20var.
- 18rA "DEN" Gr MS B. It was correctly given in Gr MS A as  $E\Delta N$ . See Gr 2, 150, 8var.
- 18rC "ad... faciunt" Heiberg, Gr 2, 151, n. 7, would delete this as an interpolation.
- 18rD After " $ABG^2$ " we are to understand something like "in aliquo puncto I."
- 18rE "autem" Apparently thus in Gr MS B. Gr MS A had δη (=itaque). See Gr 2, 152, 2var.
- 18rE Concerning the lacuna after "erit," see above, Part I, Chap. 1, Sect. III, List A, item (1). He could have handled the Doric ποκα of Gr MS B as in 17vJ-K, namely, by adding an aliqua before relinquitur.
- 18rE The lacuna after "T" is puzzling. The minuscule "t" perhaps stood for the Greek enclitic  $\tau\epsilon$  and thus something like "sitque  $D\Omega$ " was intended. If so, then after "equales" in the next clause he should have added "ipsi  $D\Omega$ ." The passage would then have been rendered like 17vK.
- 18rE "MN" Moerbeke corrected MH in Gr MS B (see 18rEvar). It was MN in Gr MS A (see Gr 2, 152, 8var).
- 18rF "Erit" This translates εσται in Gr MSS A and B. But from the form of the argument, it seems that the Greek should have been ἔστω and been translated "Sit." See Gr 2, 152, 12var.
- 18rH "totius" Heiberg, Gr 2, 154, 4, would delete this.
- 18rH "quia... trigona" Heiberg, Gr 2, 154, 5, would delete this.
- 18rJ Before "recta" Heiberg, Gr 2, 154, 18var, (following the Basel edition) has given  $P\Theta$ , while Gr MS A had  $E\Theta$  and Moerbeke omitted the magnitude.
- 18rJ-K "Signum... partem" This has been obscurely expressed. See Gr 2, 155, n. 3, and for a clear rendering consult Heath, *Archimedes*, p. 199. Heiberg believed that the Greek equivalent of "hoc... partem" had been interpolated from Eutocius.
- 18rM "Quoniam... angulos" Heiberg, Gr 2, 156, 16-17, would delete this as an interpolation. After "angulos" Gr MS A had φανεφον γαφ τουτο, which Heiberg would also delete.
- 18rM-N "quoniam... ZDG" Heiberg, Gr 2, 156, 21-22, would delete this.
- 18rO "Non...AD" This is awkwardly expressed. It surely means that it cannot be that the center of gravity of triangle ABG is not in line AD.
- 18rQ "Si" This translates the ει of Gr MSS A and B. But obviously the Greek should have been ἐσσεῖται. See Gr 2, 158, 15var.

- 18rR "continens" This translates Gr MS B. Gr MS A had το περας εχον. See Gr 2, 158, 26var.
- 18rS "linearum" and "linea<sup>1-3</sup>" Not in Gr MS A. Either they were in Gr MS B or Moerbeke added them as translations of the respective definite articles, as he was often to do in translating Gr MS A.
- 18rT "linea<sup>1,2</sup>" and "linee" See the preceding comment.
- 18rT-U "et3... MT" Heiberg, Gr 2, 160, 15-16, would delete this. Cf. Gr 2, 161, n. 1. Thus the preceding "Quoniam ... BD" ought to be taken with the sentence before and the "itaque" after "Quoniam" ought to be deleted since it was not in Gr MS A, though no doubt it was in Gr MS B. Cf. the comment to 53rZ.
- 18rU "linea" See the comment to 18rS.
- 18rW "RPS" Thus in both Gr MSS A and B. Should rather be "RSP" (i.e., RS + SP). See Gr 2, 162, 12var.
- 18vB-C Note that the lettering of the magnitudes here reproduced from Gr MS B differs from that of Gr MS A (see Gr 2, 164-66).
- 18vC After "HN" it should have been noted that HN = KT.
- 18vC "KH" This ought to have been "KN." The argument then goes in the following way. If HK = TL = TM and LH = HN, then HN = KT and KN = TLKM. But parab. ABG / parab. DEZ = TK / KH (given), or parab. ABG / parab. DEZ = HL / LT. And NL = 2HL and LM = 2LT. Hence, parab. ABG / parab. DEZ = NL / LM. Then we apply to LN (above and below) two equal rectangles that together form rectangle XO and they are together equal to parab. ABG. We complete the larger rectangle (XO + OP) by applying OP to line LM. Now, XO/OP = NL / LM. And hence parab. ABG / parab. DEZ = XO / OP. Then, since XO is equal to parab. ABG, OP must be equal to parab. DEZ. The center of gravity of XO + OP is point K. Hence K is also the center of gravity of the parabolas so disposed.
- 18vF After "et<sup>5</sup>" Gr MS A had αει (= semper), which was apparently missing in Gr MS B. See Gr 2, 168, 7var.
- 18vG "note inscripta" This translates γνωρίμως (or γνωρισμως in Gr MS A) έγγράφεσθαι. See Gr 2, 168, 9var. For the technical meaning of this expression, see Ver Eecke, Archimede, p. 325, n. 4.
- 18vH "Hoc" Thus in Gr MSS A and B. But the sense demands a plural and so Heiberg, Gr 2, 168, 16var, (following Eutocius) has corrected it.
- 18vI "linea<sup>1-3</sup>" See the comment to 18rS.
- 18vJ "linea1-3" See the comment to 18rS.
- 18vK-N Gr MS A had a different set of letters marking the magnitudes. See Gr 2, 173, var after line 7.
- 18vM "ipsi" Gr MS A had ταις. See Gr 2, 172, 5. What was intended was that AG / KL = DZ / CY.
- 18vM "lineas1... rectas," "lineas2" and "lineis" See the comment to 18rS.

- 18vN "Habentia autem" Gr MS A had εχωντι δε. Heiberg, Gr 2, 172, 11var, thought that it should have been ἔχοντι δή. If so, it would then be translated "habent itaque."
- 18vN "lineam<sup>1,2</sup>" See the comment to 18rS. In the succeeding propositions Moerbeke often added some form of *linea* where Gr MS A had the definite article only. I shall not note the instances hereafter.
- 18vP "autem2" Thus in Gr MS B. Gr MS A had  $\delta \eta$  (=itaque), which Heiberg, Gr 2, 174, 17var, preferred.
- 18vQ "ostensum... enim" Gr MS B, missing in Gr MS A. See Gr 2, 174, 18var. The reference is to Proposition II.2.
- 18vQ "autem" Thus in Gr MSS A and B. It ought to be  $\delta \dot{\eta}$  (=itaque). See Gr 2, 174, 20var.
- 18vQ "ABG" Triangle ABG is meant.
- 18vR ''notum'' Gr MS B. Gr MS A had του ευθυγοαμμου, i.e. ''rectilineum.'' See Gr 2, 176, 4var.
- 18vR "reliquas" Gr MS B, missing in Gr MS A. See Gr 2, 176, 4var.
- 18vU-W The letters for the magnitudes given here are from Gr MS B. For a comparison with those of Gr MS A, see Gr 2, 178, var after line 6.
- 18vX "ad XO, TN" Gr MS B was corrupt here. It should read "XO ad OH." In fact, the whole expression "secta... portionis" is not necessary. If Moerbeke had followed the model of Gr MS A, he would have substituted for it: "hoc est inter signa X et H." See Gr 2, 180, 2.
- 19rA-E The letters for the magnitudes reproduced here and in Fig. Cg. 22 are from Gr MS B. For those in Gr MS A, see Gr 2, 180 fig.
- 19rD "QP... portio" The simplest correction is that which I have given in parentheses, namely "Q ad minorem proportionem." It could be that Gr MS B was corrupted from a text that had the equivalent of "Q, hoc est QP, ad PE, quia PE est minor portio." Cf. the full specification of the proposition given above in 18vW-X.
- 19rD "QE" Should be "CE." And if the full proportion were given, it would be triang. ABG / (triang. AKB + triang. BLG) = CR / RE, where R is the center of gravity of the pentagonal figure.
- 19rE "Quoniam... rectilinei" For an elaboration of the argument, see Heath, Archimedes, pp. 211-12.
- 19rI-J "erit... TE" Cf. the somewhat different text in Gr MS A: Gr 2, 184, 20-26. But in any case, the argument is clear. Since rect. AKBL / remaining segments > BT / TE, in order to find an equal proportion we extend BT to H, producing HT that makes the proportion equal. Then, since rect. AKBL / remaining segments = HT / TE, point H must be the center of gravity of the remaining segments. But this is impossible since the segments are all on the same side of a line drawn through H parallel to AG. Therefore TE < Z. Q.E.D.

- 19rL "in1...ZT" Thus in Gr MS B. Gr MS A expressed this in a different way, saying that we must prove that points K and L divide the diameters in the same ratio. See Gr 2, 186, 8-9.
- 19rP Before "MN" Gr MS A properly had ZH, missing in Gr MS B. See Gr 2, 188, 13var and 19rPvar.
- 19rS "quoniam... ABG" Heiberg, Gr 2, 191, n. 1, would delete this because Eutocius did not have it.
- 19rT "equalis1... tripla2" Note the different reading of Gr MS A (Gr 2, 190, 17-20). Compare the marginal addition given by Moerbeke from Gr MS A and included by me in 19rTvar. It can be rendered as follows: "Therefore, XE =5ET, i.e. DE = 5ET since DT = XE. Hence DT = 6TE and BD = 3DE." The proposition then follows, namely that  $BT = \frac{3}{2}DT$ .
- 19rT-19vB "Si... AB." The enunciation and its specification as given by Moerbeke, though translated from Gr MS B, also comprise an accurate translation of the text in Gr MS A, with only minor divergences (see Gr 2, 190, 24var and 27var; 192, 16var).
- 19vB "[ad AD]" Moerbeke omitted this, either because it was not in Gr MS B or by carelessness. It was, however, in Gr MS A (see Gr 2, 192, 16var.)
- 19vB-R "Quoniam...  $AB^2$ " This translates the proof as given in Gr MS B. It is essentially the same as the proof in Gr MS A (20rA-P) in spite of considerable difference in detail. Note that the letter K in Gr MS B (see Fig. Cg. 26) was given as O in Gr MS A (see Fig. Cg. 27). The proof is very much easier to follow in the algebraic notation adopted by Heath, Archimedes, pp. 216-18, than in the Archimedean geometrical notation. It will be noticed that in presenting the texts of both of the versions of the proof translated by Moerbeke I have retained all of the erroneous readings of the manuscripts but have added in parentheses the correct readings. These erroneous readings largely involve mistaken letters of magnitudes. My corrections are based on the required mathematical sense of the proof.
- 20rA "[BD... ad]" This was omitted from Gr MS A, but compare Gr 2, 192, 21-22.
- 20rB "et ipsius DB" Moerbeke thus translates και α ΔB in Gr MS A. Heiberg corrects to καὶ τῷ ΔB. See Gr 2, 194, 4var (misplaced by Heiberg as 3var).
- " $DB^3$ " Gr MS A had B $\Delta$ . See Gr 2, 194, 5var.
- 20rB "AB2" Moerbeke has corrected B in Gr MS A. See Gr 2, 194, 6var.
- 20rC "DT" and "TA" Thus in Gr MS A. They should be DO and OA respectively. See Gr 2, 194, 10var and 11var.
- 20rC "[et... GB]" Missing from Gr MS A and Moerbeke's translation. I have added it from the Basel ed. and Heiberg. See Gr 2, 194, 12-13var.
- 20rE In place of the lacuna after "que" Gr MS A had A. It should be OA. See Gr 2, 194, 23var.

- 20rE "quincupla" Moerbeke has corrected  $\overline{\Delta E}$  in Gr MS A. See Gr 2, 194, 24var.
- 20rF "TD" Thus in Gr MS A. It should be OD. See Gr 2, 196, 7var.
- 20rG "DB" "HBD" and "TD" Thus in Gr MS A. They should be AD, BD and OD respectively. See Gr 2, 196, 11var, 14var and 16var.
- 20rG ''dispositis'' Moerbeke has correctly read τετμημενων in Gr MS A as if it were τεταγμένων. See Gr 2, 196, 14var.
- 20rG "turbata" Moerbeke has correctly read τεταραγμένος in Gr MS A as if it were τεταραγμένας. See Gr 2, 196, 15var.
- 20rG " $GB^2$ " Gr MS A had B $\Gamma$ . See Gr 2, 196, 17var.
- 20rH "TD" Gr MS A had  $\Theta$ E (and Heiberg misreports Moerbeke's reading as the same). Gr MS C correctly has  $\Theta$ E. See Gr 2, 196, 19var.
- 20rI "ET" Thus in Gr MS A. It should be EO. See Gr 2, 198, 6var.
- 20rJ "ipsa" Missing in Gr MS A. It should be tripla ipsius. See Gr 2, 198, 7var.
- 20rJ "EB" Thus in Gr MS A. It should be OB. See Gr 2, 198, 10var.
- 20rK "ut²" Omitted from Gr MS A. Added by Moerbeke. Gr MS A had εστιν after αρα (i.e. "ergo" in Moerbeke's translation). See Gr 2, 200, 1var.
- 20rL "DA" and "GE" Thus in Gr MS A. They should be BA and GB respectively. See Gr 2, 200, 5var and 10var.
- 20rN "AB" and "EB2" Thus in Gr MS A. Each should be OB. See Gr 2, 200, 22var and 26var. Note that Heiberg (ibid., 26var) claims falsely that the "est" three words before "EB2" was omitted by Moerbeke.
- 20rO "ex ipsa GB" This translates  $\varepsilon\varkappa$  του τας  $\Gamma B$  in Gr MS A. See Moerbeke's alternate suggestion in the margin (20rOvar): "ex tripla ipsius GB." It should be sexcupla ipsius. See Gr 2, 202, 5var.
- 20rO-P "A \_\_\_ (lac., O)" Gr MS A had A only. It should be AO. See Gr 2, 202, 10var.
- 20rP "BD" and "DB." Greek MS A had B $\Theta$  and  $\Delta$ B respectively. They should be BA and AB. See Gr 2, 202, 11var and 13var.
- 20rP "quod oportebat demonstrare" Gr MS A had only ot for this clause. See Gr 2, 202, 13var.
- 20rP "sectoris" Here and throughout this proposition it appears that Moerbeke has mistranslated τόμος by sector. I have discussed this difficulty above, Part I, Chap. 1, Sect. III, List G, item (6).
- 20rQ "medietate maioris" Apparently thus in Gr MS B. (Cf. Gr MS no. 14, 144v, and ed. Basel, 1544, p. 118, where parts of the text were retranslated into Greek from Moerbeke's autograph—see Vol. 3, Part III, Chap. 4, Sect. I, n. 1.) The "medietate" was missing from Gr MSS A and C (see Gr 2, 204, 5var). It was probably introduced into Gr MS B from the specification and proof of the proposition which are couched not in the terms of the full major and minor bases of the frustum but in terms of their halves. That is to say, the proposition as specified and proved in terms of the half-bases is TI / IK =

 $AZ^2 \cdot (2DH + AZ) / DH^2 \cdot (2AZ + DH)$ , while the enunciation if put in terms of the full bases would be  $TI/IK = AG^2 \cdot (2DE + AG)/DE^2 \cdot (2AG + DE)$ . These two statements are obviously equivalent since AG = 2AZ and DE =2DH. I would suppose then that, since the identity of these statements was immediately obvious, Archimedes felt no necessity to indicate their identity to the reader when he laid out his specification and proof in terms of the half-bases after having given the enunciation in terms of the full bases. My reasoning that "medietate" is an intrusion is further strengthened by the fact that this is the only place in the enunciation where the half-base appears. Thus if "medietate maioris" in 20rQ were correct, then we would expect in 20rR that "duple minoris" would be rather "minori," that "maiori" would be "medietati maioris," that "minori" would be "medietate minoris," that "duple maioris" would simply be "maiori," and finally that "minori2" would be "medietati minoris." But none of these readings is present in Moerbeke's translation and thus presumably none was in Gr MS B.

20rS "et<sup>2</sup>... portionem" Heiberg, Gr 2, 205, n. 2, would delete this, believing that Archimedes in all likelihood specified in 20rR (but now missing) that the straight lines AG and DE were parallel. Against Heiberg's view that this should be omitted we note that there is reliance on it below in 20rV. Be that as it may, either Gr MS B or Moerbeke's reading of it was defective in this passage. From Gr MS A we can tell that what was intended was that lines AG and DE are parallel to a tangent to the parabola at B. Thus we find in Gr MS A: τα κατα το Β εφαπτομένα τας τομάς. The τα was not translated by Moerbeke and he further read εφαπτομεναι.

"et... MX (! NX)" That is, MN / NX = NX / NO. 20rU

"attingentes" This translates εφαπτομέναι in Gr MSS A and B. Heiberg, Gr 2, 206, 11var, preferred ἐφαπτομένα (=attingenti) found in Gr MSS G and H. See the comment to 20rS.

20rX "[tres quintas]" See above, Part I, Chap. 1, Sect. III, List A, item (2).

20rΘ ''cum duabus'' A poor translation of σύνδυο. See above, Part I, Chap. 1, Sect. III, List G, item (8).

 $20r\Phi$  "et precedentium sequentia" Moerbeke probably read Gr MS B as ξπόμενα (=sequentia); Gr MS A had  $\bar{\epsilon}$  (=quinquies). See above, Part I, Chap. 1, Sect. III, List G, item (9). The whole phrase is, of course, a genitive absolute and should have been more properly translated (following Gr MS A) as "precedentibus quinquies."

### Commentary on the Liber Archimedis qui dicitur quadratura parabole (20vE-22vH)

20vE "Liber... parabole" This form of the title no doubt appeared in Gr MS B. Needless to say, it does not go back to Archimedes since the word παραδολή was not used by Archimedes for a parabola. Presumably the original title was τετραγωνισμὸς ὀρθογωνίου κώνου τομᾶς (=τομῆς). But see Eutocius' comment in Gr 3, 292-94 (=54rK), where Archimedes' work is merely entitled Περὶ τῆς ὀρθογωνίου κώνου τομῆς.

20vE-K "Archymenides.... Vale." The whole preface was so literally translated by Moerbeke that it is difficult to follow. Furthermore, Gr MS B was corrupt in a number of places, as I indicate below. For these reasons I give the English translation of Heath, Archimedes, pp. 233-34:

Archimedes to Dositheus greeting. When I heard that Conon, who was my friend in his lifetime, was dead, but that you were acquainted with Conon and withal versed in geometry, while I grieved for the loss not only of a friend but of an admirable mathematician, I set myself the task of communicating to you, as I had intended to send to Conon, a certain geometrical theorem which had not been investigated before but has now been investigated by me, and which I first discovered by means of mechanics and then exhibited by means of geometry. Now some of the earlier geometers tried to prove it possible to find a rectilineal area equal to a given circle and a given segment of a circle; and after that they endeavoured to square the area bounded by the section of the whole cone and a straight line, assuming lemmas not easily conceded, so that it was recognised by most people that the problem was not solved. But I am not aware that any one of my predecessors has attempted to square the segment bounded by a straight line and a section of a right-angled cone [a parabola], of which problem I have now discovered the solution. For it is here shown that every segment bounded by a straight line and a section of a right-angled cone [a parabola] is four-thirds of the triangle which has the same base and equal height with the segment, and for the demonstration of this property the following lemma is assumed: that the excess by which the greater of (two) unequal areas exceeds the less can, by being added to itself, be made to exceed any given finite area. The earlier geometers have also used this lemma; for it is by the use of this same lemma that they have shown that circles are to one another in the duplicate ratio of their diameters, and that spheres are to one another in the triplicate ratio of their diameters, and further that every pyramid is one third part of the prism which has the same base with the pyramid and equal height; also, that every cone is one third part of the cylinder having the same base as the cone and equal height they proved by assuming a certain lemma similar to that aforesaid. And, in the result, each of the aforesaid theorems has been accepted no less than those proved without the lemma. As therefore my work now published has satisfied the same test as the propositions referred to, I have written out the proof and send it to you, first as investigated

- by means of mechanics, and afterwards too as demonstrated by geometry. Prefixed are, also, the elementary propositions in conics which are of service in the proof (στοιχεῖα κωνικά χρεῖαν ἔχοντα ἐς τὰν ἀπόδειξιν). Farewell.
- 20vE "quendam" This translates τινα in Gr MSS A and B. Heiberg, Gr 2, 262, 4var, corrects to  $\tau i \nu (=te)$ .
- 20vF After "mittere" Heiberg, Gr 2, 262, 8var, would add τοι (=ad te).
- 20vF "ab aliis" This translates Gr MS B, but as Moerbeke himself has noted in the margin "in alio, a nobis," i.e. Gr MS A had αμων or ημων. See Gr 2, 262, 11var and 20vFvar.
- 20vF "demonstratis quidem" See above, Part I, Chap. 1, Sect. III, List G, item (10). Thus Moerbeke has erred in reading the Greek as ἐπιδειχθέντων μέν when it should have been read as ἐπιδειχθέν. τῶν μὲν, with the verb taken with the previous sentence and translated "demonstratum" and the  $\tau \tilde{\omega} \nu$  understood as referring to the earlier geometers and translated "eorum."
- 20vG "erat" See above, Part I, Chap. 1, Sect. III, List G, item (11).
- 20vG "hoc" This translates Gr MS B. Gr MS A had ταυτα (=hec). See Gr 2, 262, 16var.
- 20vG "spatium2... recta" This was corrupt in the MSS and it is difficult to know what was intended here. It is natural to suppose that an ellipse is to be understood by "the section of a whole cone" but then it is not clear to what "a straight line (recta)" refers unless it is to the axis or diameter. If the "straight line" was used to indicate a segment of an ellipse, then why the expression "the section of a whole cone"? See Heath, Archimedes, p. 233n and Heiberg, Gr 2, 263, n. 3.
- 20vG "que quidem" and "despecta sunt" See above, Part I, Chap. 1, Sect. III, List C, items (9) and (10).
- 20vH-I "sumpto... spatium" This is Archimedes' Lemma. It has been awkwardly translated here because of the expression "ipsum excessum compositum" in 20vI. In place of excessum (added by Moerbeke) Heiberg, Gr 2, 264, 11, wrote ξαυτα and translated the whole phrase "sibi ipsum additum," referring back to excessum in 20vH. Cf. Gr 2, 265, n. 1 and my comment to 11vY ("ipsum").
- 20vI After "et<sup>3</sup>" Heiberg, Gr 2, 264, 17var, would add ὅτι (=quod or quia), which Gr MSS A and B omitted here though it was present in the preceding clause.
- 20vJ "hoc" The word lemmate is understood and indeed it was present in Gr MS A (see Gr 2, 264, 24var).
- 20vK "huius inductum" This translates τουτου αναγμένον in Gr MSS A and B. Heiberg, Gr 2, 264, 26var, would correct to τούτοις ἀναγμένων, which following Moerbeke's style we could translate "hiis inductorum."

- 20vL ''[1.]' Moerbeke has not numbered any of the propositions of On the Quadrature of the Parabola. Heiberg, Gr 2, 270, 4var, has noted that Gr MSS A and B omitted the numbers of propositions from Prop. 5 onward. However, I suspect that the manuscripts omitted not only these but all of the proposition numbers. This would explain why Cremonensis also omitted the numbers when he undertook the translation of Gr MS A in about 1450. It appears that Regiomontanus was the first to add the numbers in his corrected version of Cremonensis' translation (ca. 1462-64). For this reason the numbers also appeared in the edition of Cremonensis' translation published with the editio princeps of Basel, 1544, since the translation of Cremonensis given in the Basel edition was the corrected version of Regiomontanus. For these later versions and editions, see Vol. 3.
- 20vL-22rB This constitutes the mechanical proof of the parabola's quadrature. The first sixteen propositions have no general but only specific enunciations. Even so, I have expressed them in capital letters since it is unlikely that general enunciations were ever framed.
- 20vL "apud" and "penes" Here and in the succeeding propositions Moerbeke used both of these prepositions to render παρά in the abbreviated Greek expression indicating that one line was parallel to (literally, "along side of") another. Later he was to use penes exclusively for this purpose. It could be that he did not at first understand the meaning of the conventional Greek expression. At any rate, it is worth noting that when Francesco Maurolico in 1534 refurbished Moerbeke's translation he used only penes to render the expression (see below, Vol. 3, Part III, Chap. 5, Sect. III, Text D).
- 20vN "longitudine" Apparently in Gr MS B, missing in Gr MS A. See Gr 2, 268, 1var.
- 20vN "lineam" See the comment to 18rS. I shall not note this again in my commentary on On the Quadrature of the Parabola.
- 20vN "in elementis conicis" See Gr 2, 269, n. 2.
- 20vP "KI (! KH)" Cf. 20vPvar.
- 20vR "eiusdem autem proportionis erit" This translates the ομολογον δε εσσειται of Gr MSS A and B literally. See Gr 2, 270, 12. A better translation is "correspondebit autem," for the meaning is that in the case of two lines cut in the same ratio (that is, the line parallel to AZ and the line AG), the segment toward A of the one "will correspond" to the segment toward A of the other.
- 20vV "in recto" This translates επι ορθου in Gr MSS A and B. Heiberg, Gr 2, 272, 12var, would correct to ἐπίπεδον ὀρθόν. Thus we are to conceive of the plane of the figure to be perpendicular to the horizon, with AB horizontal. D's side of AB is to be understood as "down," while the other side of AB is to be thought of as "up." The addition of "deorsum" in 20vW is based on the reading suggested by the scribe of Gr MS G, namely κάτω νοείσθω, instead of κατανοεισθω as given by Gr MSS A and B. See Gr 2, 272, 14var.

- 20vW "videlicet... BG" Heiberg, Gr 2, 272, 17, would delete this as an interpolation. Cf. ibid., 273, n. 5.
- 20vX "assimilatur" Perhaps translated from ἔοικε in Gr MS B. Gr MS A had εηκα and Heiberg, Gr 2, 272, 24var, corrected it to εἴη κα.
- 20vX "ipsi orizonti" Gr MS A had αυτον οφιζονται. Heiberg, Gr 2, 272, 25var, (following Torelli) corrected it to παρὰ τὸν ὁρίζοντα, αί.
- 20vY "in mechanicis" That is, On the Equilibrium of Planes, Bk. I, Prop. [12.] (=Gr. 14). Cf. 21rK.
- 20vZ "ostensum...hoc" Cf. Gr 2, 275, n. 2 and Heath, Archimedes, p. 238n for different suggestions as to the title of the lost work in which this might have been proved.
- 20vZ "consistentiam" Moerbeke so translates κατάστασιν. The meaning is that the triangle maintains the same position or disposition relative to the balance beam when suspended from E as when suspended from B and G. See Gr 2, 274, 16.
- 21rA-B "quod<sup>2,1</sup>" One or the other of these ought to be deleted.
- 21rB "trigonum GDH1" This was in both Gr MSS A and B but ought to be deleted since it is obvious that it is the balance beam AG that is suspended from B. See Gr 2, 274, 28var.
- 21rC "autem<sup>2,3</sup>" Translates  $\delta \epsilon$  in Gr MSS A and B, but it should rather be *itaque*, translating  $\delta \dot{\eta}$ . See Gr 2, 276, 4var and 8var.
- 21rD After "ZL" Gr MS A properly had  $\kappa\alpha\iota$  τριτον εστι του  $B\Gamma\Delta$  το  $Z\Lambda$ . This was apparently omitted by Gr MS B or, at least, was not translated by Moerbeke. See Gr 2, 276, 12-13var.
- 21rI "autem2" Omitted in Gr MS A. See Gr 2, 278, 22var.
- 21rK "AG" It would have been better to have said "BH." See Gr 2, 280, 7var.
- 21rK "ipsius<sup>3</sup>". This translates της in Gr MSS A and B. Heiberg, Gr 2, 280, 9var, corrects this to τάν.
- 21rK "in mechanicis" Cf. On the Equilibrium of Planes, Bk I[13.] (=Gr. 15). It is because of this reference and the similar reference of 20vY that Stamatis and others have adopted the title of Μηχανικά for On the Equilibrium of Planes. There is also a reference to Στοιχεῖα τῶν μηχανικῶν in Prop. II.2 of On Floating Bodies in the part of the proof not available to Moerbeke (see Gr 2, 350, 21-22). The reference is to Prop. I.6 (=Gr. I.8) of On the Equilibrium of Planes.
- 21rL After "maiorem" Heiberg, Gr 2, 280, 24var, (following the Basel edition) adds ἄρα (=ergo).
- 21rV After "HI" Heiberg, Gr 2, 286, 4var, judiciously adds IG, omitted in both Gr MSS A and B.
- 21rW "Sit... divisa" For this error, see above, Part I, Chap. 1, Sect. III, List G, item (12).

- 21vD 'itaque' This translates  $\delta \eta$  in Gr MSS A and B. Heiberg, Gr 2, 290, 1var, justly substitutes  $\delta \dot{\epsilon}$  (=autem).
- 21vG "autem" Cf. the comment to 21rC and see Gr 2, 290, 21var.
- 21vI After "ducens" Heiberg, Gr 2, 292, 8, adds ov (=igitur).
- 21vM "autem" This should be "itaque." See Gr 2, 294, 12var.
- 21vN "autem1" Cf. the comment to 21rC and Gr 2, 294, 16var.
- 21vR After "Rursum" Heiberg, Gr 2, 296, 20var, adds ἄρα (=ergo).
- 21vT "autem" Heiberg has incorrectly given Moerbeke's reading as "ergo" (see Gr 2, 298, 15var).
- 21vU "Hoc autem demonstrato" There was no δε (=autem) in Gr MS A. Perhaps Moerbeke read the δε- of δεδειγμένου twice (see Gr 2, 298, 17). We do not know what was in Gr MS B.
- 22rA "equalis... TK" This was in Gr MS B but omitted from Gr MS A (see Gr 2, 300, 7var). It follows from Proposition 2.
- 22rD "equidistans" Apparently singular in both Gr MSS A and B. It ought to be plural and the succeeding even translated as sunt. See Gr 2, 302, 2var.
- 22rE "que<sup>2</sup>... est" That is, the line drawn from the midpoint of the base parallel to the diameter. Similarly the line drawn from the midpoint of half the base (i.e. "que<sup>3</sup>... ducitur") is also to be drawn parallel to the diameter. These omissions are rectified in the specification in 22rF.
- 22rI-J "ZE" "AZ" and "AZEG" These were given in Gr MS A as  $\Delta E$ ,  $A\Delta$  and  $A\Delta E\Gamma$ . In the figure of Gr MS A the point  $\Delta$  appears where Z appears in Fig. Q. 20. See Gr 2, 304, fig. and 11var, 13var and 15var.
- 22rJ "quod2" In Gr MS A the text had οτι ως. See Gr 2, 304, 19var.
- 22rS "componentur" This translates συντεθεωντι in Gr MSS A and B. Heiberg, Gr 2, 310, 6var, changes this to τεθέωντι (=ponantur) and translates it by the indicative ponuntur, as is his custom in such clauses..
- 22rU "E<sup>4</sup>" Heiberg, Gr 2, 310, 19var, (following Torelli) would delete this.
- 22vD After "Quoniam" Heiberg, Gr 2, 312, 22var, adds γάο (=enim).
- 22vD "ABG" That is, triangle ABG. τοιγωνον was in Gr MS A; either it was missing from Gr MS B or Moerbeke failed to translate it. See Gr 2, 314, 2var.
- 22vD After "deinde" Gr MS A had  $\delta \epsilon$  (=autem); either it was missing from Gr MS B or Moerbeke failed to translate it. See Gr 2, 314, 3var.

- 22vE "Ponatur... Z<sup>1</sup>" As in Gr MSS A and B. It would have been better geometrical form if the text had read "Let space Z be placed equal to triangle ABG." See Gr 2, 314, 8-9var.
- 22vE "et $^3$ ...I" That is, let I be less than the excess by which space K exceeds the segment.
- 22vG Before "sint" Gr MS A had  $\varepsilon \alpha v$  (=si). See Gr 2, 314, 20var. Either it was missing from Gr MS B or Moerbeke failed to translate it.

## Commentary on the Archimedis circuli dimensio (22vI-23rI)

- 22vI "Archimedis... dimensio" This title was written by Coner in an erasure. But it could be that Moerbeke gave no title (that is, that Coner erased something he himself had written), for Latin MS M, which was copied from O before its acquisition by Coner, failed to give any title. Cf. the variant reading to 22vI. Apparently Gr MS A had Αρχιμηδους χυκλου μετρησις. See Gr 1, 232, var for title. It is also worth noting that this is the only work in Moerbeke's codex that has no colophon.
- 22vI "[1.]" The numbers of this and the succeeding propositions were not given by Moerbeke (or added by Coner). Hence I have added them. Incidentally the first two propositions were not numbered in Gr MS A, but the third one was (see Gr 1, 232, 1var; 234, 18var; 236, 7var). Furthermore Gr MS A erroneously numbered the second half of Proposition 3 as  $\delta'$  (=4.). See *ibid.*, 240, 12var. In view of the omissions and this intrusion, it is not surprising that Moerbeke omitted the proposition numbers.
- 22vJ After "equa" Heiberg in his Latin translation suggests that Archimedes would have indicated that straight lines BZ, ZA, AM, MD, etc. were to be drawn. For Heiberg, this and other signs of brevity and negligence suggested that the text in the form we have it was executed by an excerptor rather than by Archimedes. See Gr 1, 233, n. 3.
- 22vL "Accipiantur" For this error, see above, Part I, Chap. 1, Sect. III, List G, item (13).
- 22vL "sectores similes ipsi PZA" The Greek text reads οἱ τῷ ΠΖΑ τομεῖ ὅμοιοι (see Gr 1, 234, 11-12). One might have expected Moerbeke to render it literally as "que similes ipsi sectori PZA." Instead he added sectores and omitted sectori. While Gr MS A clearly had τομει, which does indeed indicate

- a sector, it is hardly likely that Archimedes would have designated the figure involved as a sector. He perhaps had used some word like ἀποτμήματι (see Gr 1, 235, n. 3).
- 22vM "ABGD" Added by Moerbeke, not in Gr MS A. See Gr 1, 234, 17.
- 22vO ''quoniam... demonstrabitur'' Heiberg, Gr 1, 237, n. 2, would delete this as an interpolation.
- 22vP Before "proportionem" Coner properly added maiorem, for here the Greek text was in error since in fact EG / GZ > 265 / 153. See 22vPvar (post GZ). Cf. my Archimedes, Vol. 1, p. 29, comment to lines 75-111.
- 22vQ "et permutatim et componenti" Heiberg, Gr 1, 236, 17-18, would delete this. Cf. Gr 1, 237, n. 4.
- 22vQ "591[1/8]" Coner has added -1/8, no doubt from Eutocius since it was missing in Gr MS A at this point. See Gr 1, 238, 2var and 22vQvar.
- 23rB "longitudine" Heiberg, Gr 1, 238, 10var, would delete this because it was not in Eutocius' text.
- 23rB "4673[½]" Note that Moerbeke corrected Gr MS A's δυογ but did not add the missing -½, which Coner added from Eutocius. See 23rBvar and Gr 1, 238, 10var.
- 23rC "latus (?)" Moerbeke appears to have written and then deleted this because it was not in Gr MS A (see 23rCvar). But it clearly belongs in the text (see Gr 1, 238, 15var).
- 23rC "poligonii 96" It was thus in Gr MS A, but apparently it ought to have been οςγώνου (=96gonii), as it is given toward the end of the proof in Gr MS C (see Gr 1, 240, 4var; 242, 16var.).
- 23rD "poligonium" Thus in Gr MS A, but obviously we should have "perimeter poligonii" to make mathematical sense. See Gr 1, 240, 8.
- 23rE "[1]351" Coner has added the initial 1-, no doubt from Eutocius (cf. Gr 3, 248, 19). Gr MS A at this point mistakenly had  $\overline{\tau v \alpha}$ , which Moerbeke correctly rendered as 351 (see 23rEvar and Gr 1, 240, 14var).
- 23rE After "780" the Greek text had  $\dot{\eta}$   $\delta \dot{\epsilon}$  A $\Gamma$   $\pi \varrho \dot{\delta} \varsigma$   $\Gamma B$   $\delta \nu$   $\alpha \varphi \xi$   $\pi \varrho \dot{\delta} \varsigma$   $\psi \pi$  ("and AG/GB=1560/780"). Moerbeke omitted this and Heiberg would delete it (see Gr 1, 240, 14-15). But Gerard of Cremona's translation from the Arabic also had it (see my *Archimedes*, Vol. 1, p. 50, lines 122-23).
- 23rF "et<sup>2</sup>" Heiberg, Gr 1, 240, 22var, would delete this.
- 23rG "3013[½ ¼]" The fraction was added by Coner from Eutocius; Moerbeke had originally written -3 4, properly translating Gr MS A. See 23rGvar and Gr 1, 242, 1var.
- 23rG "5[9]24[½¼]" Moerbeke, translating Gr MSA, had rather 5324⅓ ¼. The corrections were made in erasures by Coner. Moerbeke's ⅓ was an unsuccessful effort to correct Gr MS A's ε'. See 23rGvar and Gr 1, 242, 3var.

- 23rG "2[4]01" The -4- is Coner's correction. From Latin MS M we can deduce that Moerbeke had 250, as indeed did Gr MS A. See 23rGvar and Gr 1, 242, 4var.
- 23rG "[4/13]" Added by Coner. Moerbeke had written in the margin from Gr MS A:  $\overline{\Delta} \iota \gamma' \alpha'$  and did not translate it, perhaps because of the superfluous  $\alpha'$ . See 23rGvar and Gr 1, 242, 4var.
- 23rG "[9/11]" Corrected by Coner from 9 in Moerbeke's text. See 23rGvar and Gr 1, 242, 5var.
- 23rH "ergo" Heiberg, Gr 1, 242, 7, would delete this.
- 23rH "[66]" Coner has written this in an erasure. From Latin MS M we can deduce that Moerbeke had written 266, as it was in Gr MS A. See 23rHvar and Gr 1, 242, 7var.
- 23rH "[11/40] [Que AG]" and "[KG...  $1009^{1}/_{6}$ ]" Coner's corrections. See 23rHvar and Gr 1, 242, 8var.
- 23rH " $AG^2$ " This was an uncorrected error of Gr MS A. It should be LG. See Gr 1, 242, 10var.
- 23rI "63[36]" and "[2]01[7]" Corrections of Coner. Moerbeke originally had  $6301^{1}/6$  and  $7012^{1}4$ . See 23rIvar and Gr 1, 242, 13var and 14var.
- 23rI "10/71<sup>1,2</sup>" Moerbeke has corrected Gr MS A in both instances of this reading. See 23rIvar and Gr 1, 242, 15var and 17var.
- 23rI "poligonii 96" See the comment to 23rC.

## Commentary on the Liber Archimedis de spera et cylindro (23vA-33vV)

23vA-G These sections of Moerbeke's translation were to prove useful to Heiberg in the publication of his second edition of Archimedes' works because they offered a literal rendering of the first folio of Gr MS A that had considerably deteriorated by the time the Renaissance copies were made from it (in fact so much so that Gr MSS H and E omit most of the beginning of the text and the other copies have significant lacunae). Hence Moerbeke's translation offered a fresh route to the manuscript before the deterioration of its initial folio. Incidentally, Jacobus Cremonensis in about 1450 was able to translate sections A-D, but probably only because he consulted Moerbeke's translation at that point (see below, Vol. 3, Part III, Chap. 2, Sect. I). But sections E-G were evidently too illegible for the humanist, so that he omitted them entirely,

- leaving half a page blank. Apparently he was reluctant to substitute Moerbeke's translation for the sections he could not read well enough.
- 23vE "ad2... solida" That is, the more important theorems of Eudoxus concerning solids.
- 23vF After "insignes" Gr MS A (Gr 1, 4, 12) had γεωμετρων, which was not translated by Moerbeke. I presume that Coner made no addition here because of the fact that he was checking Moerbeke's translation against Gr MS E, which, as I have noted, failed to include this section.
- 23vF "hiis" That is, Archimedes' discoveries.
- 23vG "putabamus" For this error, see above, Part I, Chap. 1, Sect. III, List G, item (16).
- 23vG "Probantes... considerare" The translation is awkward. Heath, Archimedes, p. 2, gives a translation that will serve as a smooth translation of the Latin: "but as I judge it well to communicate them to those who are conversant with mathematics, I send them to you with the proofs written out, which it will be open to mathematicians to examine."
- 23vH "axiomata" They are rather definitions.
- 23vH "curve" This translates καμπυλαι in Gr MS A (see Gr 1, 6, 2) and signifies either continuous curves or lines consisting of any number of lines that are straight or curved.
- 23vH "omnes" The better translation of ολαι in Gr MS A (see Gr 1, 6, 4) would be tote, as Jacobus Cremonensis realized.
- 23vI "autem3" Gr MS A apparently had δη (=itaque). See Gr 1, 6, 11var.
- 23vJ "omnes1" See the comment to 23vH ("omnes") and Gr 1, 6, 14.
- 23vJ "habent<sup>2</sup>" This represents a correction by Moerbeke. He first wrote habentes to translate εχουσαι in Gr MS A. See Gr 1, 6, 14var. See also 23vJvar.
- 23vJ "curvas (! cavas)" There is considerable confusion regarding Moerbeke's translation of κοίλος in this and the succeeding sections. Either cavus or concavus is correct (see 23vI), but Moerbeke, in most if not all cases of its translation, seems to have written curvus (i.e., c'vus), though perhaps cavus was intended.
- 23vL "Linearum"... rectam" Cf. Heath, Archimedes, p. 3n.
- 23vM "aut" This ought to be deleted, and it may have been Moerbeke who ran a line through it (see 23vMvar). Gr MS A had  $\eta$ , which Moerbeke first translated as if it were  $\tilde{\eta}$  (=aut) rather than as the article  $\tilde{\eta}$ , which was intended and which he should either have omitted or, if he were following his customary literal style, translated by que. What was intended by Archimedes is that either the whole of one of the two lines is included between the other and the straight line that has the same extremities, or it is partly included by, and partly

- common with, the other. Note also that after "altera" Moerbeke has properly deleted "superficies," though it was in Gr MS A (but in the genitive case, see Gr 1, 8, 8var).
- 23vN "planam" Moerbeke seems to have added a macron over the second "a," though he clearly has "que" before the word. According to his style, exemplified by "que comprehenditur" in the preceding postulate, we would expect "plana."
- 23vN "tota... superficie" Gr MS A seems to have had ολη περιλαμδανηται υπο της ετερας ετερα επιφανεια. Heiberg would expand ετερα to ή έτέοα (see Gr 1, 8, 19var). It would then be parallel to Postulate 2, which is to say that either the whole of one of the surfaces is included between the other and the plane having the same extremities, or it is partly included by, and partly common with, the other. Note that m. 2 changed "superficie" to "superficies" (see 23vNvar).
- 23vO "Adhuc... dicuntur" This is Archimedes' Lemma. See the comments to 11vY and 20vH-I.
- 23vQ "[1.]" This number was added by Coner but was missing in Moerbeke's text. However Moerbeke added the numbers of the succeeding propositions, which Coner erased and repeated (see 23vQvar and 23vSvar).
- 23vT "HE1,2" Moerbeke has corrected ZE in Gr MS A. See Gr 1, 12, 8var and 9var.
- 23vU After "GB2" Gr MS C has the Greek equivalent to the following: "But GA / AT = EH / HZ. Therefore, EH / HZ < GA / GB." This was missing in Gr MS A. See Gr 1, 12, 12-15var.
- 23vU "resecatum" Moerbeke read Gr MS A as διαλημμα (instead of as διὰ λῆμμα). He took this as equivalent to διάλειμμα. Heiberg, Gr 1, 12, 16, would delete the  $\delta\iota\dot{\alpha}$   $\lambda\tilde{\eta}\mu\mu\alpha$  and in fact also  $\check{\alpha}\varrho\alpha$  (=ergo) earlier in the clause. Both of these were missing from Eutocius' text (see 34vO).
- 23vV "equum" This translates Gr MS A. Gr MS C had εἰρημένον (=dictum). See Gr 1, 12, 20var.
- 23vV "hoc... minorem3" Heiberg, Gr 1, 12, 20-22, would delete this.
- 23vX "possibile... hoc" Heiberg, Gr 1, 14, 8, would delete this.
- 23vX "GE" Moerbeke properly changed Gr MS A's reading of  $\Gamma$ B. See Gr 1, 14, 10var.
- 23vY-Z "quoniam... hoc" Heiberg, Gr 1, 14, 15-19, would delete this.
- 23vZ "HX" Moerbeke properly corrected NE in Gr MS A. See Gr 1, 14, 20var.
- $23v\Theta$  "manifestum... NG" Heiberg, Gr 1, 14, 24-25, would delete this.
- "NG" Moerbeke has properly corrected HN $\Gamma$  in Gr MS A. See  $23v\Theta var$ 23vΘ and Gr 1, 14, 25var.
- 23vΘ "signa" Added by Moerbeke, not in Gr MS A. See Gr 1, 14, 28.

- 24rC-D "possibile... hoc1" Heiberg, Gr 1, 16, 22-23, would delete this.
- 24rD "possibile... TK" Heiberg, Gr 1, 16, 25, would delete this.
- 24rE "XNO" Moerbeke apparently corrected N\(\text{TO}\) in Gr MS A. See Gr 1, 18, 3.
- 24rH "sicut didicimus" Heiberg, Gr 1, 18, 24, would delete this.
- 24rH "dupla proportio" and "duplicis" The sense is "duplicated," i.e. "squared." The ambiguous use of "dupla" for "duplicated" was very common in medieval mathematics. Cf. M. Clagett, *The Science of Mechanics*, 2nd print. (Madison, 1961), pp. 464, 468, n. 49.
- 24rI "dupla" See the preceding comment and Gr 1, 18, 27.
- 24rI "similia enim" Heiberg, Gr 1, 18, 28, would delete this.
- 24rI "ipsius<sup>1</sup>...  $D^1$ " That is,  $(G/H)^2 = G/D$ . Moerbeke was aware that dupla was to be understood after "G ad H" since he wrote dupla in the margin opposite Et. See 24rIvar (Oppos. Et). I have recovered the marginal reading by ultraviolet light.
- 24rJ "6." This number was written in the margin by m. 1, but below, before Demonstrandum (24rL). It was not given by Coner. Its position here in Gr MS A has been inferred by Heiberg. Still it was placed in the lower position by Cremonensis (see MS Venice, Bibl. Naz. Marc. f.a. 327, 67v) and by the scribe of Gr MS No. 14 (and thus in the ed. of Basel, 1544). However, Gr MSS E and G have the number properly placed. Thus it could be that Cremonensis and the scribe of Gr MS No. 14 were influenced by Moerbeke's action, as they were in other instances (see below, Vol. 3, Part III, Chap. 2, Sect. I and also Chap. 4, Sect. I, n. 1). To settle this, a complete examination of all the Greek manuscripts copied from Gr MS A would be necessary. See Gr 1, 20, 4var and 10var.
- 24rJ "autem" Moerbeke misread the  $\delta \eta$  (=itaque) in Gr MS A. See Gr 1, 20, 5var.
- 24rK "Elementatione" That is, the *Elements* of Euclid, Prop. XII.2. I have already pointed out in the introduction that Moerbeke always translated στοιχείωσις by *elementatio* (see above, Part I, Chap. 1, Sect. III, n. 9).
- 24rM "Sit... sectore" This is an awkward translation. What is meant is that, if we demonstrate it for the circle, the same reasoning can be transferred to the sector.
- 24rR "ipsam" Moerbeke first translated the incorrect τφ of Gr MS A by "ipsi" and then corrected it to "ipsam." See 24rRvar and Gr 1, 24, 9var.
- 24rT 'hoc....*ABG*'' Heiberg, Gr 1, 24, 17-18, would delete this. Cf. Gr 1, 25, n. 2.
- 24rT-W "Manifestius....  $ADG^2$ " Heiberg, Gr 1, 25, n. 3, believes that the alternate demonstration was not by Archimedes and so he would delete it.
- 24rT "Sit" Gr MS A mistakenly had ωστε, which Moerbeke correctly surmised ought to be ἔστω. See Gr 1, 24, 20var.

- 24rT "quidem" This was in Gr MS A. Either Moerbeke or Coner properly deleted it. See 24rTvar and Gr 1, 24, 22var.
- 24rV "ABG" Moerbeke initially had ADG from the false reading in Gr MS A. He later corrected it. See Gr 1, 26, 9var and 24rVvar.
- 24rW "8." Gr MS A had  $\theta'$  (=9.). See Gr 1, 26, 14var.
- 24rX "DEZ" Coner's addition, though Heiberg mistakenly identifies it as Moerbeke's. See Gr 1, 26, 20var.
- 24rY "axis... et" Heiberg, Gr 1, 26, 24-25, would delete this.
- 24vB "EDH" Moerbeke has corrected  $E\Delta N$  in Gr MS A. See Gr 1, 28, 11var.
- 24vB "EHZ1" Moerbeke has corrected ENZ in Gr 1, 28, 14var.
- 24vC "9." Gr MS A had  $\iota'$  (=10.). See Gr 1, 30, 1var.
- 24vG "ADG" Moerbeke has corrected A $\Delta$ B in Gr MS A. See Gr 1, 32, 6var.
- 24vH "sumemus" Moerbeke has mistranslated λείψομεν (=relinquemus) in Gr MS A. See Gr 1, 32, 10. For m. 2's correction to derelinquemus, see 24vHvar.
- 24vH "sint accepte" Moerbeke has mistranslated λελιφθω in Gr MS A, which is written as λελείφθω (=relinquantur) in Gr MS C. See Gr 1, 32, 11var. For m. 2's correction to sint relicte, see 24vHvar. This and the correction noted in the preceding comment constitute precise evidence that the corrector exemplified by m. 2 was employing the Greek text for some of his corrections.
- 24vI "AE, EB" Thus in Gr MS A. But Gr MS C added ἐπὶ τῶν before this, which Moerbeke in conformity with the preceding sentence would have rendered as "super lineas AE, EB." See Gr 1, 32, 18var.
- 24vK "ADG3" The "-G" was corrected by Coner from "-E". See Gr 1, 34, 4var, where Heiberg misidentifies the correction as Moerbeke's.
- 24vK "10." Gr MS A had  $\iota \alpha'$  (=11.). See Gr 1, 34, 5var.
- 24vO "ut... contingentem" This translates Gr MS A, which was corrupt. For Moerbeke's suggested addition after "ZEG" see 24vOvar. Heiberg incorrectly locates this addition. The insertion mark is clearly after ZEG, which is equivalent to τριγώνων in line 4 of Gr 1, 36 and not to that word in line 3, as Heiberg indicates. For the readings of Gr MSS A and C and the suggested deletion of Heiberg, see Gr 1, 36, 2-4var.
- 24vP "sit.... due" Missing in Gr MS A, but correctly supplied by Moerbeke. See 24vPvar ("sit spatium T") and ("Quod... due"). Cf. Heiberg's use of Moerbeke's addition in the reconstructed text, Gr 1, 36, 10-13 and variants. Note that Moerbeke supplied circumacceptis (assuming thus πεφιλημμάτων). The proper word would have been πεφιλειμμάτων (=circumrelictis). But Heiberg prefers ἀποτμημάτων.
- 24vQ "ABG2" Thus in Gr MS A. Coner has corrected this to AEG in the margin, though either he or the scribe of m. 2 had first corrected it to ABE in the text. See 24vQvar and Gr 1, 36, 18var.
- 24vQ, R "circumacceptis" This translates Gr MS A's περιλημματων. Gr MS C

- correctly had περιλειμμάτων (=circumrelictis). See Gr 1, 36, 22var and 24var.
- 24vS "circumacceptis" See the preceding comment and Gr 1, 38, 7var.
- 24vS "accipiemus" See the comment to 24vH ("sumemus"), where Moerbeke made a similar error. As there, *relinquemus* is the proper translation. See Gr 1, 38, 10. Cf. 35rL.
- 24vS "accepta" See above, Part I, Chap. 1, Sect. III, List G, item (13).
- 24vT "bases... basibus" Heiberg, Gr 1, 38, 15-16, would delete this, as well as the additional phrase καὶ τὸ ὕψος ἴσον found in Gr MS C.
- 24vU "circumacceptis<sup>1,2</sup>" See the comment to 24vQ, R and Gr 1, 38, 23var and 25var. Note that Coner has corrected these translations (see 24vUvar).
- 24vV "AEH" Moerbeke has corrected this from Gr MS A's false reading of ΔEH. See Gr 1, 40, 1var.
- 24vV "DEG" Moerbeke has corrected this from Gr MS A's false reading of  $\Delta E\Sigma$ . See Gr 1, 40, 2var.
- 25rA "11." Gr MS A had  $\iota\beta'$  (=12.). See Gr 1, 40, 5var.
- 25rB "diametro" This was in Gr MS A, but it ought to be deleted. See Gr 1, 41, n. 2.
- 25rD "trigona" Thus in Gr MS A, but see the sound correction of Coner noted in 25rDvar ("trigona"). Heiberg, Gr 1, 40, 28, would simply delete the word.
- 25rD "plana" Thus in Gr MS A. See Gr 1, 42, 4var. Coner corrected this to trigonis. See 25rDvar ("plana").
- 25rE "AEB3" Moerbeke has corrected Gr MS A's EB. See Gr 1, 42, 12var.
- 25rF "rectis" Moerbeke has corrected ευθεια in Gr MS A. See Gr 1, 42, 14var.
- 25rG-H "A... ZMD" Heiberg, Gr 1, 44, 2-4, would delete this.
- 25rH, I "parallelogramma" and "parallelogrammis". These words were corrected by Moerbeke, I believe, from "parallelogrammis" and "parallelogramma." Cf. Gr MS A in Gr 1, 44, 8var and 10var and see 25rHvar and Ivar.
- 25rI-L "basis<sup>1-8</sup>" Thus in Gr MS A. See Gr 1, 44, 8var, 11var, 16var, 24var, 25var; 46, 2var, 6var, and 8var. All of these should read bases.
- 25rJ After "GLZMD" the scribe of m. 2 has added the lengthy addition (not in the Greek text) noted in 25rJvar. Heiberg, Gr 1, 45, n. 2, thinks the addition a worthy one that somehow dropped out of the Greek text.
- 25rL "AGBD" Gr MS A had  $A\Delta\Gamma B$ . Heiberg quite properly prefers the  $A\Gamma\Delta B$  of the Basel ed. (see Gr 1, 46, 9var). Notice also that Moerbeke's succeeding "parallelogrammo" is a correction of Gr MS A's incorrect παραλληλογραμμα (see *ibid*.).
- 25rM "Residua" Moerbeke has corrected λοιπον in Gr MS A. See Gr 1, 46, 16var.
- 25rN "12." Gr MS A had  $\iota \gamma'$  (=13.). See Gr 1, 46, 19var.
- 25rN "basis" See the comment to 25rI-L and Gr 1, 46, 22var.
- 25rQ After "contingens" Moerbeke would add a statement that EZ is tangent at

- B, parallel to AG and bisected at that point (see 25rOvar), and Heiberg, Gr 1, 49, n. 2, thinks that Archimedes perhaps had such a statement in the text.
- 25rQ "superficiem" Heiberg, Gr 1, 48, 12, would delete this.
- 25rQ "latere" Thus in Gr MS A. Either the scribe of m. 2 or Coner has changed it to "lateribus" (see 25rQvar and Gr 1, 48, 16var).
- 25rQ-R "Quoniam . . . ZG<sup>2</sup>" Heiberg, Gr 1, 48, 16-19, would delete this. Cf. Gr 1, 49, n. 4. After " $ZG^1$ " there is an erased marginal comment in m. I that cannot be completely read, even with ultraviolet light. See 25rRvar. The substance of this statement must be that of Heiberg's remark in note 4, namely, since EH + HZ > EZ and AE + ZG = AE + ZG, hence AH + HG > AE + EZ+ ZG; and so the parallelograms that have each of these lines as one side and the altitude of the cylinder as the other side are related as the base lines.
- 25rR "autem" See the comment to 21rC and Gr 1, 48, 23var.
- 25rU "periferiam" Moerbeke has corrected περιφερειας in Gr MS A. See Gr 1, 50, 11var.
- 25rU "AE, EB, BZ, ZG" Thus in Gr MS A. Heiberg, Gr 1, 50, 14var, (following the Basel ed.) would write "AEB, BZΓ."
- 25rU-V "nam... ipsis" Heiberg, Gr 1, 50, 18-19, would delete this. Cf. Gr 1, 51, n. 1.
- 25rV "figuram" This translates σχηματος in Gr MS A. Heiberg, Gr 1, 50, 25var, (following Nizze) would change this to τμήματος (=portionem).
- 25vA "in predictis quidem" Heiberg, Gr 1, 52, 1-2, would delete this. Cf. Gr 1, 53, n. 1.
- 25vA-B "unumquodque.... basem" Heiberg, Gr 1, 52, 4-9, would delete this. Cf. Gr 1, 53, n. 4.
- 25vB "secundum... illi" Heiberg, Gr 1, 52, 12, would delete this. Cf. Gr 1, 53, n. 2.
- 25vC-D "unumquodque... superficiei" Heiberg, Gr 1, 52, 17-19, would delete this. Cf. Gr 1, 53, n. 4.
- 25vD "et1" Not in Gr MS A. Moerbeke has properly added it. See Gr 1, 52, 19var.
- 25vD "13." Gr MS A had  $\iota\delta'$  (=14.). See Gr 1, 52, 23var. As Heiberg, Gr 1, 53, n. 5, observes, Pappus cites it as the thirteenth proposition.
- 25vG After "prisma" Moerbeke adds in the margin "equalis altitudinis chylindro." See 25vGvar. This is not in the Greek text but seems like a proper addition. See Gr 1, 55, n. 3.
- 25vH "itaque" This translates δη in Gr MS A. Heiberg, Gr 1, 54, 19var, would change this to  $\delta \varepsilon$  (=autem).
- 25vH "KDT" In this proposition Moerbeke has used T for tau. Ordinarily he reserves T for theta, but there was no theta in this proposition.
- 25vH "quoniam... A3" Heiberg, Gr 1, 54, 24-25, would delete this.
- 25vI ''quoniam<sup>1</sup>... prismatis<sup>1</sup>'' Heiberg, Gr 1, 54, 27-29, would delete this.

- 25vJ "rectilinea" Heiberg, Gr 1, 56, 5, would delete this. Cf. Gr 1, 57, n. 1.
- 25vJ "que3... centro" Heiberg, Gr 1, 56, 8-9, would delete this.
- 25vJ "centro" Thus in Gr MS A. Gr MS C has the plural (=centris). See Gr 1, 56, 8var. Cf. the preceding sentence.
- 25vK-M "que<sup>2</sup>.... descripta" Heiberg, Gr 1, 56, 10-24, would delete this as excessively verbose. Cf. Gr 1, 57, n. 2.
- 25vL-M "Si... descripta" This is an awkward translation. What is meant is that, if there are three proportional lines, the first is to the third as the figure constructed on the first is to the similar figure similarly constructed on the second.
- 25vM "quoniam... LZ" Heiberg, Gr 1, 56, 26, would delete this.
- 25vO-P "Superficies...  $B^2$ " Heiberg, Gr 1, 58, 12-16, would delete this. Cf. Gr 1, 59, n. 2.
- 25vO-P "<in>scriptum... cylindri" See 25vO-Pvar. Note that when m. 2 first made this addition he followed Gr MS A in writing "scriptum" and then in the second writing of it he properly changed it to "inscriptum" (cf. Gr 1, 58, 15var).
- 25vP "autem<sup>2,3</sup>" See the comment to 21rC and Gr 1, 58, 19var.
- 25vQ "inscripto" Moerbeke has corrected εγγεγοαμμενον in Gr MS A. See Gr 1, 58, 25var.
- 25vQ "sit1" Moerbeke failed to translate an ambiguous abbreviation in Gr MS A. Either m. 2 or Coner added this above. See 25vQvar and Gr 1, 58, 27var.
- 25vR ''quia<sup>1</sup>... catheto'' Heiberg, Gr 1, 60, 2-4, would delete this. Cf. Gr 1, 61, n. 1.
- 25vR "ad unum latus" Apparently Gr MS A had πλευφας επι μιαν πλευφαν and Moerbeke properly deleted πλευφας. Cf. Gr 1, 60, 3var.
- 25vR "quia<sup>2</sup>... prismatis<sup>2</sup>" Heiberg, Gr 1, 60, 6-9, would delete this. Cf. Gr 1, 61, n. 2.
- 25vR ''quod'' Gr MS A had oς and Moerbeke first wrote ''qui'' before correcting it (see Gr 1, 60, 8var). Also see 25vRvar.
- 25vT-U "Quoniam... prismatis" Heiberg, Gr 1, 60, 23—62, 1, would delete this. Cf. Gr 1, 61, n. 4.
- 25vV "14." Gr MS A had  $\iota\epsilon'$  (=15.). See Gr 1, 62, 5var.
- 26rC "Que.... superficierum" Heiberg, Gr 1, 64, 7-10, would delete this. Cf. Gr 1, 65, n. 1.
- 26rE "Superficies...  $B^4$ " Heiberg, Gr 1, 64, 23-26, would delete this.
- 26rF "autem" See the comment to 21rC and Gr 1, 64, 29var.
- 26rH "Que... coni<sup>2</sup>" Heiberg, Gr 1, 66, 15-19, would delete this. Cf. Gr 1, 67, n. 2.
- 26rH "super... polygonii" Missing in Gr MS A but properly added by Moerbeke. See 26rHvar and Gr 1, 66, 18var.
- 26rI "ipsum" See 26rIvar and Gr 1, 66, 22var.

- 26rJ "Polygonium.... coni2" Heiberg, Gr 1, 68, 2-5, would delete this.
- 26rK "15." Gr MS A had  $\iota \varsigma'$  (=16.). See Gr 1, 68, 8var.
- 26rM "hoc... precedenti" Heiberg, Gr 1, 68, 20, would delete this.
- 26rM-N "utraque.... E" Heiberg, Gr 1, 68, 22-28, would delete this.
- 26rN "ergo". This is an unusual instance of Moerbeke's having translated ov by ergo instead of by igitur. See Gr 1, 68, 28 and the Index of Latin Terms.
- 26rO "16." Gr MS A had  $\iota \zeta'$  (=17.). See Gr 1, 70, 1var.
- 26rS After " $T^4$ " Moerbeke has omitted translating Gr 1, 72, 9-23, though these lines were in Gr MS A. This omission was perhaps intentional since, as Heiberg proposes, they ought to be deleted (see Gr 1, 73, n. 2).
- 26vA-C "[1.]" This and the succeeding numbers of the lemmata I have added, following Torelli and Heiberg (see Gr 1, 72, 25et seq.).
- 26vA-C "Coni... sunt" Notice that these lemmata were given in the upper margin by Moerbeke with the observation that they were not "de libro," i.e., not proved in the work, but that they were "in the Greek exemplar before the following theorem." Coner added the further observation that they have been demonstrated by Euclid. See 26vA-Cvar. In fact, Lemma 1 = Euclid, XII.11 and XII.14, Lemma 2 = XII.13, Lemma 3 follows from XII.10, Lemma 4 = XII.15, and Lemma 5 = XII.12.
- 26vB After "cylindris2" Archimedes certainly must have added that the altitudes of the cylinders and the cones are the same. See Gr 1, 75, n. 2.
- 26vC 'hoc... altitudinibus' Heiberg, Gr 1, 74, 10-11, would delete this. Cf. Gr 1, 75, n. 4.
- 26vD "17." Gr MS A had  $i\eta'$  (=18.). See Gr 1, 74, 14var.
- 26vD "coni<sup>3</sup>" That is, the first cone.
- 26vD "altitudini" That is, to the altitude of the second cone. No doubt the cones were more carefully delineated in Archimedes' original text. See Gr 1, 75, n. 6.
- 26vE "perpendiculari" Here Moerbeke realized that the reading of Gr MS A (παθετον) was incorrect. See Gr 1, 74, 23var.
- 26vE "equalia... proportionem" Heiberg Gr 1, 76, 2-3, would delete this.
- 26vF ''DT'' Gr MS A had in error: EΘ. See Gr 1, 76, 6var.
- 26vF "Demonstratum... trigona" Heiberg, Gr 1, 76, 6-11, would delete this.
- 26vF "ET" The "E" was corrected by Coner, no doubt from D, since Gr MS A had  $\Delta\Theta$ . See 26vFvar and Gr 1, 76, 10var. Heiberg wrongly indicated that the correction was Moerbeke's. He similarly labeled Coner's succeeding corrections of TD and ET to TE and DT as Moerbeke's (see *ibid*.).
- 26vG "18." Gr MS A had  $\iota\theta'$  (=19.). See Gr 1, 76, 17var.
- 26vJ "ABG" Moerbeke has corrected this from AB in Gr MS A. See Gr 1, 78, 4var.
- 26vK "propter... equales" Heiberg, Gr 1, 78, 10-11, would delete this. Cf. Gr 1, 79, n. 2.
- 26vK-L "basis<sup>2</sup>... MNX<sup>1</sup>" Heiberg, Gr 1, 78, 17-18, would delete this.

- 26vL "similia enim trigona" Heiberg, Gr 1, 78, 20, would delete this.
- 26vL "MNX2" Moerbeke corrected this from NME in Gr MS A. See Gr 1, 78, 21var.
- 26vL "subponebatur enim" Heiberg, Gr 1, 78, 22, would delete this.
- 26vM "19." Gr MS A had  $\kappa'$  (=20.). See Gr 1, 80, 3var.
- 26vN "circumaccepto" This translates πεφιλημματι in Gr MS A. It was correctly given as πεφιλείμματι (=circumrelicto) in Gr MS C. See Gr 1, 80, 8var. Coner realized the error of Gr MS A and retranslated it as circumderelicto. See 26vNvar.
- 26vP "circumaccepto" See the preceding comment and Gr 1, 80, 22var and 26vPvar.
- 26vQ "propter ....coni4" Heiberg, Gr 1, 80, 26—82, 5, would delete this. Cf. Gr 1, 83, n. 1.
- 26vR "propter... est2" Heiberg, Gr 1, 82, 7-9, would delete this. Cf. Gr 1, 83, n. 2.
- 26vS "circumaccepto" See the comment to 26vN and Gr 1, 82, 20var.
- 26vT "20." Gr MS A had  $\kappa\alpha'$  (=21.). See Gr 1, 82, 21var.
- 26vT "circulo conus" Moerbeke has properly translated κωνου κυκλος in Gr MS A as if it were κύκλου κῶνος. See Gr 1, 82, 24var.
- 26vT "circumaccepto" See the comment to 26vN and Gr 1, 82, 26var.
- 26vV "BEDZ" Gr MS A had EB $\Delta$ Z. See Gr 1, 84, 8var.
- 27rA "circumaccepto" See the comment to 26vN and Gr 1, 84, 13var.
- 27rB "Itaque... ABGD" Heiberg, Gr 1, 84, 17-18, would delete this. Cf. Gr 1, 85, n. 2.
- 27rB "Similiter" Moerbeke has thus corrected Gr MS A's ομοιω. See Gr 1, 84, 20var.
- 27rB "Similiter... *BEDZ*" Heiberg, Gr 1, 84, 20-21, would delete this. Cf. Gr 1, 85, n. 3.
- 27rB "BEDZ" Gr MS A had EBZΔ. See Gr 1, 84, 21var.
- 27rD "BEDZ" Gr MS A had EB $\Delta$ Z. See Gr 1, 86, 5var.
- 27rD "circumaccepto" See the comment to 26vN and Gr 1, 86, 6var.
- 27rD "21." Gr MS A had  $\kappa\beta'$  (=22.). See Gr 1, 86, 7var.
- 27rE "copulantes... polygonii" This is so literally rendered by Moerbeke that it is excessively obscure. The meaning is that the ratio of the sum of the chords to the diameter is equal to the ratio of the line subtending (n-1) adjacent sides of the semipolygon to the side of the polygon, where n is the total number of sides of the semipolygon.
- 27rE "A...A" Thus in Gr MS A. Heiberg, following Gr MS D, would delete the final A. See Gr 1, 86, 17var.
- 27rG "Et... AO" Heiberg, Gr 1, 86, 26-27, would delete this.
- 27rG "AO" Moerbeke has corrected Gr MS A's AΘ. See Gr 1, 86, 27var.
- 27rG, H "-Q" This occupies the position of tau in the Greek text.

- 27rH "C" This occupies the position of chi in the Greek text.
- 27rH "CG" Equivalent to X $\Gamma$  in the Greek diagram. It corrects H $\Gamma$  in Gr MS A. See Gr 1, 88, 8var.
- 27rH "et omnia... unam" Heiberg, Gr 1, 88, 8-10, would delete this.
- 27rI "22." Gr MS A had  $\varkappa\gamma'$  (=23.). But Eutocius referred to it as the 22nd theorem in his comment to Prop. 37, which see in 35vV. See also Gr 1, 88, 15var and Gr 3, 42, 7-8.
- 27rJ "ABG" Thus in Gr MS A. Gr MS C has ABΓΔ. See Gr 1, 88, 24var.
- 27rK "NM" Gr MS A had MN. See Gr 1, 90, 8var.
- 27rK "et ut ergo omnia... unam" Heiberg, Gr 1, 90, 8-9, would delete this. Cf. Gr 1, 91, n. 1.
- 27rL "23." Added by Moerbeke but omitted in Gr MS A. Concerning the absence of a general enunciation, see above, Part I, Chap. 2, Sect. III, n. 5.
- 27rM After "diametri" Archimedes no doubt indicated that these diameters were to be perpendicular to each other. See Gr 1, 91, n. 2.
- 27rM "rectis" That is, the circles described by the angles of the polygon are perpendicular to circle ABGD. In writing "rectis" Moerbeke has corrected oppov in Gr MS A. See Gr 1, 90, 24var.
- 27rN ''AZ'' Moerbeke has corrected the false reading of AΞ in Gr MS A. See Gr 1, 90, 28var.
- 27rO "HZ" Gr MS A had ZH. See Gr 1, 92, 5var.
- 27rQ After "sibi" Archimedes could hardly have omitted some statement like Coner's to the effect that the surface of the figure (described by half the polygon) is less than the surface of the hemisphere, in view of the next sentence ("Similiter... spere"). See 27rQvar and Gr 1, 93, n. 1.
- 27rR "in1" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 92, 27var.
- 27vA "24." From this proposition to the last one in Book I, Moerbeke's numbers agree with those in Gr MS A.
- 27vA ''entia equedistantia'' This was Moerbeke's effort at rendering the corrupt reading of Gr MS A: τετραγωνους ουσας. The reading adopted by Heiberg is παραλλήλοις οὔσαις (=entibus equedistantibus). See Gr 1, 94, 9var.
- 27vB ''itaque'' This translates δη in Gr MS A. Heiberg would substitute δέ (=autem). See Gr 1, 94, 17var.
- 27vE "GD2" Gr MS A had  $\Delta\Gamma$ . See Gr 1, 96, 10var.
- 27vF "possunt" Moerbeke has corrected δυναται found in Gr MS A. See Gr 1, 96, 15var.
- 27vG "potest" Moerbeke has corrected δυνανται found in Gr MS A. See Gr 1, 96, 21var.
- 27vI "parium angulorum" Heiberg, Gr 1, 98, 7, would delete this. It is not needed when the stated condition is that the number of sides of the regular polygon is divisible by 4. Cf. Gr 1, 99, n. 2.

- 27vI "apud ipsum" This translates επ'αυτου in Gr MS A. Heiberg would correct to ἀπ' αὐτοῦ (=ab ipso). See Gr 1, 98, 8var.
- 27vJ "BD" Gr MS A had  $\Delta B$ . See Gr 1, 98, 15var.
- 27vL-M "Minor.... R<sup>5</sup>" Heiberg, Gr 1, 98, 27—100, 8, would delete this. Cf. Gr 1, 101, n. 1.
- 28rA "TI, LK" See Fig. Sc. 26 and Gr 1, 102, 1var.
- 28rB "circumacceptum" See above, Part I, Chap. 1, Sect. III, List G, item (18) and Gr 1, 102, 8var.
- 28rC "MN, ZH" Coner (and not Moerbeke, as Heiberg implies) has corrected this to "MH, ZN" (see Gr 1, 102, 14var and 28rCvar).
- 28rC "circumacceptum" Unlike the other cases this appears to be a slip on Moerbeke's part, since Gr MS A had περιλειπομενον. See Gr 1, 102, 16. Moerbeke ordinarily translates this by circumrelictum (see the Index of Latin Terms). For Coner's correction, see 28rCvar.
- 28rE "circumaccepta" See the comment to 26vN and Gr 1, 102, 25var. Cf. 28rEvar.
- 28rI "basis1" Coner's proper addition. See Gr 1, 106, 1var.
- 28rJ "(Gr. 28)" Omitted by Moerbeke and Gr MS A. See Gr 1, 106, 10var. Notice also the absence of a general enunciation. See above, Part I, Chap. 2, Sect. III, n. 5
- 28rM "in primo" This translates επι του πρωτου in Gr MS A. Heiberg would write ἐπὶ τῶν πρὸ τούτου, understanding thereby "in propositionibus precedentibus" (see Gr 1, 108, 1var).
- 28rN "[que latera]" Omitted by Moerbeke and Gr MS A. See Gr 1, 108, 9var. I have followed Heiberg in adding it. The translation here is very awkward because of the omission and because "ipsorum K, D signorum" is a poor translation of the Greek genitive. The meaning of the whole sentence is this: "For let KD be the diameter of one of the circles described in the lesser sphere, with points K and D being those at which [two of] the sides of the circumscribed polygon touch circle ABGD."
- 28vA " $ZE^{1,2}$ " Thus in Gr MS A. See Gr 1, 112, 1var. Corrected by Coner to ZT. See 28vAvar. The corrections were misascribed by Heiberg to Moerbeke.
- 28vA "equali" Missing in Gr MS A, but properly added by Moerbeke. See Gr 1, 112, 3var.
- 28vB "dupla... ABGD2" Heiberg, Gr 1, 112, 9-10, would delete this.
- 28vC ''(Gr. 31)'' Omitted by Moerbeke and Gr MS A. See Gr 1, 112, 14var.
- 28vF "catheto... hoc est" Heiberg, Gr 1, 114, 8-10, would delete this. Cf. Gr 1, 115, n. 1.
- 28vG "basem2... equalem" Heiberg, Gr 1, 114, 18-19, would delete this.
- 28vH "duplam" See the comment to 24rH ("dupla proportio").
- 28vH "circumscripta" Thus in Gr MS A. Heiberg, Gr 1, 114, 28-29, would delete this.

- 28vH "triplam" That is, "triplicated" or "cubed." I shall not comment again on the appearance of this ambiguous use of dupla and tripla in this text.
- 28vI "maximus" Though not in Gr MS A, Coner's addition is a proper one. See 28vIvar and Gr 1, 117, n. 1.
- 28vI "In... autem" This translates επι δε in Gr MS A. Heiberg would change to ἔτι δὲ αί. See Gr 1, 116, 5var. Accordingly the Latin translation would become "Adhuc autem circumscripti polygonii latera...."
- 28vJ "BZTD" Thus in Gr MS A. See Gr 1, 116, 13var. Coner (not Moerbeke, as Heiberg implies) corrects to ZBDT. See 28vJvar.
- 28vK "periferiam" Thus in Gr MS A. See Gr 1, 116, 16. But "diametrum" is better. Or perhaps the plural "periferias circulorum" represents Archimedes' original intention. Cf. Gr 1, 117, n. 2.
- 28vK "circumscripta" and "inscripta" Thus in Gr MS A. But the words ought to be interchanged, as in 29rL. See Gr 1, 116, 16var and 17var.
- 28vM "angulos" That is, of the inscribed polygon. See Gr 1, 117, n. 3.
- 28vM-O "hoc... inscripti" Heiberg, Gr 1, 118, 3-13, would delete this.
- 28vO "secundus" Gr MS A had B and omitted the preceding "Conus." Coner properly deleted "secundus" and wrote "O" (see 28vOvar), which Gr MS G also had. Heiberg has reported the correction as Moerbeke's rather than as Coner's. See Gr 1, 118, 20var.
- "Demonstrata... hec" Heiberg, Gr 1, 118, 25, would delete this. 28vP
- "enim" Gr MS A had ovv (=igitur). See Gr 1, 118, 25var.
- 28vQ "O" Omitted by Gr MS A but added by Moerbeke. See Gr 1, 120, 4var.
- 28vQ "Similes ergo sunt" Heiberg, Gr 1, 120, 8, would delete this.
- "idem" This translates to auto in Gr MS A. Heiberg would change it to τοῦτο. See Gr 1, 120, 8var.
- 29rA "Esto" Moerbeke has properly read ως in Gr MS A as if it were ἔστω. See Gr 1, 120, 17var.
- 29rC "ad... inscripti" Not in Gr MS A (see Gr 1, 122, 5), but properly added by Coner (see 29rCvar) since it certainly must have been in Archimedes' original text. Cf. Gr 1, 121, n. 4.
- 29rC-D "et4... inscripti2" Heiberg, Gr 1, 122, 6-12, would delete this. Cf. Gr
- 29rE "Demonstrata... A<sup>3</sup>" Heiberg, Gr 1, 122, 19-22, would delete this. Cf. Gr 1, 123, n. 2.
- 29rG "superficies1" An error of Moerbeke. It is "latus" that is understood but not expressed in the Greek. See Gr 1, 124, 1.
- 29rG "[ad latus inscripti]" I have added this. See the comment to 29rC.
- 29rG "et dupla ergo" Heiberg, Gr 1, 124, 2, would delete this. Cf. Gr 1, 125,
- 29rJ "minorem2" Moerbeke has properly added this, though it was missing in Gr MS A. See Gr 1, 124, 26var.

- 29rK " $T^1$ " Properly corrected by Moerbeke from H in Gr MS A. See Gr 1, 126, 1var. Cf. the text in 35vQ.
- 29rL "AG, BD" Properly corrected by Moerbeke from AB,  $\Gamma\Delta$  in Gr MS A. See Gr 1, 126, 8var.
- 29rL "figura1" Thus in Gr MS A. Heiberg would make it plural. See Gr 1, 126, 11var.
- 29rM "[ad inscriptam]" Not in Gr MS A, but I have added it. See Gr 1, 126, 17-18 and Heiberg's Latin translation.
- 29rM "ea quam" Translates του ov in Gr MS A. See Gr 1, 126, 19. Note that in the preceding sentence he rendered the same words in the same expression by eius quam.
- 29rM "hoc... sumpta" Heiberg, Gr 1, 126, 20, would delete this.
- 29rN After "conum X" m. 2 would add that the circumscribed figure has to the inscribed figure a ratio less than that of the sphere to cone X (see 29rNvar) and some such addition to the text seems proper. We would also expect after "permutatim" something like "circumscripta ad inscriptam habet proportionem minorem quam inscripta ad conum X." Cf. Gr 1, 129, n. 1 and Heiberg's Latin translation.
- 29rN-O "propterea... quadrupla" Heiberg, Gr 1, 126, 26—128, 2, would delete this.
- 29rO "si" Moerbeke has corrected η in Gr MS A, understanding instead εί. See Gr 1, 128, 4var.
- 29rP "I, T" Gr MS A had  $\Theta$ , I. See Gr 1, 128, 8var.
- 29rR "H (! I). Que autem K ad" Not in Gr MS A (see Gr 1, 128, 21var). It appears to have been Coner who corrected H to I (see 29rRvar).
- 29rR "K<sup>3</sup>" Moerbeke has changed the false reading of HK in Gr MS A. See Gr 1, 128, 24var.
- 29rR After "speram" m. 2 quite properly would add a statement that the circumscribed figure has to the inscribed a ratio less than that of cone X to the sphere. See 29rRvar and Gr 1, 129, n. 2.
- 29vB "proportionaliter" Thus in MS O. It would have been smoother if Moerbeke had simply used "proportionalis." But the adverbial translation was very common with Moerbeke (see the Index of Latin Terms).
- 29vB "Palam... basis<sup>3</sup>" Heiberg, Gr 1, 130, 20-21, would delete this. Cf. Gr 1, 131, n. 3.
- 29vB "enim" This translates γαο in Gr MS A. Heiberg, following the Basel ed., would correct this to γίνεται (=fit). See Gr 1, 130, 20var.
- 29vB "[hoc est]" Without this, the statement does not make sense. As Heiberg noted, Torelli added τουτέστι. See Gr 1, 130, 23var.
- 29vD, E "ei quod continetur" In each case Moerbeke has shown by his translation that he has read to in Gr MS A as if it were  $\tau \tilde{\phi}$ . See Gr 1, 132, 7var and 17var.

- 29vE "inscripta... superficiebus" Heiberg, Gr 1, 132, 13-14, would delete this. Cf. Gr 1, 133, n. 2.
- 29vE "polygonium" That is, a regular polygon. See Gr 1, 133, n. 3.
- 29vE "a³" It would be less ambiguous if this word and the succeeding "ab" were deleted. The meaning of the sentence is that the square of the radius of circle  $L = AG \cdot (EZ + GD + AK)$ . In a similar situation in 30rL Moerbeke has not repeated the preposition.
- 29vG After "erit" Heiberg, Gr 1, 134, 1var, would add ov (=igitur), omitted in Gr MS A.
- 29vH "que2" Missing in Gr MS A. Moerbeke has properly added it. See Gr 1, 134, 9var.
- 29vI "a medietate basis" It would have been clearer if he had written "medietati basis" since the meaning is that the squares of all the radii =  $AG \cdot (EZ + GD + AK)$ .
- 29vI Notice the absence of a general enunciation for Prop. 34. See above, Part I, Chap. 2, Sect. III, n. 5.
- 29vK "vertex" This translates μορυφη in Gr MS A. Following Barrow, Heiberg would change to μορυφήν (=verticem). See Gr 1, 136, 1var.
- 29vL "curve (! cave)" See the comment to 23vJ and Gr 1, 136, 7.
- 29vM ''et<sup>3</sup>... polygonium'' Heiberg, Gr 1, 136, 17-19, would delete this. Cf. Gr 1, 137, n. 2.
- 29vM "sit<sup>3</sup>" Moerbeke has properly read the false reading of ωστε in Gr MS A as if it were ἔστω. See Gr 1, 136, 21var.
- 29vO "et enim ipso LT, KT" Heiberg, Gr 1, 138, 2-3, would delete this. See 29vOvar for the correction suggested by m. 3. Cf. Gr 1, 139, n. 1.
- 29vO "M" Moerbeke has corrected AM in Gr MS A. See Gr 1, 138, 5var.
- 29vO "portione" That is, a segment less than a hemisphere, as the addition of Coner rightly points out (see 29vOvar and Gr 1, 139, n. 2). The specification of the proposition below (29vP-Q) indicates that the segment of the circle whose rotation produces the spherical segment is a "portio minor semicirculo."
- 29vP, R ''catheto'' By this translation Moerbeke has shown that he realized that την in Gr MS A ought to have been τη. See Gr 1, 138, 13var and 25var. Cf. Gr 1, 140, 17var.
- 29vQ "polygonium" That is, a polygon which, except for base AB, has sides mutually equal and even in number. See Gr 1, 139, n. 3.
- 29vQ "BA" Thus in Gr MS A. Coner (not Moerbeke, as Heiberg implies) has corrected it to BL. In fact, by his marginal note Moerbeke has apparently suggested that it ought to be BE. See Gr 1, 138, 20var and 29vQvar.
- 29vQ "circumdelata spera". Thus in Gr MS A, but it should be "circumdelato circulo" or "circumdelato plano in quo sunt circulus et polygonium" (see Gr 1, 141, n. 1).

- 29vR "portioni" Thus in Gr MS A. Coner has properly corrected this to "figure" (see 29vRvar and Gr 1, 140, 1var). Cf. Gr 1, 141, n. 2.
- 29vR "autem2" Thus in Gr MS A. It ought to be  $\delta \dot{\eta}$  (=itaque). See Gr 1, 140, 3var.
- 29vR ''TH, DZ'' Moerbeke has corrected the false reading of ΘZ, KI in Gr MS A. See Gr 1, 140, 4var.
- 30rA, B "circumacceptum" See the comment to 26vN and Gr 1, 140, 11var and 18var.
- 30rA " $ZD^{1,2}$ " Moerbeke has corrected the false reading of  $Z\Lambda$  in Gr MS A. See Gr 1, 140, 14var and 17var.
- 30rB "ZD1,2" See the preceding comment and Gr 1, 140, 20var and 23var.
- 30rC "et1" Moerbeke originally translated και μετα in Gr MS A by "et cum" and then he deleted "cum" (see 30rCvar). Heiberg deleted και and thus settled for μετά (see Gr 1, 140, 25var).
- 30rC "[habent]" I have added this from the Greek text (Gr 1, 142, 1). I assume its omission was merely an oversight on Moerbeke's part.
- 30rC "-D-" Again note that this was - $\Lambda$  in Gr MS A. See Gr 1, 142, 3var. Thus in all cases, except for ZED in 30rA and B, Gr MS A had the reading  $\Lambda$  instead of  $\Delta$ . Notice also that - $\Theta$  was omitted from Gr MS A but was added by Moerbeke as -T-.
- 30rD " $AEG^2$ " Moerbeke has corrected Gr MS A's reading of EA $\Gamma$ . See Gr 1, 142, 8var.
- 30rE "habens1,2" For proper agreement habenti is required.
- 30rF "demonstratum...hoc" Heiberg, Gr 1, 142, 23-24, would delete this. Cf. Gr 1, 143, n. 1.
- 30rF Before "Esto" a general enunciation seems to have disappeared from the Greek text. See above, Part I, Chap. 2, Sect. III, n. 5.
- 30rF "secetur" This translates τετμησθω in Gr MS A. Archimedes no doubt had τμῆμα (=portio). See Gr 1, 142, 27var.
- 30rG "polygonium" That is, a polygon which, except for its base, has sides mutually equal and even in number. See Gr 1, 143, n. 2.
- 30rI "autem" Thus in Gr MS A. It should be  $\delta \dot{\eta}$  (=itaque). See Gr 1, 144, 15var.
- 30rI "-L-" Not in Gr MS A. Added by Coner (and not Moerbeke, as Heiberg implies). See 30rIvar and Gr 1, 144, 20var.
- 30rJ "terminum... figura" Heiberg, Gr 1, 144, 22-25, would delete this.
- 30rK "sub... subtenditur" Heiberg, Gr 1, 144, 28, would delete this.
- 30rK "fit" Moerbeke has properly corrected the abbreviated reading of γαο εστι in Gr MS A, translating it as if it were γίνεται. See Gr 1, 144, 29var. Compare the text in 35vX where the reading was correctly given in Gr MS A.
- 30rK "hec... sumptis" Heiberg, Gr 1, 146, 1, would delete this.
- 30rK After "quod" Gr MS A had και, which Moerbeke failed to translate. See Gr 1, 146, 2var.

- 30rL "adhuc" Coner's correction. Gr MS A had επι, which apparently Moerbeke wrote in the margin (see 30rLvar). I say apparently because it is difficult to distinguish it from ETI. But there would have been no problem if Gr MS A's reading had been ett and Moerbeke would scarcely have written that in the margin. See Gr 1, 146, 10var.
- 30rL "inscripta1... prescriptum" Heiberg, Gr 1, 146, 11-14, would delete this. Cf. Gr 1, 147, n. 1.
- 30rL "inscripta" This translates εγγεγοαμμενον in Gr MS A. Heiberg would substitute for this word the following: ὑπὸ τοῦ πολυγώνου γεγραμμένον (=a polygonio descripta [figura]). See Gr 1, 146, 11-12var and 12var.
- 30rO "quod utique... predemonstratum est" Heiberg, Gr 1, 148, 1-3, would delete this.
- 30rO-P ''quod<sup>3</sup>... DX'' Heiberg, Gr 1, 148, 5-10, would delete this. Cf. Gr 1, 149, n. 1.
- 30rP-Q "Si...  $GD^2$ " Heiberg, Gr 1, 148, 11-15, would delete this.
- 30rP "EO1" Moerbeke has corrected Gr MS A's false reading of EH. See Gr 1, 148, 11var.
- 30vA-B "qui2... prescripto" Heiberg, Gr 1, 150, 1-5, would delete this. Cf. Gr 1, 151, n. 1.
- 30vC "que ex centro2" That is, the radius of the smaller sphere. See Gr 1, 151, n. 2.
- 30vD A general enunciation for Prop. 39 seems to have dropped from the Greek text. See Part I, Chap. 2., Sect. III, n. 5.
- 30vD "polygonium" See the comment to 30rG and Gr 1, 151, n. 3.
- 30vD "huic" Moerbeke has properly read τουτου in Gr MS A as if it were τούτω. See Gr 1, 150, 20var.
- 30vE "circuli" That is, "circuli cum polygoniis" (see Gr 1, 151, n. 4).
- 30vF "figura... eiusdem" Thus in Gr MS A (see Gr 1, 152, 3-4). But surely the meaning Archimedes intended was this: (circum. fig. + cone) / (inscr. fig. + cone) = (side of circum. polyg.)3 / (side of inser. polyg.)3. In Moerbeke's Latin this would run as follows: "figura circumscripta cum cono ad figuram inscriptam cum cono habet proportionem triplam quam latus polygonii circumscripti ad latus polygonii inscripti."
- 30vF, G "omnibus" Thus in Gr MS A. Ought to be "equali omnibus" (see Gr 1, 153, ns. 2 and 3).
- 30vF "sub3" Again I would delete to remove the ambiguity. See the comment to 29vE (''a<sup>3</sup>'').
- 30vF "N" Moerbeke has corrected Gr MS A's false reading of M. See Gr 1,
- 30vG-H "et ut... N" Heiberg, Gr 1, 152, 17-18, would delete this. Cf. Gr 1, 155, n. 1.

- 30vH "eandem... polygonium" Heiberg, Gr 1, 152, 22, would delete this. Cf. Gr 1, 155, n. 1. See the suggested correction of Coner in 30vHvar.
- 30vI "circulus" Moerbeke has corrected κυκλον in Gr MS A. See Gr 1, 154, 4var.
- 30vI "ipsi" Moerbeke has corrected to in Gr MS A. See Gr 1, 154, 6var.
- 30vJ "quoniam" and "D<sup>2</sup>" Heiberg, Gr 1, 154, 10 and 13, would delete these on the basis of the reading found in Eutocius' Commentary. Cf. Gr 1, 155, n. 2, and 36rG.
- 30vJ "et diametri ad diametrum" Heiberg, Gr 1, 154, 16, would delete this. Cf. Gr 1, 155, n. 3.
- 30vK "Similes... coni" Heiberg, Gr 1, 154, 20, would delete this.
- 30vM "circulo" This implies that Moerbeke read the article το in Gr MS A as τω. See Gr 1, 156, 9var.
- 30vM After "Oportet" Heiberg, Gr 1, 11var, would add from Gr MS C: δή (=itaque).
- 30vN "huic" Moerbeke has corrected touto in Gr MS A. See Gr 1, 156, 18var.
- 30vP After "Z" Coner adds a statement to the effect that therefore surf. circum. fig. / surf. inscr. fig. < surf. segm. ABG / circle Z. See 30vPvar.
- 30vQ "et similiter" This translates και ομοιως in Gr MS A, but Heiberg prefers the reading καί in Gr MS C. See Gr 1, 158, 11var.
- 30vR "figure" This translates σχηματος in Gr MS A. Heiberg, following Nizze, would substitute τμήματος. See Gr 1, 158, 15var.
- 30vR "Non... Z" See Gr 1, 159, n. 1.
- 30vS "penes" Notice that Coner has changed this to "secundum" (see 30vSvar).
- 30vS "B" Missing in Gr MS A, it has been added by Moerbeke. See Gr 1, 158, 25var.
- 30vT "GB" Moerbeke has corrected the false reading of AB in Gr MS A. Gr MS C has BΓ. See 30vTvar and Gr 1, 160, 3var.
- 30vT After "equalis" Gr MS A had εστιν, which Moerbeke did not translate. See Gr 1, 160, 5var.
- 30vT-U "quoniam... BG" Heiberg, Gr 1, 160, 6-7, would delete this.
- 30vU "Demonstratum... emisperio" Heiberg, Gr 1, 160, 8-9, would delete this.
- 31rA After "que ex centro" Gr MS A had της σφαιρας (=spere), which Moerbeke has omitted. See Gr 1, 160, 16var.
- 31rC "huic" See the comment to 30vN and Gr 1, 162, 4var.
- 31rE "ad latus inscripti" Though not in Gr MS A, it ought to be there, as Moerbeke believed when he wrote it in the margin. See 31rEvar and Gr 1, 163, n. 4. Apparently Coner erased it because it was not in the Greek text.
- 31rE After "solida figura" Gr MS A omitted something equivalent to the following: "circumscripta cum cono ad figuram inscriptam cum cono" (see Gr 1, 165, n. 1).

- 31rF "Circumscripta...  $T^3$ " Gr MS A omitted this, but it was added properly by m. 2 (and not by Coner, as Heiberg's report implies). Something like it was necessary. See 31rFvar and Gr 1, 162, 21-22var. For the text in Eutocius' Commentary, see 36rK-L.
- 31rG "portione" This translates τμηματος in Gr MS A. Heiberg notes that τομέως (=sectore) was originally intended. See Gr 1, 165, n. 5.
- 31rG-H "hoc.... spere2" Heiberg, Gr 1, 164, 3-11, would delete this.
- 31rH "sectore" Moerbeke has properly read τομευς in Gr MS A as if it were τομέως. See Gr 1, 164, 13var.
- 31rI "excessus" Moerbeke has corrected the false reading of δυο πλευρας in Gr MS A. See Gr 1, 164, 17var.
- 31rI "polygonii" See the comment to 30rG and Gr 1, 165, n. 7.
- 31rI-J "et fiant... figure" Heiberg, Gr 1, 164, 20-21, would delete this. Cf. Gr 1, 167, n. 1.
- 31rJ "habet2" Added by Moerbeke, i.e. omitted from Gr MS A. But see Gr 1, 164. 24var.
- 31rJ "Quare... circumscriptum" Heiberg, Gr 1, 164, 25—166, 1, would delete this. Cf. Gr 1, 167, n. 2.
- 31rK "Demonstratum... sectorem" Heiberg, Gr 1, 166, 4-6, would delete this, Cf. Gr 1, 167, n. 3.
- 31rM "portionis1" Added by Moerbeke, i.e. omitted from Gr MS A. But it is in Gr MS C. See Gr 1, 168, 9var.
- 31rO "per hec" Moerbeke has read διαυτουτων in Gr MS A as if it were δια τούτων. See Gr 1, 168, 22var.
- 31rQ "emiolius" Moerbeke has corrected ομιολιος in Gr MS A. See Gr 1, 170, 15var.
- 31rQ "E" Moerbeke has corrected B in Gr MS A. See 31rQvar and Gr 1, 170, 18*var*.
- 31rQ-R "equalium... altitudinibus" Heiberg, Gr 1, 170, 19-20, would delete this.
- "cylindrus... spera" Heiberg, Gr 1, 170, 23-25, would delete this. 31rR
- "ipsi" Moerbeke has corrected to in Gr MS A. See Gr 1, 172, 8var. 31rT
- 31rV "ut ergo<sup>1</sup>... circulum  $K^1$ " Heiberg, Gr 1, 172, 20-22, would delete this. Cf. Gr 1, 173, n. 5.
- 31rV "Cylindrorum... altitudinibus" Heiberg, Gr 1, 172, 24-25, would delete this. Cf. Gr 1, 173, n. 6.
- 31vA "B" Greek MS A seems to have had HB since Gr MSS DEH have that reading. However, Gr MSS G and No. 14 have B, as indeed has Cremonensis (though to be sure Cremonensis in MS cit. in the first comment to 24rJ, 96v, has a lacuna between "hoc" and "b". See Gr 1, 174, lvar and Mugler, ed. cit., Vol. 1, p. 104, 4var.
- 31vB "eo" Moerbeke has corrected των in Gr MS A. See Gr 1, 174, 11var.

- 31vE "primo libro" Moerbeke's marginal comment (31vEvar) cites Prop. I.37 (=Gr. I.40). But Prop. I.42 (=Gr. I.44) is the correct citation.
- 31vE "ita" Moerbeke has properly read the ουτω in Gr MS A as οὕτως. See Gr 1, 176, 2var.
- 31vG-H "hoc.... BDZT" Heiberg, Gr 1, 176, 18-26, would delete this.
- 31vH "circulus" Moerbeke, by his translation, has corrected the case ending of κυκλον in Gr MS A. See Gr 1, 176, 23var.
- 31vI "ut" Moerbeke has corrected the reading of o in Gr MS A, translating it as if it were ως. See Gr 1, 178, 6var.
- 31vJ "ei... equalis" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 31vJvar and Gr 1, 178, 13var.
- 31vL "BTZA" Moerbeke has corrected  $B\Theta Z\Delta$  in Gr MS A. See Gr 1, 178, 25var.
- 31vM "BKZ" Moerbeke has corrected BZ in Gr MS A. The Basel ed. has BZK. See Gr 1, 178, 29var.
- 31vM "ut" Moerbeke has corrected the reading of  $\omega$  in Gr MS A, translating it as if it were  $\dot{\omega}\varsigma$ . See Gr 1, 180, 4var.
- 31vO "Spera.... ipsa" Heiberg, Gr 1, 180, 13—18, would delete this.
- 31vP "TG, GE" This is a case of Moerbeke's having expanded the abbreviatory form  $\Theta \Gamma E$  in Gr MS A. See Gr 1, 180, 22var.
- 31vQ "AE1" Moerbeke has corrected  $\Delta E$  in Gr MS A. See 31vQvar and Gr 1, 182, 3var.
- 31vQ " $AE^2$ " Moerbeke has corrected  $\Theta E$  in Gr MS A. See 31vQvar and Gr 1, 182, 4var.
- 31vS-T "Vel.... BKZD<sup>2</sup>" Heiberg, Gr 1, 182, 19-27, would delete this.
- 31vT "BKZD<sup>2</sup>" Apparently added by Coner (and not by Moerbeke, as Heiberg implies). It was BZKΔ in Gr MS A. See 31vTvar and Gr 1, 182, 27var.
- 32rA "secare" For Gr MS A, see Gr 1, 184, 3var.
- 32rB "[data]" Missing from Gr MS A and Moerbeke's translation. I have added it as necessary. Cf. Heiberg's Latin translation of Gr 1, 184, 10.
- 32rB "est2... DBE2" Added by Coner (see 32rBvar). Heiberg, Gr 1, 184, 13-15var, reports this addition as "AD... ipsi2," which, strictly speaking, is incorrect, though the reconstructed Greek text based on Coner's addition remains identical with the corrected text of MS O.
- 32rC "positione" That is, "positione datum."
- 32rC "autem2" Thus in Gr MS A. It should be  $\delta \acute{\eta}$  (=itaque). See Gr 1, 184, 21var.
- 32rE "data est que" Thus in Gr MS A. Coner has properly corrected this to "rectus est qui" (see 32rEvar) and Heiberg has accepted this correction (see Gr 1, 186, 6var).
- 32rG "itaque" Added by Coner (see 32rGvar). The omission by Moerbeke was an oversight. See Gr 1, 186, 18.

- 32rI "quoniam... AG" Heiberg, Gr 1, 188, 4-5, would delete this.
- 32rJ " $DQ^1$ " Moerbeke has corrected Gr MS A's BX (=BQ). See Gr 1, 188, 14var.
- 32rJ-K "et ut ergo... $BQ^3$ " Heiberg, Gr 1, 188, 16-20, would delete this. Cf. Gr 1, 189, n. 4.
- 32rK "et erit . . . ZQ" Heiberg, Gr 1, 188, 21—190, 2, would delete this. Cf. Gr 1, 189, n. 4.
- 32rL " $LD^1$ " This was a slip by Moerbeke. It was  $\Lambda X$  (=LQ) in Gr MS A. See Gr 1, 190, 3. For Coner's possible correction, see 32rLvar.
- 32rL "BQ" Thus in Gr MS A, that is BX. Coner (and not Moerbeke, as Heiberg implies) has corrected to ZQ. See Gr 1, 190, 8var and 32rLvar.
- 32rN "Sed... ZT<sup>2</sup>" Though missing from Gr MS A and Moerbeke's translation, it was properly added by Coner (see 32rNvar). Heiberg, Gr 1, 190, 16-18var, has accepted it.
- 32rN "Communis...  $ZQ^3$ " Heiberg, Gr 1, 190, 18-19, would delete this. Cf. Gr 1, 191, n. 5.
- 32rN "penes" This translates  $\pi\alpha\varrho\alpha$  in Gr MS A. Heiberg would correct this to  $\varepsilon \vartheta \theta \varepsilon \widetilde{\alpha} v \ \widetilde{\alpha} \varrho \alpha \ (=rectam \ ergo)$ . See Gr 1, 190, 22var.
- 32rO "ZT" and "quod a BD" Heiberg, Gr 1, 190, 24, would delete these.
- 32rO "hoc est... resolutionem" Heiberg, Gr 1, 190, 27-29, would delete this.
- 32rO ''ipsam ZT... TB'' Thus in Gr MS A. Heiberg would write μείζονα τῆς ZΘ τὴν ZB. See Gr 1, 190, 28var.
- 32rP " $DB^{1,2}$ " Gr MS A had B $\Delta$ . See Gr 1, 192, 1var and 2var.
- 32rP "DB3" Moerbeke has corrected AB in Gr MS A. See Gr 1, 192, 3var and 32rPvar. Cf. the text in 40rO.
- 32rP "utraque... componentur" For Eutocius' claim to have found the missing supplement, see 40rP et seq. and the comment to 40rS ("ut... scribit"). Cf. Gr 3, 130 et seq.
- 32rQ "maioris" By this translation Moerbeke or Coner has corrected μειζον in Gr MS A. See Gr 1, 192, 8var and 32rQvar.
- 32rS "quod1" Moerbeke has corrected τω in Gr MS A. See Gr 1, 192, 24var.
- 32rS "est ut que ...  $LD^4$ " Heiberg, Gr 1, 192, 28—194, 1, would delete this.
- 32rT " $LQ^2$ " Moerbeke has corrected  $\Delta X$  (=DQ) in Gr MS A. See 32rTvar and Gr 1, 194, 6var.
- 32vA "'ADG" Moerbeke has corrected AA $\Gamma$  in Gr MS A. See Gr 1, 194, 15var.
- 32vA "alii" Moerbeke has corrected αλλο in Gr MS A. See Gr 1, 194, 19var.
- 32vC "circuli" That is, "circuli maximi." See Gr 1, 197, n. 1.
- 32vC "HO" Moerbeke has corrected HΘ in Gr MS A. See Gr 1, 196, 4var.
- 32vD " $\Omega M$ " Moerbeke has corrected O $\Phi$  (=0M) in Gr MS A. See Gr 1, 196, 8var.
- 32vD "bases" Moerbeke has corrected the singular form in Gr MS A. See Gr 1, 196, 9var.

- 32vD "diametros" Moerbeke has corrected the singular form in Gr MS A. See Gr 1, 196, 10var.
- 32vD "autem2" Coner has properly corrected this to "itaque" (see 32vDvar and Gr 1, 196, 11var).
- 32vE "Equalium... altitudinibus" Heiberg, Gr 1, 196, 16-17, would delete this.
- 32vF "portioni" By this translation Moerbeke has shown that he understood Gr MS A's τα as τῷ. See Gr 1, 196, 22var.
- 32vF "similis<sup>2</sup>" Moerbeke has thus corrected ομοιως in Gr MS A. See Gr 1, 196, 23var.
- 32vF "hoc... demonstrabitur" Heiberg, Gr 1, 196, 24, would delete this.
- 32vF " $TK^2$ " Moerbeke has corrected  $\Theta K \omega$  in Gr MS A. See 32vFvar and Gr 1, 196, 27var.
- 32vH "propter... S2" Heiberg, Gr 1, 198, 9-10, would delete this.
- 32vI "EHZO" Moerbeke has corrected EHZ $\Omega$  in Gr MS A. See Gr 1, 198, 16var.
- 32vI "HO" Moerbeke has corrected H $\Theta$  in Gr MS A. See Gr 1, 198, 16var.
- 32vI "CG" and " $\Omega M$ " Moerbeke has corrected TY (=CY) and  $O\Phi$  (=OM) in Gr MS A. See Gr 1, 198, 19var.
- 32vJ " $E\Omega Z$ " Gr MS A had  $Z\Omega E$ . See Gr 1, 198, 21var.
- 32vJ " $TK^2$ " Gr MS A had K $\Theta$ . See Gr 1, 198, 25var.
- 32vK "EZH" Moerbeke has corrected EZHΘ in Gr MS A. See Gr 1, 200, 6var.
- 32vL " $\Omega EZ$ " Gr MS A had  $Z\Omega E$ . See Gr 1, 200, 12var.
- 32vM "AB1" Moerbeke has corrected A $\Theta$  in Gr MS A. See Gr 1, 200, 16var.
- 32 vM " $TK^{1,5}$ " Gr MS A had K $\Theta$ . See Gr 1, 200, 16var and 19var.
- 32vM ''AB<sup>4</sup>... diametrum'' Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 32vMvar and Gr 1, 200, 20var. Heiberg has slightly misreported Coner's addition.
- 32vN "alii" Moerbeke has corrected αλλο in Gr MS A. See Gr 1, 200, 25var.
- 32vN "uni" Moerbeke has corrected ev in Gr MS A. See Gr 1, 202, 3var.
- 32vO "portio" Missing in Gr MS A but added by Moerbeke. See Gr 1, 202, 10var.
- 32vQ-R "superficies2... bases" Heiberg, Gr 1, 202, 24-27, would delete this.
- 32vR "BP2" Moerbeke has corrected  $\Theta\Pi$  in Gr MS A. See Gr 1, 204, 3var.
- 32vR "similia... trigona" Heiberg, Gr 1, 204, 4, would delete this.
- 32vS "data<sup>1,3</sup>" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 32vSvar and Gr 1, 204, 7var and 8var. The first addition was misassigned to Moerbeke by Heiberg. Compare the text in 43rF.
- 33rA "habere" Moerbeke has corrected exet in Gr MS A. See Gr 1, 204, 13var.
- 33rA "quidem2" Heiberg, Gr 1, 204, 15, would delete this.
- 33rB "LN" and "LM" Moerbeke has corrected AN and AM in Gr MS A. See Gr 1, 204, 21var.

- 33rC "circulo... equalis" Omitted from Gr MS A and Moerbeke's translation. Added properly by Coner. See 33rCvar and Gr 1, 206, 5-6var. The succeeding "ipsi LM<sup>2</sup>" appears to have been a correction by Coner in an erasure. See 33rCvar.
- 33rD "portionis3...DEZ" Omitted from Gr MS A and Moerbeke's translation. Added properly by Coner. See 33rDvar and Gr 1, 206, 11-12var.
- 33rG "quare"... DZ4" Heiberg, Gr 1, 208, 5-6, would delete this. Cf. Gr 1, 209, n. 1.
- 33rJ " $DB^3$ " Gr MS A had B $\Delta$ . See Gr 1, 208, 24var.
- 33rJ "AZG" Moerbeke has corrected AΓZ in Gr MS A. See Gr 1, 208, 25var.
- 33rJ Before "ABG" Moerbeke has properly left απο in Gr MS A untranslated. But Coner has added "ab" (see 33rJvar and Gr 1, 208, 26var).
- 33rK "AHG1" Moerbeke has corrected  $\Lambda$ H $\Gamma$  in Gr MS A. See Gr 1, 210, 6var and Mugler, Vol. 1, p. 122, 15var.
- 33rL "duplam" and "emioliam" That is, "squared" and "raised to the 3/2 power." See the comment to 24rH ("dupla proportio").
- 33rL "minorem" Omitted from Gr MS A, it was properly added by Moerbeke. See Gr 1, 210, 11var.
- 33rN "BA, AD" Moerbeke has expanded the abbreviatory  $BA\Delta$  in Gr MS A. See Gr 1, 210, 23var.
- 33rO "ab" Properly added by Moerbeke, though missing from Gr MS A. See Gr 1, 212, 4var.
- 33rO-P "Demonstrandum... portionis2" Heiberg, Gr 1, 212, 6-9, would delete this.
- 33rP "quidem" Heiberg, Gr 1, 212, 13, would delete this.
- 33rP-Q "ut autem...  $ZD^1$ " Heiberg, Gr 1, 212, 14-15, would delete this.
- 33rQ "hoc... est" Heiberg, Gr 1, 212, 17, would delete this.
- 33rR "TB3...KZ3" In Gr MS A, but omitted by Moerbeke. Coner has added it in the margin. See 33rRvar and Gr 1, 212, 25-27var. Heiberg has incorrectly included "ad" (i.e. πρός) after KZ as a part of Coner's addition.
- 33rS "TZ, ZH" Moerbeke has expanded the abbreviatory  $\Theta$ ZH in Gr MS A. Coner has written TZH in the margin. See 33rSvar and Gr 1, 212, 28.
- "hoc... ZH3" Heiberg, Gr 1, 212, 29—214, 1, would delete this.
- 33rS "Quod autem... ZH<sup>6</sup>" Heiberg, Gr 1, 214, 2-3, would delete this.
- 33rT "Que KZ... ZD" Heiberg, Gr 1, 214, 5-7var, (following the Basel ed.) would delete this.
- 33rT "Que KZ" Coner has changed this to "Que ergo TZ" (see 33rTvar and Gr 1, 214, 5-7var). Cf. Gr 1, 215, n. 2.
- 33rU "BTK" Thus in Gr MS A. Coner has properly changed this to TBK. See 33rUvar and Gr 1, 214, 13var.
- 33rU "ab  $NK^2$ " Here Gr MS A omitted  $\alpha\pi$ o. Moerbeke has properly added the preposition. See Gr 1, 214, 15var.

- 33rU-V "et quod...  $ZH^1$ " Heiberg, Gr 1, 214, 16-18, would delete this.
- 33rV "hoc enim in fine" Heiberg would delete this. See Gr 1, 214, 20.
- 33rW "Sed tunc" This translates αλλ'οτε in Gr MS A. But Coner has properly corrected this to "quare" (see 33rWvar and Gr 1, 214, 25var).
- 33vA "Aliter" Concerning this alternate proof, see Gr 1, 217, n. 1.
- 33vB "est1" In Gr MS A but omitted by Moerbeke. Added by Coner. See 33vBvar and Gr 1, 216, 10var.
- 33vB "TG" Moerbeke has corrected A $\Gamma$  in Gr MS A. See 33vBvar and Gr 1, 216, 12var.
- 33vC "autem" Thus in Gr MS A. It ought to be  $\delta \dot{\eta}$  (=itaque). See Gr 1, 216, 14var.
- 33vD "HAT" Thus in Gr MS A. Coner (and not Moerbeke, as Heiberg implies) has properly corrected this to HTA. See 33vDvar and Gr 1, 216, 26var. Compare the text in 43vO, where HTA appears.
- 33vD "quod a<sup>1</sup>" The correction is Coner's (see 33vDvar). Gr MS A had την instead of τὸ ἀπό. See Gr 1, 216, 26var.
- 33vD " $TG^6$ " H $\Theta$ ,  $\Theta\Gamma$  in Gr MS A. Either Moerbeke or Coner made this correction. See 33vDvar and Gr 1, 216, 27var.
- 33vE "super<sup>1-4</sup>" All corrected by Coner (see 33vEvar). In the cases of "super<sup>1,3,4</sup>" Gr MS A erroneously had προς instead of ἐπί (see Gr 1, 218, 1var, 2var, and 3var). It was probably rendered as "ad" by Moerbeke.
- 33vE "Quod ergo" Thus in Gr MS A (see Gr 1, 218, 3-4). Coner properly substituted "Oportet ergo demonstrare quia" (see 33vEvar). More economically we could write "Demonstrandum ergo quod." Cf. 33vF for two further instances in which *Demonstrandum* must be added.
- 33vE "TZ3" Moerbeke has corrected AZ in Gr MS A. See Gr 1, 218, 5var.
- 33vE "quam.... Sed" Missing from Gr MS A and Moerbeke's translation. Properly added by Coner. See 33vEvar and Gr 1, 218, 6var. Cf. Gr 1, 217, n. 3.
- 33vE-F "proportioni...  $TG^1$ " Heiberg, Gr 1, 218, 6-7, would delete this. Cf. Gr 1, 219, n. 1.
- 33vF "habet... TH3" Omitted from Gr MS A and Moerbeke's translation. Properly added by Coner. See 33vFvar and Gr 1, 218, 8-10var.
- 33vG "etiam quod" διοτι in Gr MS A (see Gr 1, 218, 13var). But I think that Moerbeke read it as δὴ ὅτι, since in the same situation in 33vH and I he so rendered the latter. In all three cases Coner changed "etiam" to "itaque" (see 33vG-Ivar).
- 33vG "ad superficiem<sup>1,2</sup>" Omitted from Gr MS A and Moerbeke's translation. Properly added by Coner. See 33vGvar. Cf. Gr 1, 217, n. 3, where the readings given from Eutocius confirm Coner's additions.
- 33vG "cubus" and "cubum" Moerbeke has corrected Gr MS A's false readings of พบพโดบ and พบพโดบ. See Gr 1, 218, 18var and 19var.

- 33vH "id¹ quod" Moerbeke read του in Gr MS A as if it were τό. See Gr 1, 218, 19var.
- 33vH "cubus... hoc est1" Heiberg, Gr 1, 218, 20-22, would delete this.
- 33vH "que1" Moerbeke commented in the margin "proportio puto" (see 33vHvar).
- 33vH "eius1...  $AT^3$ " In Gr MS A (at least partially) but omitted by Moerbeke (see Gr 1, 218, 23var). Coner added it in the margin (see 33vHvar).
- 33vH " $BT^2$ " Gr MS A had  $\Theta$ B. See Gr 1, 218, 24var.
- 33vI " $TBG^{1,2}$ " Thus in Gr MS A. Coner has corrected these to BTG. See 33vIvar and Gr 1, 220, 3var and 4var.
- 33vI "ergo" Heiberg, Gr 1, 220, 5, would delete this.
- 33vI Notice that after "AT6" Moerbeke or Coner has properly deleted a line of text that was in Gr MS A. See 33vIvar and Gr 1, 220, 6-7. The marginal addition reported by Heiberg (ibid., 7var) as Coner's is in fact not in the margin but rather in the text in Moerbeke's hand. It is a part of the deleted line noted above.
- 33vJ "Oportet... TB" Heiberg, Gr 1, 220, 12-13, would delete this. Cf. Gr 1, 221, n. 1.
- 33vK "ab... et" Not in Gr MS A or Moerbeke's translation. Properly added by Coner. See 33vKvar and Gr 1, 220, 14-15var.
- 33vK "BL" Moerbeke has corrected B $\Delta$  in Gr MS A. See Gr 1, 220, 15var.
- 33vK "Reliquum erat demonstrare quia" This translates επιλοιπον μειναι δειξαι διοτι in Gr MS A. Coner would translate this "Reliquum nobis demonstrare oportet quia" (see 33vKvar), apparently correcting μειναι to ἡμῖν and διοτι to δεῖ ὅτι. See Gr 1, 220, 15var and 16var.
- 33vK "quia<sup>2</sup>" This translates διοτι in Gr MS A (see Gr 1, 200, 18var). Coner corrected this to "oportet quia" (see 33vKvar), apparently changing διοτι to δεῖ ὅτι.
- 33vL "TG" Gr MS A had  $\Gamma\Theta$ . See Gr 1, 220, 23var.
- 33vM " $TA^2$ " Moerbeke has corrected  $\Theta\Lambda$  (=TL) in Gr MS A. See Gr 1, 222, 1var.
- 33vM "quod" Heiberg would understand this as if it were "ergo demonstrandum est quod" (see Gr 1, 223, end of Prop. 8). Coner added "ergo" after "quod" (see 33vMvar).
- 33vN "9." Gr MS A erroneously had  $\iota\delta'$  (=14.). See Gr 1, 222, 4var.
- 33vO "portionum"... emisperio<sup>2</sup>" Heiberg, Gr 1, 222, 15-18, would delete this.
- 33vO, Q "d" Thus in the margin. It is given as S in Moerbeke's text, but see his Fig. Sc. II.9.
- 33vO "[ipsarum... igitur]" Missing from Gr MS A and Moerbeke's translation. Following the Basel ed. and Heiberg, I have added it as necessary. See Gr 1, 222, 18var.

- 33vP-Q "Demonstrata... \( \text{\pi} \) " Heiberg, Gr 1, 222, 24—224, 3, would delete this.
- 33vQ "Sit... AR" Missing from Gr MS A and Moerbeke's translation. Properly added by Coner and accepted by Heiberg in modified form. See 33vQvar and Gr 1, 224, 6-7var.
- 33vS "itaque" Coner has corrected this to "autem" (see 33vSvar). Cf. Gr 1, 226, 6var and see the text in 44vB.
- 33vS "Quod<sup>2</sup>" Moerbeke has corrected τω in Gr MS A. See Gr 1, 226, 9var.
- 33vS "AK, GX" Coner has corrected this from  $A \equiv (=AX)$  in Gr MS A and probably also in Moerbeke's translation. See 33vSvar and Gr 1, 226, 10var.
- 33vT "Quod... XKA1" Heiberg, Gr 1, 226, 12-13, would delete this.
- 33vT " $XKA^1$ " Coner has corrected this from  $\Xi AK$  (=XAK) in Gr MS A and probably also in Moerbeke's translation. See 33vTvar and Gr 1, 226, 13var.
- 33vT "[MKG]" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 33vTvar and Gr 1, 226, 14-15var.
- 33vU "a<sup>1</sup>... quod<sup>4</sup>" Added by Coner. See 33vUvar and Gr 1, 226, 20var. Incidentally, that which I have read as ZB in Coner's correction may rather be ZL. In any case, it should be AR.
- 33vU "LN" " $MK^2$ " and "NL" Moerbeke has corrected  $\Lambda H$ , HMK and  $M\Lambda$  in Gr MS A. See Gr 1, 226, 22var and 24var.
- 33vV After "diametrum".2" Gr MS A had μεν, which Moerbeke properly refrained from translating. See Gr 1, 228, 1var and 3var.

## Commentary on the Eutokii Ascalonite rememoracio in libros de spera et chylindro (34rA-44vP)

- 34rB "inveniens" Moerbeke has read ευφον in Gr MS A as if it were εὑφών. See Gr 3, 2, 3var.
- 34rC "in finem" Moerbeke has read επι τελους in Gr MS A as if it were ἐπὶ τέλος. See Gr 3, 2, 11var.
- 34rC "tribus" This translates τριων in Gr MS A. It should have been τρίτων (=tertio). See Gr 3, 2, 12var.
- 34rD 'et, si... concedas' See above, Part I, Chap. 1, Sect. III, List G, item (19). Incidentally, Heiberg mistakenly asserted that αυτοθεν (=de se) was not translated by Moerbeke. See Gr 3, 2, 18var.
- 34rE "consultum" Moerbeke has so translated του συνηθων in Gr MS A. Heiberg would correct this to τὸ σύνηθες (=morem). See Gr 3, 2, 25var.
- 34rG After "componatur" there is a lacuna of one half of the column and Moerbeke explains that there was a missing folio in the exemplar, i.e. Gr MS

- A. See 34rGvar. Jacobus Cremonensis made a similar observation in his translation. See Gr 3, 4, 13var.
- 34rH "curvarum (! cavarum)" This translates μοιλων in Gr MS A (see Gr 3, 4, 17). But see also the third comment to 23vJ.
- 34rI "ad1... nulla" Gr MS A and Moerbeke's translation do not have the signs of quotation, which I have added. See Gr 3, 4, 21-25var. Cf. the somewhat differently expressed text of 23vI.
- 34rI "Eadem . . . superficiebus" In spite of the omission of ἐπί from Gr MS A. Moerbeke has made good sense of this. See Gr 3, 4, 26var.
- 34rK "Omnium... rectam" Gr MS A and Moerbeke's translation omitted the signs of quotation, which I have added. See Gr 3, 6, 4-6var. Compare the text in 23vL.
- 34rK "aliqua" Moerbeke has properly read τι in Gr MS A as if it were τις. See Gr 3, 6, 7var.
- 34rK "AGB<sup>2</sup>" Moerbeke has corrected A $\Gamma$  in Gr MS A. See Gr 3, 6, 10var.
- 34rN After "confessorum" Gr MS A had xai, which was not translated by Moerbeke. See Gr 3, 8, 2var.
- 34rO-P "et linearum... entes" and "altera... comprehensa" Gr MS A and Moerbeke's translation have omitted the signs of quotation from the latter passage. See Gr 3, 8, 8-11var. Compare the text in 23vL-M, where there are divergencies.
- 34rO After "sed" Gr MS A had xai, which was not translated by Moerbeke. See Gr 3, 8, 7var.
- 34rP Before "istud" Gr MS A had και, which was not translated by Moerbeke. See Gr 3, 8, 12var.
- 34rP After "quod2" Gr MS A had xal, which was not translated by Moerbeke. See Gr 3, 8, 22var.
- 34rQ, R "consistentes" This first translates συνισταμέναι and then συνέσταλμεναι in Gr MS A. Heiberg has corrected each one of these to συνεσταμέναι (=concurrentes). See Gr 3, 8, 26var and 30var.
- 34rQ "minoresque" Gr MS A simply had ἐλάττους. See Gr 3, 8, 26var.
- 34rR "Rursum enim ad" Gr MS A had εντος γαρ παλιν επι. Thus Moerbeke has not translated εντος. See Gr 3, 8, 30.
- "ZH<sup>2</sup>" Gr MS A had HZ. See Gr 3, 10, 10var.
- 34vB "ABGK" Moerbeke has corrected ABOK in Gr MS A. See Gr 3, 10, 14var.
- 34vB "GDE" Moerbeke has corrected ΓΛΕ in Gr MS A. See Gr 3, 10, 16var.
- 34vC "congruet" Moerbeke has thus corrected αρμοση in Gr MS A. See Gr 3, 10, 22var.
- 34vE "quod" This translates of in Gr MS A. Heiberg would correct this to ως. See Gr 3, 12, 4var.

- 34vF "sitas" Moerbeke has properly read κειμεναις in Gr MS A as if it were κειμένας. See Gr 3, 12, 10var.
- 34vF "appositum est" Moerbeke has read προκειται in Gr MS A as if it were πρόςκειται. See Gr 3, 12, 12var.
- 34vG "In" Moerbeke has correctly read επει in Gr MS A as if it were ἐπί. See Gr 3, 12, 16var.
- 34vH "AB, BG" Moerbeke has corrected AB in Gr MS A. See Gr 3, 12, 23var.
- 34vI "ED" Moerbeke has corrected  $\Gamma$  in Gr MS A. See Gr 3, 12, 31var.
- 34vI "DZG" Moerbeke first wrote BAG but then corrected it to DZG. Gr MS A had BZΓ. See 34vIvar and Gr 3, 12, 31var.
- 34vI "BAG1" Moerbeke has corrected BAZ in Gr MS A. See Gr 3, 12, 31var.
- 34vJ "contingens signum D" This is ambiguous. What is intended is that D is any point on BG.
- 34vL "KN" Moerbeke has corrected KH in Gr MS A. See Gr 3, 14, 24var.
- 34vL "BAHLG" Moerbeke has corrected ABH $\Lambda\Gamma$  in Gr MS A. See 34vLvar and Gr 3, 14, 25var.
- 34vM "Magnitudo... D" Compare the same text somewhat differently translated in 23vT.
- 34vM "autem2" Thus in Gr MS A. Should be  $\delta \dot{\eta}$  (=itaque). See Gr 3, 16, 2var, and the text in 23vT.
- 34vO "Et componenti... BG" Compare the text in 23vU.
- 34vO "ZH ad ZE" Thus in Gr MS A. As Coner (and not Moerbeke, as Heiberg implied) noted, it should be "EZ ad ZH" (see 34vOvar and Gr 3, 16, 11var). Cf. the text in 23vU
- 34vP "TZ" Moerbeke has corrected ΘA in Gr MS A. See Gr 3, 16, 23var.
- 34vQ " $EZ^2$ ... ad  $ZT^1$ " Thus in Gr MS A. Should be "TZ... ad ZE" (see Gr 3, 16, 25var).
- 34vR "ZE1" EZ in Gr MS A. See Gr 3, 16, 31var.
- 34vR "et1" Gr MS A had δη. Perhaps Moerbeke intended to add a macron over the ampersand to produce *etiam*, but in fact he did not. See Gr 3, 18, 1.
- 34vR "GB<sup>2</sup>" Moerbeke has corrected  $\Gamma\Delta$  in Gr MS A. See Gr 3, 18, 1var.
- 34vV "Et a  $K \dots KM^1$ " Compare the text in 23vX.
- 34vV "ipsa" and "ipsi" Thus in Gr MS A. Should rather be "ipsi" and "ipsa" (see Gr 3, 18, 26var).
- 34vV "Que ergo... parium [laterum]" Compare the slightly abbreviated text in 23vY.
- 34vW "Uno...recto... protracto" That is, a right angle placed in a quarter of a circle. Moerbeke probably translated the words by using feminine endings, thus implying that it was a straight line that was to be drawn. Coner has corrected these endings. Furthermore he substituted "constituto" for "protracto" (see 34vWvar).

- 34vW After "quod" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 20, 2var.
- 34vW "periferias" That is, "equales periferias" as in Gr MS A. See Gr 3, 20, 3var.
- 34vW "Quare<sup>2</sup>... equilateri" Compare the slightly different text in 23vZ-Θ.
- 34vX "[lineam... angulum]" Following Torelli and Heiberg, I have added this. See 34vXvar and Gr 3, 20, 10-11var.
- 34vZ "OP... ipsi PT" Gr MS A had  $\Theta\Pi$ ...  $\tau\eta$   $\Pi\Theta$  (see Gr 3, 20, 19var). Hence Moerbeke corrected the first magnitude to OP. In the Basel edition the second magnitude was changed to  $\Pi O$ .
- 34vZ After "autem" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 20, 23var.
- 34vZ "OH" Moerbeke has corrected  $\Theta$ H in Gr MS A. See Gr 3, 20, 24var.
- 34vZ "PH" Gr MS A had H $\Pi$ . See Gr 3, 20, 24var.
- 34vZ After "equedistans" Heiberg, following Torelli, would add  $\alpha \alpha (=ergo)$ . Gr MS A had an abbreviation for  $\gamma \alpha \rho$ , and in MS O there is an erasure in the margin. See Gr 3, 20, 25var.
- 35rA "Que ergo... HC" Compare the text in  $23v\Theta$ - $\Pi$ .
- 35rA "K" Moerbeke has corrected KΓ in Gr MS A. See Gr 3, 22, 5var.
- 35rC "Propter... simulutroque" Compare the text in 24rQ.
- 35rD "Copulate... ipsas" This is a paraphrase and abbreviation of the text in 24rY-24vA.
- 35rE "'HT2" Not in Gr MS A. Moerbeke has added this. See Gr 3, 22, 30var.
- 35rF "B, G" Gr MS A had  $\Gamma$ , B. See Gr 3, 24, 6var.
- 35rF "primo" Gr MS A had πρωτου του. Heiberg has corrected this to πρὸ τούτου (=ante hoc) and Coner has written "precedenti" (see 35rFvar and Gr 3, 24, 10var).
- 35rF "proponebatur" This translates προεκειτο in Gr MS A. Heiberg prefers the reading of Gr MS G<sup>2</sup>: προσέκειτο (=adiacebatur). See Gr 3, 24, 10var.
- 35rF ''Non aliter'' Moerbeke has properly read ου καλως in Gr MS A as if it were οὐκ ἄλλως. See Gr 3, 24, 13var.
- 35rG "proposuit" This translates προεθημέν in Gr MS A. Heiberg prefers the reading of Gr MS  $G^2$ : προσέθημέν (=addivit). See Gr 3, 24, 15var.
- 35rG "oportere esse" Moerbeke has so translated ειναι in Gr MS A. See Gr 3, 24, 15var.
- 35rH "Trigona... ADG" Compare the slightly different text of 24vE.
- 35rI "itaque" This translates  $\delta \eta$  in Gr MS A. Should perhaps be  $\delta \epsilon$  (=autem). See Gr 3, 24, 28var.
- 35rI "ADG" Moerbeke has corrected A $\Delta$ B in Gr MS A. See Gr 3, 26, 2var.
- 35rJ "Ducatur... B" Compare the slightly different translation of 24vM-N.
- 35rJ "HBZ" Moerbeke has corrected HZE in Gr MS A. Heiberg, following the Basel ed., prefers HZ. See Gr 3, 26, 4var. See the text in 24vM.

- 35rK "DBZ" Moerbeke has corrected BΔZ in Gr MS A. See Gr 3, 26, 11var.
- 35rL "Circumscribentes... T" Compare the text in 24vS. Notice that here Moerbeke has correctly translated λειψομεν as "relinquemus" (see the comment to 24vS ["accipiemus"]).
- 35rL "T" Moerbeke has corrected  $\Theta Y$  in Gr MS A. See Gr 3, 26, 19var.
- 35rL "elementatione" That is, Euclid's *Elements*, Prop. XII.2. See above, Part I, Chap. 1, Sect. III, n. 9.
- 35rP "Intelligatur... $B^2$ " Compare the somewhat different text and translation in 25vG.
- 35rP, V "circumscripto" By this translation Moerbeke has shown that he understood the article τo in Gr MS A as τω. See Gr 3, 28, 18var and 30, 27var.
- 35rP After "quidem" Gr MS A had ovv (=igitur), which Moerbeke did not translate. See Gr 3, 28, 19var.
- 35rP-Q "Pappo... elementorum" This part of Pappus Commentary on the Elements has not survived. See P. Ver Eecke, Pappus d'Alexandre. La Collection mathématique, Vol. 1 (Paris, 1933), pp. CXVII-CXVIII.
- 35rQ "circumscripto" Moerbeke has properly read περιγεγραμμενον in Gr MS A as if it were περιγεγραμμένω. See Gr 3, 28, 23var.
- 35rR "Et quoniam... potentia" Compare the closely similar translation in 25vI-J.
- 35rR After "quam quidem" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 30, 1var.
- 35rS "copulate" Moerbeke has correctly read επεζευμεναι in Gr MS A as if it were ἐπεζευγμέναι. See Gr 3, 30, 7var.
- 35rU "LN" Moerbeke has corrected AH in Gr MS A. See Gr 3, 30, 18var.
- 35rU "Eandem... ZRL" The signs designating that this was quoted from Archimedes were not in Gr MS A but were added by Moerbeke. See Gr 3, 30, 20-22var. Compare the text in 25vM.
- 35rU "ZRL" Moerbeke has corrected ZPA in Gr MS A. See Gr 3, 30, 22var.
- 35rU "que2" Not in Gr MS A but added by Moerbeke. See Gr 3, 30, 24var.
- 35rU "TD" Moerbeke has corrected TA in Gr MS A. See Gr 3, 30, 25var. Here Moerbeke has represented tau by T instead of by C.
- 35rV-W "Et... inconveniens" See the comment to 35rU ("Eandem... ZRL") and Gr 3, 32, 3-6var. This passage was reduced to the first and last phrases in 25vO.
- 35rX-Y "Que autem... conum" Compare the text in 26rG-H.
- 35vA "unum" Moerbeke has read την in Gr MS A as if it were μίαν. See Gr 3, 32, 21var.
- 35vB "fit" Moerbeke has corrected the abbreviation for γαρ εστι in Gr MS A, reading it as if it were γίνεται. See Gr 3, 34, 1var.
- 35vD "AH1" Moerbeke has corrected ΛH in Gr MS A. See Gr 3, 34, 12var.
- 35vE "NH" Gr MS A had HN. See Gr 3, 34, 18var.

- 35vE-F "Et quoniam... AH2" Compare the text in 26rQ-R.
- 35vF "Est enim" Moerbeke has in his translation mistakenly truncated Gr MS A's επει γαρ παραλληλος εστιν η ΔΖ τη AH, εστιν. See Gr 3, 34, 26-27var.
- 35vG "BD1" Moerbeke has corrected BA in Gr MS A. See Gr 3, 36, 2var.
- 35vG "AH2" Moerbeke has corrected  $\Delta$ H in Gr MS A. See Gr 3, 36, 4var.
- 35vG After "AH2" Heiberg, following Torelli, would add the Greek text equivalent to "quod ergo sub BD, AH cum eo quod sub DA, AH" (see Gr 3, 36, 4-5var).
- 35vH "Multitudo... quaternitate1" Compare the text in 27rL.
- 35vJ "Que... ABGD1" Compare the text in 28vB.
- 35vK "enim" This translates the abbreviation for γαο και in Gr MS A. Heiberg would write γίνεται καί (=fit et). See Gr 3, 36, 27var.
- 35vK "ZT" Gr MS A had  $\Theta$ Z. See Gr 3, 36, 30var.
- 35vL "Habet...  $AK^{1}$ " Compare the text in 28vQ.
- 35vL "rectis" Moerbeke has properly read ο g θ ω in Gr MS A as if it were ο g θ ωv. See Gr 3, 38, 6 var.
- 35vL "trigono GKA" Missing from Gr MS A and Moerbeke's translation, it has been added by Coner. See 35vLvar and Gr 3, 38, 8var.
- 35vM "circumscripti<sup>2</sup>" Moerbeke has properly corrected εγγεγραμμενου in Gr MS A, reading it as if it were περιγεγραμμένου. See Gr 3, 38, 16var.
- 35vN "ME" and "MA" Thus in Gr MS A. Coner has corrected these to HE and GA. See 35vNvar and Gr 3, 38, 21var.
- 35vP "ab" Omitted from Gr MS A but added by Moerbeke. See Gr 3, 40, 2var.
- 35vP "et<sup>2</sup>" Not in Gr MS A. See Gr 3, 40, 4var.
- 35vQ "Que... H" Compare the text in 29rJ-K.
- 35vR "faciendum" Moerbeke has properly read ποιητε in Gr MS A as if it were ποιητέον. See Gr 3, 40, 14var.
- 35vR "ipsa DB" In Gr MS A but omitted by Moerbeke. It has been added by Coner. See 35vRvar and Gr 3, 40, 17var.
- 35vR " $T^1$ " Moerbeke has corrected H $\Theta$  in Gr MS A. Heiberg has erroneously reported Moerbeke's reading as TH, apparently mistaking it for the T, H that follows. See Gr 3, 40, 18var.
- 35vT "M<sup>2</sup>" Missing from Gr MS A and Moerbeke's translation, it was added by Coner. See 35vTvar and Gr 3, 40, 30.
- 35vU "triplam<sup>1,2</sup>" That is, "triplicated" or "cubed" (see the appropriate comments to 24rH and 28vH).
- 35vU-V "Sed quod...  $KT^{1}$ " Compare the text in 29vN.
- 35vV "EZ" Moerbeke has corrected Z in Gr MS A. See Gr 3, 42, 8var.
- 35vV "AK" Gr MS A had KA. See Gr 3, 42, 8var.
- 35vV "Quod... TA" See the comment to 35rU ("Eandem... ZRL") and Gr 3, 42, 12var. Notice also that by writing "Quod" Moerbeke has properly read τω in Gr MS A as if it were τό. Compare the text in 29vO.

- 35vW "Habebit... ABG" Compare the text in 30rG. Notice that the earlier text had "itaque" and that Coner here in 35vW also wrote "itaque" as a correction of some misreading by Moerbeke (see 35vWvar).
- 35vW ''D'' Moerbeke has corrected ΔE in Gr MS A. See Gr 3, 42, 20var.
- 35vX After "ipse" Gr MS A had  $\delta \epsilon$  (=autem), which Moerbeke did not translate. See Gr 3, 42, 23var.
- 35vX "Quando... superficie" Compare the text in 30rK, where Moerbeke made a correction in conformity with the text in 35vX (see the comment to 30rK ["fit"]).
- 35vY "habet" Moerbeke has corrected επι in Gr MS A, reading it as ἔχει. See Gr 3, 44, 2var.
- 36rA "Superficies ergo... circulo" Compare the text in 30rQ.
- 36rB After "quidem" Gr MS A had  $\gamma \alpha \rho$  (=enim), which Moerbeke did not translate. See Gr 3, 44, 18var.
- 36rC " $DX^{1,2}$ " Moerbeke has corrected  $\Delta H$  in Gr MS A. See Gr 3, 44, 20var
- 36rD "Sed ...  $AL^{1}$ " Compare the text in 30vG.
- 36rF "copulantes" That is, "copulantes angulos polygonii inscripti" (see Heiberg's Latin translation of Gr 3, 46, 9).
- 36rF "omnibus" That is, "omnibus copulantibus" (see Heiberg's Latin translation of Gr 3, 46, 12). The same thing is understood for "omnibus" in 36rF and "omnibus1,2" in 36rG.
- 36rG "Et est... AL2" Compare the text in 30vJ. Notice that after "Et" the earlier text has "quoniam" and after "centro2" it has "D," both of which Heiberg would delete on the basis of the text in 36rG. See the comment to 30vJ ("quoniam").
- 36rH "copulata2" Moerbeke has corrected the inadvertent accusative επιζευγθεισαν found in Gr MS A. See Gr 3, 46, 26var.
- 36rH-I "Demonstratum . . .  $N^{1}$ " Compare the text in 30vJ.
- 36rJ "Utraque... inscripti" Compare the text in 30vP.
- 36rJ "de" This translates περι in Gr MS A. As Coner noted, it should be "ante" (see 36rJvar), the reference being to the preceding proposition. Cf. Gr 3, 48, 8var.
- 36rK-L "Circumscripta ergo . . . T" Compare the text in 31rF. As I noted in the comment to that passage, it was there added by the scribe of m. 2.
- 36rL "B" Thus in Gr MS A. Should be D. See Gr 3, 48, 22var.
- 36rL After " $E^3$ " we ought to understand "habet proportionem minorem" (cf. Heiberg's Latin translation of Gr 3, 48, 25).
- 36rM "ex traditione" Cf. 44vP and above, Part I, Chap. 1, Sect. III, List G, item (35).
- 36rM "explicit" Moerbeke has added this.
- 36rN "Eiusdem" Gr MS A had Ευτοκιου Ασκαλωνιτου. See Gr 3, 50, Ivar.

- 36rN "incipit" Moerbeke has added this.
- 36rN "Dati... cylindrus" Note the somewhat different wording of the text and translation in 31rQ.
- 36rO "autem3" Thus in Gr MS A. It should be  $\delta \acute{\eta}$  (=itaque). See Gr 3, 50, 13var.
- 36rO " $AG^2$ " In Gr MS A but omitted by Moerbeke. Added by Coner. See Gr 3, 50, 13var and 36rOvar.
- 36rR "cuius oportunum sit" Moerbeke has correctly read ουδε ον in Gr MS A as if it were οὖ δέον. See Gr 3, 52, 7var.
- 36rT "circulus XO" From Gr MS A it is evident that XO here refers to the side as a diameter rather than to the circle about the diameter. See Gr 3, 52, 17var.
- 36rT " $XO^3$ " Moerbeke has corrected  $\Xi\Theta$ O in Gr MS A. See Gr 3, 52, 21var.
- 36rU "circulum XO" See the comment to 36rT ("circulus XO") and Gr 3, 52, 27var.
- 36rV After "hoc" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 54, 1var.
- 36rX "RS1" Moerbeke has corrected PO in Gr MS A. See Gr 3, 54, 20var.
- 36rY "erit" Gr MS A had the optative ειη. See Gr 3, 54, 23.
- 36rY "negotiato" Moerbeke has read ποριθεντος in Gr MS A as if it were πορισθέντος. See Gr 3, 54, 24var.
- 36vB "divisam proportionem" This appears to mean "a discrete proportion" to contrast it with the following "continua." Unfortunately Eudoxus' solution, which Eutocius refused to present, has not been preserved. At any rate, T. L. Heath believed that Eudoxus was too accomplished a mathematician to have treated a discrete proportion as if it were continuous. See A History of Greek Mathematics, Vol. 1 (Oxford, 1921), p. 249.
- 36vB "autem<sup>2</sup>" This was δη in Gr MS A and should have been translated "itaque" (see Gr 3, 56, 10var).
- 36vE "Hiis" Moerbeke has properly read των in Gr MS A as if it were τούτων. See Gr 3, 58, 3var.
- 36vE "sic" Gr MS A had ovv, usually translated by "igitur" (see Gr 3, 58, 3var).
- 36vG "D" Moerbeke has corrected  $\Lambda$  in Gr MS A. See Gr 3, 58, 13var and 36vGvar.
- 36vH "ita ut" Moerbeke has thus deleted the first ω in Gr MS A's reading of ω ωστε. See Gr 3, 58, 18var.
- 36vH-I "Manifestum... parallelogrammum" Heiberg, Gr 3, 58, 23—60, 2, would delete this.
- 36vH ''ipsarum'' Moerbeke has corrected αυτον in Gr MS A. See 36vHvar and Gr 3, 58, 25var.
- 36vI "ad Z, H" Heiberg, Gr 3, 60, 2-3, would delete this.
- 36vI "secet" This translates αποτεμοις in Gr MS A. See Gr 3, 60, 5var.

- 36vI "ipsas" Moerbeke has translated  $\tau \alpha$  in Gr MS A as if it were  $\tau \alpha \zeta$ . See Gr 3, 60, 5var.
- 36vJ "secatur" Moerbeke has thus translated τετμηται in Gr MS A. See Gr 3, 60, 9var.
- 36vJ-L Moerbeke's marginal references to Euclid (see 36vJvar, Kvar and Lvar) appeared as scholia in Gr MS A. See Gr 3, p. 329. The one to Prop. I.48 should be rather to Prop. I.47.
- 36vL "Si... sunt" Heiberg, Gr 3, 60, 19-20, would delete this.
- 36vL-M "trigoni... AB1" Heiberg, Gr 3, 60, 23-24, would delete this.
- 36vM "quod... invenire" Heiberg, Gr 3, 60, 27, would delete this.
- 36vN "quidem<sup>2</sup>" This translates μεν in Gr MS A, but Heiberg would delete it. See Gr 3, 62, 5var.
- 36vS "ad... TZ" This translates προς ταις ΘΔ, ΘΖ προσπιπτουσαις in Gr MS A. Heiberg would change it to πρὸς τὰς ΘΔ, ΘΖ προσπίπτουσαι and, in terms of Moerbeke's letters, translate it "cum rectis TD, TZ concurrentes" (see Gr 3, 64, 7var and Latin translation).
- 36vT "autem3" This translates γε in Gr MS A. Coner corrects to "equidem" (see 36vTvar). See Gr 3, 64, 13var.
- 36vT "regula" This is an error by Moerbeke, since, as he noted in the margin, the Greek word is μαρμίνφ (=circino). See 36vTvar and Gr 3, 64, 13. Notice also that by writing "D, Z" at the end of the sentence Moerbeke has implicitly corrected the false reading of το  $\Delta$ , Z in Gr MS A, assuming rather that it must be τα  $\Delta$ , Z. See Gr 3, 64, 14var.
- 36vU "ABG" Thus in Gr MS A. It should rather be BAG, or if we expand the Greek syncopated form in the manner of Coner: AB, AG. See Gr 3, 64, 17var and 36vUvar.
- 36vU "periferia" Moerbeke has corrected περιφερειαν in Gr MS A. See Gr 3, 64, 19var.
- 36vV "BG" Moerbeke has corrected A $\Gamma$  in Gr MS A. See Gr 3, 64, 25var.
- 37rA "pyriis" Moerbeke simply did not know the meaning of πυριων in Gr MS A, and he wrote it in the margin (see 37rAvar). Cf. 40rQvar and 41vOvar. I have added in brackets a suggested title that incorporates the transliteration of the term and its meaning. The Greek text of Diocles' work is lost, but the Arabic text is extant and is being published by G. J. Toomer.
- 37rC "EL" This was corrected by Coner. Gr MS A, and no doubt Moerbeke, had AB. See 37rCvar and Gr 3, 66, 19var.
- 37rD " $HZ^2$ " and " $HD^2$ " Gr MS A had ZH and  $\Delta$ H. See Gr 3, 66, 25var and 26var.
- 37rD After "per" Gr MS A had μεν, which Moerbeke did not translate. See Gr 3, 66, 27var.
- 37rE "ut1" In Gr MS A and added by Coner. See Gr 3, 68, 6var and 37rEvar.
- 37rE "appositione" Moerbeke has translated παραθεσεις in Gr MS A as if it were παραθέσει. See Gr 3, 68, 10var.

- 37rG "diametri" Moerbeke has corrected διαμετρον in Gr MS A. See Gr 3, 68, 21var.
- 37rG "DTZ" Moerbeke has corrected  $\Delta EZ$  in Gr MS A. See Gr 3, 68, 23var. Notice also that, according to the erased comment on Fig. Es. 25 (which see), Moerbeke was puzzled as to why DTZ was drawn as a curved line in this figure when the corresponding line in Fig. Es. 24 was a straight line. Not having used ultraviolet light, Heiberg was able to read only the first two words of this comment. See the remarks at the end of the variant readings on Gr 3, 69.
- 37rI Before "ea" (i.e. τα) Gr MS A had και, not translated by Moerbeke. Coner, however, added "et ipsi" (and not "et ipsa," as Heiberg suggests) as a translation of και... αυτω. Moerbeke had rendered αυτω by "sue" (see 37rIvar and Jvar), which Coner deleted. See also Gr 3, 70, 9var.
- 37rJ "etiam per verba" Moerbeke has thus translated ματα λεξιν in Gr MS A (see Gr 3, 70, 14var). Coner preferred "his verbis" (see 37rJvar).
- 37rK "circumiaceat" Added by m. 2, I believe; it translated περιμεισθαι in Gr MS A. The word remained untranslated by Moerbeke. See 37rKvar and Gr 3, 70. 17var.
- 37rK After "A" Gr MS A had an abbreviation for εστω, which Moerbeke refrained from translating. In its stead Pappus actually had ἑστῶτι (=posito). See Gr 3, 70, 19var.
- 37rM "ipsi que BD" This is Moerbeke's effort to correct  $\eta$  B $\Delta$  in Gr MS A. Pappus had  $\tau \tilde{\eta}$  B $\Delta$  (=ipsi BD). See Gr 3, 72, 13var. In either case, the meaning is clear, namely that LH is parallel to BD.
- 37rM "LG" Moerbeke has corrected A $\Gamma$  in Gr MS A. See Gr 3, 72, 15var.
- 37rO "ea que eius quod<sup>1,2</sup>" Gr MS A had του in both places. In the first, Moerbeke had "ea quod" alone, Coner inserting "que eius" (see 37rOvar). In the second case, Moerbeke had "ea que" alone, to which Coner added "eius quod'' (see 37rOvar). In both places Heiberg accepted  $\tau o \tilde{v} \tau o \tilde{v}$ , as proposed by Hultsch (see Gr 3, 72, 22var and 24var).
- 37rQ " $DT^3$ " Gr MS A had  $\Theta\Delta$ . See Gr 3, 74, 4var.
- 37rR-vA "et que" In Gr MS A but omitted by Moerbeke. Added by Coner. See Gr 3, 74, 16 and 37rR-vAvar.
- 37vA "Diocles" A slip on Moerbeke's part, since the genitive "Dioclis" is required.
- 37vC "utique" A correction by Coner (see 37vCvar). Gr MS A had δή, which, I suspect, Moerbeke mistranslated as "autem" and hence Coner's correction. See Gr 3, 76, 3var.
- 37vD "et1... DAE" Not in Gr MS A or Moerbeke's translation but properly added by Coner. See Gr 3, 76, 5-7var and 37vDvar.
- 37vD "ad2" Corrected by Coner, it translated επι in Gr MS A. Perhaps Moerbeke had written "versus" since "ad" was written by Coner in a somewhat lengthy erasure. See 37vDvar.
- 37vD "KNM" Moerbeke has corrected KMN in Gr MS A. See Gr 3, 76, 13var.

- 37vE "EM1" Moerbeke has corrected ΘM in Gr MS A. See Gr 3, 76, 19var.
- 37vG "TB1" Moerbeke has corrected  $\Theta\Gamma$  in Gr MS A. See Gr 3, 76, 29var.
- 37vG " $AB^{1,2}$ " Moerbeke has corrected A $\Theta$  in Gr MS A. See 37vGvar and Gr 3, 78, 1var and 2var.
- 37vG " $BG^2$ " Heiberg falsely states that Moerbeke's text has "bg etiam" (see Gr 3, 78, 3var), but there is no "etiam" in the text.
- 37vH " $BT^6$ " Gr MS A had  $\Theta$ B. See Gr 3, 78, 9var.
- 37vH "hec" That is, this construction.
- 37vI "Menechmus" This reproduces the form Μενεχμος in Gr MS A. Μέναιχμος is to be preferred. See Gr 3, 78, 13var.
- 37vI-N "A" and "D" Coner has interchanged these letters throughout the first proof of Menaechmus and in Fig. Es. 28. See also Moerbeke's marginal comment in 37vI-Jvar.
- 37vJ "ZT1" Moerbeke has corrected  $\Theta Z\Theta$  in Gr MS A. See Gr 3, 78, 18var.
- 37vJ "A3" Moerbeke has corrected  $\Delta$  in Gr MS A. See Gr 3, 78, 21var.
- 37vJ "DZ2" Moerbeke, after writing AZ from Gr MS A, has corrected it to DZ. See 37vJvar and Gr 3, 78, 22var. Heiberg believed that it was Coner who made the correction.
- 37vJ "In" Moerbeke has properly read επει in Gr MS A as if it were ἐπί. See Gr 3, 78, 23var.
- 37vJ "ergo ipsum T" Written by Coner in an inexplicable lacuna of Moerbeke (see 37vJvar). Gr MS A simply had  $\alpha \rho \alpha$  to  $\Theta$ . See Gr 3, 78, 23.
- 37vK "D" Moerbeke has corrected A in Gr MS A. See Gr 3, 78, 23var and 37vKvar.
- 37vK "DK" Moerbeke has corrected AK in Gr MS A. See Gr 3, 78, 24var and 37vKvar.
- 37vK " $A^1$ " Moerbeke has corrected  $\Delta$  in Gr MS A. See Gr 3, 80, 1var and 37vKvar.
- 37vK "In" Moerbeke has corrected επει in Gr MS A, reading it as if it were ἐπί. See Gr 3, 80, 2var.
- 37vK "asymptotas" See above, Part I, Chap. 1, Sect. III, List B, item (1). Cf. 40vCvar, Lvar, Mvar, Rvar and Tvar.
- 37vK "KD, DZ" Moerbeke has corrected KA, AZ in Gr MS A. See Gr 3, 80, 3var.
- 37vK "ipsum  $T^{1,2}$ " Coner has corrected some unreadable words of Moerbeke's. Gr MS A in the second case had  $\tau\omega$   $\Theta$ . See 37vKvar and Gr 3, 80, 3var.
- 37vK-L In the margin Moerbeke has noted in a comment now visible only by ultraviolet light that the section of an obtuse-angle cone is called a hyperbola. See 37vK-Lvar. Cf. the text in 40rS.
- 37vK-N In order to be consistent with the analytic part of the proof, Moerbeke has everywhere here interchanged A and D. See Gr 3, 80, 3-23vars.
- 37vN "B<sup>1</sup>" Moerbeke has corrected HB in Gr MS A. See Gr 3, 80, 21var.

- 37vO-T This has always been considered an alternate solution devised by Menaechmus, and indeed it may well be. But G. J. Toomer writes me that Eutocius' source for the proof was certainly Diocles' De pyriis, the Arabic translation of which Toomer is editing.
- 37vP "axem BE" This indicates that Moerbeke has corrected της BE in Gr MS A. See Gr 3, 82, 11var.
- 37vO "DZ" Moerbeke has corrected EZ in Gr MS A. See Gr 3, 82, 14var.
- 37vQ "Tangebat" Moerbeke has thus translated the perfect form ηπται in Gr MS A. See Gr 3, 82, 15var.
- 37vO "BE" Moerbeke has corrected BZ in Gr MS A. See Gr 3, 82, 16var.
- 37vR "ita ut1... BG" That is, "such that the squares of the perpendiculars to BE [from the parabola] are equal to the rectangles applied to BG." To put it in another way, if we accept as x any perpendicular to BE from the parabola and as y the segment of the axis from the vertex of the parabola to x, then  $x^2 = BG \cdot y$ . Thus, in modern terms, BG is the parameter of the parabola. For the first use of the term" parameter" see below, Vol. 3, Part III, Chap. 4, Sect. III, Text B, Bk. II, Prop. II, notes 1 and 13.
- 37vR "BD" Gr MS A had  $\Delta$ B. See Gr 3, 82, 23var.
- 37vR "ita ut<sup>2</sup>... AB" That is, the parabola whose parameter is AB. See the comment to 37vR ("ita  $ut^1 \dots BG$ ").
- "ergo" In Gr MS A but omitted by Moerbeke. Added by Coner. See 37vRvar and Gr 3, 82, 27.
- 37vT "Describitur... Eronis." Needless to say, this comment on the instrument invented by Isidore of Miletus to draw a parabola is an editorial addition by a student of Isidore. See Gr 3, 84, 8-11var.
- 37vT "kamaricorum" Notice that Gr MS E changed this to μακαρικών, as did Coner. See Gr 3, 84, 11var and 37vTvar. Since Gr MS E was alone among the Gr MSS to make this change, we have convincing proof that Coner used Gr MS E. The Kamarika (On Vaultings) of Hero is lost, as is a commentary on it by Isidore of Miletus.
- 37vU "Ad1,2" Moerbeke has corrected AB in Gr MS A. See Gr 3, 84, 13var and 14var.
- 38rB "circumferatur" In Gr MS A but omitted by Moerbeke. Added by Coner. See 38rBvar and Gr 3, 84, 25var.
- "ipsius AP recte" This translates της AΠ ευθειας in Gr MS A. Heiberg, following the Basel ed., writes τη ΑΠ εὐθεία. See Gr 3, 84, 27var.
- 38rC ''DBA'' Gr MS A had B $\Delta$ A. See Gr 3, 86, 6var.
- "BMZ<sup>2</sup>" Moerbeke has corrected EMH in Gr MS A. See Gr 3, 86, 12var.
- 38rE "TBZ" and "TAI" Thus in Gr MS A. Should be BTZ and ATI. See Gr 3, 86, 16var and 17var. Coner wrote "TB, TZ" and "TA, TI" (see 38rEvar).
- 38rG-N Coner has worked over this section with some care. See 38rG-Nvars.
- 38rG "risisset" For this error, see above, Part I, Chap. 1, Sect. III, List G, item

- (20). Note that Heiberg misread the preceding "tum" as "cum." See Gr 3, p. LI.
- 38rG "locum" See above, Part I, Chap. 1, Sect. III, List A, item (5).
- 38rG "grossicie" For this error, see above, Part I, Chap. 1, Sect. III, List C, item (19).
- 38rH After "videbatur" Coner added "autem" and Heiberg has accepted this addition. See 38rHvar and Gr 3, 88, 11var.
- 38rH "itaque" Thus in Gr MS A. Heiberg, following Hiller, prefers  $\delta \epsilon$  (=autem). See Gr 3, 88, 13var.
- 38rI "convertit" Moerbeke has thus rendered the imperfect form ματεστρεφεν in Gr MS A. Heiberg incorrectly reports Moerbeke's reading as "convertitur" because of the lengthy dotting of the "i" (see Gr 3, 88, 23var).
- 38rJ "Delios" See above, Part I, Chap. 1, Sect. III, List C, item (20).
- 38rJ "querelantes" This translates the aorist participle διαμεμψαμενους in Gr MS A. Heiberg proposes the reading of Gr MS D<sup>2</sup>: δια-πεμψαμένους, which he translates by "legatis missis" (see Gr 3, 90, 2var and the Latin translation).
- 38rJ "seipsos" Moerbeke has properly read εαυτοις in Gr MS A as if it were ξαυτούς. See Gr 3, 90, 5var.
- 38rK "in brevitate Menechmi" This translates δραχυτητι του Μενεχμου in Gr MS A. Heiberg, following the Basel ed., would write δραχύ τι τὸν Μέναιχμον (=Menaechmum paullulum). See Gr 3, 90, 10var.
- 38rK "quedam" Moerbeke has properly read the abbreviation of  $\tau\eta\varsigma$  in Gr MS A as if it were  $\tau\iota\varsigma$ . See Gr 3, 90, 11var.
- 38rM "mensuras medimnorum" This translates μετρητην μεδιμνων in Gr MS A. Heiberg prefers μετρητὴν ἢ μέδιμνον (=amphoram vel medimnum). See Gr 3, 90, 19var.
- 38rN "attritiones et funes" For these errors, see above, Part I, Chap. 1, Sect. III, List G, items (21) and (22).
- 38rN "debeant" This translates μελει in Gr MS A. Heiberg prefers μέλλει in Gr MS E, which, together with Torelli's δολή instead of δουλη in Gr MS A (omitted by Moerbeke), he would translate "si voluerimus" (see Gr 3, 90, 26var and the Latin translation).
- 38rN "instrumenti" Added by Coner, it translated οργανου in Gr MS A. See 38rNvar and Gr 3, 90, 28. I do not know why Moerbeke left a lacuna, for he properly translated the word as "instrumentum" in 38vD, G and R.
- 38rO "ad rectos" Added by Coner, it translated  $\pi \varrho o \varsigma o \varrho \theta \alpha \varsigma$  in Gr MS A. Its omission by Moerbeke was apparently just an oversight. See 38rOvar and Gr 3, 92, 1var.
- 38rP "compellatur" See above, Part I, Chap. 1, Sect. III, List C, item (21).
- 38rQ "KH1" Moerbeke has corrected ZH in Gr MS A. See Gr 3, 92, 13var.
- 38rQ "HK1" Moerbeke has corrected ZK in Gr MS A. See Gr 3, 92, 16var.

- 38rR "GH2" Moerbeke has corrected KH in Gr MS A. See Gr 3, 92, 21var.
- 38rR "medie proportionales" Moerbeke has expanded the reading of μεσαι in Gr MS A. See Gr 3, 92, 23.
- 38vA "pixidulas" Coner preferred "tabellulas" (see 38vAvar).
- 38vA "ut1" Moerbeke thus ambiguously translated ως in Gr MS A. Coner first changed this to "et" and then to "quam" (see 38vAvar). The Greek phrase ώς λεπτοτάτους means "as thin as possible."
- 38vA "[impulsate (?) in canalibus]" See above, Part I, Chap. 1, Sect. III, List C, item (23).
- 38vB "ad... invicem" Moerbeke's translation is very awkward. What is meant by the Greek text is that, in order for the straight lines to be taken exactly, one has to be careful when the tablets are moved that they remain parallel and that the pieces remain joined to each other evenly without any gaps.
- 38vB, C "supremo" For this error, see above Part I, Chap. 1, Sect. III, List G, item (23). By not knowing that ἀνάθημα was a votive offering, Moerbeke missed the important point that Eratosthenes prepared a model of his instrument (the mesolabe) as a votive offering.
- 38vC "inscriptio" This translates επιγραμμα in Gr MS A. See Gr 3, 94, 11-12. It refers to the epigrammatic poem given by Eutocius at the end of the account as a part of Eratosthenes' votive offering. The poem was not translated by Moerbeke (see the second comment to 38vF below).
- 38vD "secunda figura" We have already been told in 38vC ("Duarum... columpna'') that it was only the second figure that was engraved on the column. Hence the word "secunda" here in 38vD ought not to have been included in this abbreviated proof that appeared as a part of the votive offering.
- 38vF "si libet" Coner started this in a lacuna and extended it into the margin (see 38vFvar). Gr MS A had EL EVL, which Heiberg, following Wilamowitz, changed to ἀεὶ ἑνί. At any rate, the meaning is that, if we have to find several means, we place one more tablet in the instrument than the number of means sought. See Gr 3, 96, 7var.
- 38vF After "eadem" in Gr MS A follows the above-noted epigram, which Moerbeke omitted. It is of considerable interest to the historian of the problem of finding two proportional means and so I give it in Heath's translation (A History of Greek Mathematics, Vol. 1 [Oxford, 1921], p. 260):
  - If, good friend, thou mindest to obtain from a small (cube) a cube double of it, and duly to change any solid figure into another, this is in thy power; thou canst find the measure of a fold, a pit, or the broad basin of a hollow well, by this method, that is, if thou (thus) catch between two rulers (two) means with their extreme ends converging. Do not thou seek to do the difficult business of Archytas's cylinders, or to cut the cone in the triads of Menaechmus, or to compass such a curved form of lines as is described by the god-fearing Eudoxus. Nay thou couldst, on these tablets, easily find a myriad of means, beginning from a small base. Happy art thou, Ptolemy, in that, as a father the

- equal of his son in youthful vigour, thou hast thyself given him all that is dear to Muses and Kings, and may he in the future, O Zeus, god of heaven, also receive the sceptre at thy hands. Thus may it be, and let any one who sees this offering say "This is the gift of Eratosthenes of Cyrene."
- 38vF, G "Nichomedes" Coner quite properly deleted "-h-" in each case. See 38vFvar and Gvar.
- 38vG "Scribet" In Gr MS A the present tense appeared, which Moerbeke no doubt misread as γράψει. See Gr 3, 98, 2.
- 38vG ''in quo'' Moerbeke has properly translated εφ' o in Gr MS A as if it were ἐφ' ῷ. See Gr 3, 98, 4var.
- 38vG After "videtur" Gr MS A had ὁ ἀνήρ, not rendered by Moerbeke. See Gr 3, 98, 5var.
- 38vG "expressionis" Gr MS A had εξεσεως, which Moerbeke clearly rejected (since it means "dismissal" or "divorce"). Now Gr MS E changed it to εξεως, which Heiberg accepted (see Gr 3, 98, 7var). Perhaps Moerbeke also believed this was the proper word, for his translation does convey the idea that the whole Greek phrase means deprived of geometrical character. Another possibility is that Moerbeke thought the word ought to be λέξεως, for "expressionis" would certainly translate that word. However, in other instances he translated that word by "lectio" (40rT) and "verba" (37rJ); and hence we cannot be sure what Moerbeke thought the word ought to be.
- 38vG "Igitur... defectu" See Gr 3, 98, 7-8var.
- 38vH "navicula" That is, a shuttle. Cf. R. E. Latham, Revised Medieval Latin Word-List (London, 1965), p. 311. Also see Witelo's similar use of the word (Part I, Chap. 1, Sect. II, n. 18). Heiberg indicates that Gr MS A had εχελωνίον (see Gr 3, 98, 15var) and Moerbeke appears to have written εχελωνίο (=εχελωνίον) in the margin (see 38vHvar). It no doubt should have been χελωνίον. Cf. also "chelonario" in 38vJvar.
- 38vJ "D" Moerbeke has corrected Z in Gr MS A. See Gr 3, 98, 26var.
- 38vK "cylindriculo" Moerbeke has corrected πυλινδοιον in Gr MS A. See Gr 3, 100, 6var.
- 38vK "cylindriculi" Moerbeke has corrected πυλινδοω in Gr MS A. See Gr 3, 100, 8var.
- 38vL "LMN" Moerbeke corrected AMN in Gr MS A. See Gr 3, 100, 11var.
- 38vL "linee" Moerbeke may have corrected this from "linea" before Coner changed it to "lineae" (see 38vLvar).
- 38vL "ad minus" See above, Part I, Chap. 1, Sect. III, List C, item (28). Moerbeke's translation of the whole clause "Huic... AB" is ambiguous. The Greek surely means that the conchoidal line has the property of always approaching more closely to line AB without ever meeting it.
- 38vM "secabit" This translates τεμνει in Gr MS A. See Gr 3, 100, 18var.
- 38νN "TN" Moerbeke has corrected ΘH in Gr MS A. See Gr 3, 100, 24var.
- 38vN "N" Moerbeke has corrected H in Gr MS A. See Gr 3, 100, 28var.

- 38vO "XZ" Moerbeke has corrected EN in Gr MS A. See Gr 3, 100, 31var.
- 38vO "intermedie" Here μεταξύ is translated by an adverb with the dependent phrase beginning with "inter," but often it was translated as an adjective with the dependent phrase in the form of two nouns in the genitive (e.g., see 38vL-M).
- 38vQ "erat" In Gr MS A but omitted by Moerbeke. Added by Coner. See Gr 3, 102, 17 and 38vQvar.
- 38vQ "apud lineam" That is, on the conchoidal line.
- 38vS "regula" Moerbeke has properly translated κανονιον in Gr MS A as if it were κανόνι. See Gr 3, 104, 1var.
- 39rB "AD" Moerbeke has corrected AA in Gr MS A. See Gr 3, 104, 13var.
- 39rC "TK ipsi AD vel" Moerbeke has corrected  $\Theta$ KA $\Delta$ H in Gr MS A. See Gr 3, 104, 16var, but see also 39rCvar for Moerbeke's marginal addition.
- 39rD "ML1" Moerbeke has corrected MA in Gr MS A, See Gr 3, 104, 26var and 39rDvar.
- 39rE "DB" Moerbeke has corrected AB in Gr MS A. See Gr 3, 106, 5var and 39rEvar.
- 39rE "HG<sup>2</sup> ad GK" Coner's correction (see 39rEvar). Moerbeke wrote in the margin "MG ad GK" from Gr MS A (see 39rEvar and Gr 3, 106, 7var and 8var). While only MG was in error, Moerbeke changed both magnitudes. We are not sure what he wrote for MG, but for GK he wrote LK.
- 39rF "quod" and "ei² quod" το and τα in Gr MS A, but Heiberg, following the correction of Gr MS G, would write τῷ and τό. See Gr 3, 106, 15var and 16var.
- 39rF "BMA" Coner has corrected BM in Gr MS A and Moerbeke's translation. See 39rFvar and Gr 3, 106, 16var. Heiberg wrongly reports the correction as Moerbeke's.
- 39rF " $AD^1$ " Gr MS A had  $\Delta$ A. See Gr 3, 106, 16var.
- 39rF "ab4" Missing from Gr MS A and Moerbeke's translation but properly added by Coner. See 39rFvar and Gr 3, 106, 18var. Heiberg wrongly reports this correction as Moerbeke's.
- 39rH "Et componenti...  $BE^{1}$ " Compare the text in 31vE.
- 39rH "ipsa" In Gr MS A but omitted by Moerbeke. Added by Coner. See 39rHvar and Gr 3, 106, 28var.
- 39rH "et1" Gr MS A had τε, which Moerbeke, as often was the case, did not translate. Added by Coner. See 39rHvar and Gr 3, 108, 2.
- 39rI " $GB^2$ " Moerbeke has corrected  $\Gamma\Theta$ B in Gr MS A. See Gr 3, 108, 5var.
- 39rL "qui continetur" Moerbeke has corrected τω περιεχομενω in Gr MS A. See Gr 3, 108, 25var.
- 39rL-M "Sectorem autem... conum" Compare the somewhat different translation of almost exactly the same text in 23vK. The text used by Eutocius was closer to the original Doric language.



39rN "circulo" By this translation Moerbeke has shown that he understood το in Gr MS A as τφ. See Gr 3, 110, 11var.

39rO "E" Moerbeke has corrected EN in Gr MS A. See Gr 3, 110, 14var.

39rO "ei" Moerbeke has thus changed η in Gr MS A because he carried over the preceding "equalis" (see Gr 3, 110, 16var).

39rP "equalem" Moerbeke has corrected ισον in Gr MS A. See Gr 3, 110, 21var.

39rP "H2" Moerbeke has corrected B in Gr MS A. See Gr 3, 110, 22var.

39rR "Equalis ergo... BTZK" Compare the text of 31vL.

39rR "BTZA" Moerbeke has corrected  $B\Theta Z\Delta$  in Gr MS A. See Gr 3, 112, 8var. The correction was no doubt based on the text in 31vL.

39rT "BATZ" Thus in Gr MS A and so written at first by Moerbeke, who later changed it to BAZT (see 39rTvar and Gr 3, 112, 18var).

39rT "perfecit theorema" For this error, see above, Part I, Chap. 1, Sect. III, List G, item (26). Thus, if, instead of Moerbeke's reading, we have "in fine theorematis" as the correct reading, then the clause "Inducens ... theorematis" must be joined to the succeeding sentence and the meaning of the whole becomes "After having added at the end of the theorem the corollary, which he derives from what has been previously established, he then concludes by means of another demonstration the last part of the theorem ...."

39rU "ABG" Thus in Gr MS A. Correctly changed by Coner to ABZ. See 39rUvar and Gr 3, 112, 22var. Note that Heiberg has wrongly reported the correction as Moerbeke's.

39rU "ut<sup>1</sup>...  $DG^2$ " Moerbeke has correctly given the signs indicating that this is a quotation from Archimedes, though such signs were missing in Gr MS A. See Gr 3, 112, 23var. Compare the text in 31vQ.

39rV "ut2... AEG" See the preceding comment. Compare the text in 31vQ-R.

39rX " $TD^4$ " Moerbeke has corrected  $\Theta\Lambda$  in Gr MS A. See Gr 3, 114, 13var and 39rXvar.

39rX "AE2" Moerbeke has corrected  $\Delta E$  in Gr MS A. See Gr 3, 114, 13var.

39vA "ab  $EG^1$ " Moerbeke has corrected υπο ΔΕΓ in Gr MS A. See Gr 3, 114, 17var.

39vA "ab<sup>2</sup>" Missing from Gr MS A and Moerbeke's translation, it was properly added by Coner. See 39vAvar and Gr 3, 114, 18var.

39vA "GA" Moerbeke has corrected  $\Gamma\Delta$  in Gr MS A. See Gr 3, 114, 19var.

39vB "Ut... GB" Compare the text in 32rC.

39vB "in<sup>2</sup>" In Gr MS A but omitted by Moerbeke. Added by Coner (see 39vBvar). See also Gr 3, 114, 25var.

- 39vC "que8" Thus in Gr MS A. Correctly changed by Coner to "quod a" (see 39vCvar and Gr 3, 116, 2var).
- 39vC "id² quod" Omitted in Gr MS A and Moerbeke's translation. Correctly added by Coner. See 39vCvar and Gr 3, 116, 3var. The succeeding "a" I have added, but it might also have been faintly added by Coner.
- 39vC "Data autem... G" See the comment to 39rU ("ut $^1$ ...  $DG^2$ ") and Gr 3, 116, 4-5var. Compare the text in 32rC, with its slight differences.
- 39vC "autem" Thus in Gr MS A. Heiberg preferred  $\delta \dot{\eta}$  (=itaque). See Gr 3, 116, 4var. The text in 32rC had "ergo" (i.e.  $\ddot{\alpha}\varrho\alpha$ ).
- 39vD "DG" Thus in Gr MS A. Coner has corrected to AB. See 39vDvar and Gr 3, 116, 6var.
- 39vE "Et propter... QB1" Compare the text in 32rI.
- 39vE "LD" Moerbeke has corrected ΛA in Gr MS A. See Gr 3, 116, 14var. See the text in 32rI, which also has LD.
- 39vF-G "Et tota... LD" See the comment to 39rU ("ut1... DG2") and Gr 3, 116, 25var. Compare the text in 32rJ.
- 39vG "Ut ergo... $LD^2$ " See the comment to 39rU ("ut<sup>1</sup>... $DG^2$ )" and Gr 3, 116, 25var. Compare the text in 32rJ.
- 39vI " $LD^2$ " Moerbeke has corrected A $\Delta$  in Gr MS A. See 39vIvar and Gr 3, 118, 5var.
- 39vI "Iaceat... palam" Compare the text in 32rK.
- 39vI " $DQ^1$ " Coner's correction. Gr MS A had H $\Delta$ . See 39vIvar and Gr 3, 118, 7var. Moerbeke probably had DH.
- 39vJ "Quoniam autem... data2." Compare the text in 32rK-L.
- 39vJ "QZ2" Thus in Gr MS A (i.e. XZ). Coner (and not Moerbeke, as Heiberg implies) has corrected it to QL. See 39vJvar and Gr 3, 118, 16var.
- 39vL "DL" Thus in Gr MS A. It ought to be QL. See Gr 3, 118, 23var.
- 39vL " $LQ^{1}$ " Improperly changed by Moerbeke from  $\Lambda\Delta$  in Gr MS A. See Gr 3, 118, 23var.
- 39vM "Quoniam... $LQ^3$ " See the comment to 39rU ("ut<sup>1</sup>... $DG^2$ ") and Gr 3, 120, 1var. Compare the text in 32rL.
- 39vO-40rG For Witelo's probable use of Eutocius' discussion of the compounding of ratios and an English translation of it, see above, Part I, Chap. 1, Sect. II.
- 39vP "elementatione" That is, Euclid's *Elements*, Bk. VI, def. 5. For this translation of στοιχειώσει, see above, Part I, Chap. 1, Sect. III, n. 9.
- 39vQ "Eron" This is Moerbeke's erroneous transliteration of Hωνας in Gr MS A. See Gr 3, 120, 22. Coner added H- to represent the aspirate. See 39vQvar. Incidentally, Jacobus Cremonensis properly transliterated the name as "Heronas." Eutocius is the only known reference to Heronas and to his commentary on Nicomachus. See Ver Eecke, Archimède, p. 629, n. 3.

- 39vQ "sequentem" Moerbeke has correctly translated επομενων in Gr MS A as if it were ξπόμενον. See Gr 3, 120, 24var.
- 39vQ "autem [aut]" Gr MS A had δε...η. Moerbeke might have changed the "autem" to "aut" but at least Coner added "aut" in the margin. See Gr 3, 120, 27var and 39vQvar.
- 39vT After "Sint" Gr MS A had γαρ (=enim), which Moerbeke omitted. See Gr 3, 122, 11var.
- 39vU ''quod³ Z'' Moerbeke has correctly read  $\pi \varrho o \zeta$  tov Z in Gr MS A as if it were  $\tau o v$  Z. See Gr 3, 122, 21var.
- 39vU "multiplicatus (!)" Except for this single instance Moerbeke has everywhere in this passage translated πολλαπλασιασας as "multiplicans" (see Gr 3, 122, 21).
- 39vW "proportionis" Moerbeke has correctly translated λογον in Gr MS A as if it were λόγου. See Gr 3, 124, 3var.
- 39vW " $B^5$ " Moerbeke has corrected  $\Theta$  in Gr MS A. See Gr 3, 124, 6var.
- 39vX "et²" In Gr MS A but omitted by Moerbeke. Added by Coner. See Gr 3, 124, 8var and 39vXvar.
- 40rA "et1" Heiberg has incorrectly reported this as missing from Moerbeke's translation. See Gr 3, 124, 15var.
- 40rB "ad¹ 6" Gr MS A had  $\kappa\alpha\iota$  tov  $\varsigma$ . See Gr 3, 124, 21var.
- 40rB "ad3" Not in Gr MS A, but Moerbeke has properly added it. See Gr 3, 124, 23var.
- 40rC "et<sup>5</sup>" This is a correction by Coner that agrees with Gr MS A. See Gr 3, 124, 30var. I suspect that Moerbeke wrote "ad" (cf. the comment to 40rB ["ad¹ 6"]). Heiberg reports that the following "6" was also in Coner's hand, but I think that it was written by Moerbeke. Before "9" in the preceding sentence Gr MS A had και, which Moerbeke did not translate.
- 40rD "subemiolia". This is an error, for Gr MS A had του υφημιολιου (=subemiolie). See Gr 3, 125, 34.
- 40rF "plures uno" In Gr MS A but omitted by Moerbeke. Added by Coner. See Gr 3, 126, 11var and 40rFvar.
- 40rG After "quam<sup>2</sup>" Gr MS A had εχει, which Moerbeke did not translate. See Gr 3, 126, 19var.
- 40rG-H "Sed...  $DQ^1$ " Compare the text in 32rL, where "demonstratum est" was missing but was added by Coner, no doubt on the basis of the text in 40rG-H (see 32rLvar).
- 40rH "BQ" Thus in Gr MS A (i.e. BX). Should be DQ. See Gr 3, 126, 26var.
- 40rI "Sit... ZT" See the comment to 39rU ("ut<sup>1</sup>...  $DG^2$ ") and Gr 3, 126, 29var. Compare the text in 32rM. Notice that in the earlier text Moerbeke rendered πεποιησθω in Gr MS A as "fiat" and here he translated it as "Sit... factum" (see Gr 1, 190, 10 and Gr 3, 126, 29).
- 40rJ "KB<sup>1,2</sup>" Thus in Gr MS A. Should be KR. See Gr 3, 128, 5var and 8var.

- 40rK Before "RL" Gr MS A omits  $\dot{\eta}$  (=que), which Heiberg would add. See Gr 3, 128, 10var.
- 40rL ''Iam... ZT''' Compare the text in 32rN. There Moerbeke translated λοιπον in Gr MS A as "Reliquum" and here he translated it as "Iam" (see Gr 1, 190, 19 and Gr 3, 128, 18).
- 40rL " $DQ^2$ " Corrected by Coner (see 40rLvar). It was  $\Delta K$  in Gr MS A and thus no doubt DK in Moerbeke's translation (see Gr 3, 128, 21var). Coner similarly replaced K by Q in 40rL (" $ZQ^2$ ") and 40rM (" $ZQ^{1,2}$ " " $QZ^1$ " and "DQ").
- "ipsi autem" See above, Part I, Chap. 1, Sect. III, List G, item (27).
- "ZQ3" Corrected by Coner (see 40rMvar). It was BX in Gr MS A and thus presumably BQ in Moerbeke's translation (see Gr 3, 128, 27var).
- 40rN "QZ1" Corrected by Coner (see 40rNvar). It was BZ in Gr MS A and presumably also in Moerbeke's translation (see Gr 3, 128, 28var).
- 40rN-P "Et erit.... componentur" See the comment to 39rU ("ut $^1$ ...  $DG^2$ ") and Gr 3, 130, 3var. Compare the text in 32rN-P. The text was somewhat erroneous in both places, but obviously Moerbeke did not compare them carefully. If he had, he would have been able to bring them into better conformity, as did Coner (see the next two comments).
- 40rN "erit" This translated εσται in Gr MS A, but Heiberg, following the Basel ed., would substitute  $\delta \dot{\eta}$  (=itaque). See Gr 3, 130, 3var. Now after "secare" Gr MS A had δη (omitted from Moerbeke's translation), which was changed in Gr MS E to  $\delta \tilde{\epsilon i}$ , and this Coner translated by "oportet" (see 40rNvar and Gr 3, 130, 3var). Coner used Gr MS E for the change or he made it on the basis of the text in 32rN.
- 40rN ''non'' Gr MS A apparently had ο (= οὕτως), which Moerbeke read as οὐ. Coner properly corrected it to "ita" (see 40rNvar and Gr 3, 130, 6var). He no doubt was following the text in 32rO, where "ita" appears.
- 40rP Before "sponsionem" Gr MS A had δε το and Moerbeke properly ignored δε in his translation. See Gr 3, 130, 18var.
- 40rQ After "vero" Gr MS A had και αυτο, which Moerbeke failed to translate and which Gr MSS E and H changed to καὶ αὐτός. See Gr 3, 130, 23var.
- "pyriis" See the comment to 37rA. It was added here by m. 3. See 40rQ 40rQvar.
- 40rQ "pretermissa" Moerbeke has correctly translated παραλελημ[μ]ενα in Gr MS A as if it were παραλελειμμένα. See Gr 3, 130, 27var.
- 40rS "et consuetis... sectione2" For the possible significance of this passage for the question whether Witelo used a translation of Eutocius' Commentary on the Conics of Apollonius, see above, Part I, Chap. 1, Sect. II, n. 21. See also the comment to 37vK-L and the second comment to 42rL.
- "ut... scribit" This is Moerbeke's effort to render from Gr MS A the following: ως εξ αυτων διανοεισθαι μη αρα και αυτος ειη τα εν τω τελει επηγγελμενα γραφεσθαι. Heiberg would alter αυτος to αὐτά and translate

- the whole as follows: "unde orta est suspicio, ea ipsa esse, quae in fine perscripturum se esse promisisset." See Gr 3, 132, 9-11 and 10var, and the Latin translation. In any case, the tenor of the statement is clear, namely that Eutocius believed that the ancient proof he had discovered was a corrupt version of the missing demonstration promised by Archimedes. See the comment to 32rP ("utraque... componentur"). Eutocius' reconstruction of that demonstration extends to 41rR.
- 40rT "communius et planius" See above, Part I, Chap. 1, Sect. III, List G, item
- 40rU "HBZ" Moerbeke has corrected ZHB in Gr MS A. See Gr 3, 132, 26var.
- 40rV Before "parallelogrammum" Gr MS A erroneously had τω, which Moerbeke properly read as τό. See Gr 3, 132, 27var.
- 40rV "quod<sup>3</sup> a GH" Thus in Gr MS A (see Gr 3, 133, 32var). Coner has properly corrected it to "que GH" (see 40 rV var). That is, GH, not  $GH^2$ , is the proper quantity.
- 40vA "sub3" Coner's correction (see 40vAvar). Perhaps Moerbeke had written "a" as his translation of  $\upsilon\pi$ o in Gr MS A. See Gr 3, 134, 4var.
- 40vA "ita3" Coner's correction (see 40vAvar). Gr MS A had  $\alpha\lambda\lambda$ '  $\omega\varsigma$ , which perhaps Moerbeke rendered as "sed ut" (see Gr 3, 134, 6var).
- 40vB "ut producte... HM" That is, whose parameter is HM.
- 40vB "possint" Missing from Gr MS A but added by Moerbeke as a part of the customary way to designate the parameter (see 40vBvar). See also Gr 3, 134, 13var and the first comment to 37vR.
- 40vC "scribatur" Gr MS A had η γραφη, which Moerbeke perhaps rendered as "que scriptura." Coner's correction ignores η and reads γραφη as a subjunctive form. See 40vCvar and Gr 3, 134, 21var.
- 40vC "yperbola" Moerbeke has correctly read υποπεριδολη in Gr MS A as if it were ὑπερδολή. See 40vCvar and Gr 3, 134, 21var.
- 40vC-D "8vi... Apollonii" In the extant manuscripts of Apollonius Conics this is the converse of Prop. II.12, as Coner's marginal "12" implies. See 40vCvar and Gr 3, 135, n. 2.
- 40vD "BK" Moerbeke at first corrected HK in Gr MS A to KB. Then he added the transposition signs to K and B. He did this, it seems, so that the correction became just a substitution of B for H. See 40vDvar and Gr 3, 134, 26var.
- 40vD After "yperbolam" Gr MS A had ηπτετο δε και θεσει δεδομενης παραβολης, which Moerbeke failed to translate. See Gr 3, 134, 28var. Following Moerbeke's style, we would expect the following translation: "tangebat autem et positione datam parabolam" (cf. the preceding sentence).
- 40vE "bases<sup>1,2</sup>" Moerbeke has correctly read the abbreviation for δασις in Gr MS A as βάσεις. See Gr 3, 136, 4var and 6var.
- 40vE "similiter" Moerbeke has correctly read ομοιων in Gr MS A as if it were δμοίως. See Gr 3, 136, 9var.

- 40vH "eo" Corrected by Coner (see 40vHvar). I am not sure what Moerbeke's original reading was, for in his translation of the same expression elsewhere he used "eo" (e.g., see 40vG).
- 40vH "[et concidat . . . GE]" Omitted from Gr MS A and Moerbeke's translation. Heiberg, following the Basel ed., would add καὶ συμπιπτέτω τῆ ΓΕ, which I translated in Moerbeke's style and added to the text. See Gr 3, 138, 2var. Following my addition, notice that Moerbeke has given "educta" as a translation of εκβληθειση in Gr MS A. Presumably the final letter should be η and the word should rather have been translated "educte" to agree with the "ipsi GE" that is to be added. But without the latter phrase Moerbeke was forced to read the participle as if it were in the nominative case and translate it
- 40vI "ZT" A correction by Moerbeke or Coner. Gr MS A had ZB. See 40vIvar and Gr 3, 138, 4var.
- 40vK "ZN3" Moerbeke has corrected ZH in Gr MS A. See Gr 3, 138, 26var.
- 40vL "8vi" Coner has written "12" above it (see 40vLvar). Coner has also added "secundi libri" after "theorematis" (again see 40vLvar). Consult the comment to 40vC-D.
- "RXS" Moerbeke has corrected PEZ in Gr MS A. See Gr 3, 140, 4var.
- 40vM "BXK" Moerbeke has corrected BKE in Gr MS A. See Gr 3, 140, 5var.
- 40vM "RXP<sup>2</sup>" Moerbeke has corrected PZΠ in Gr MS A. See Gr 3, 140, 7var.
- 40vM "ABZ2" Corrected by Coner (see 40vMvar). Since Gr MS A apparently had ABZ, I am unsure as to what reading Moerbeke had before Coner's correction. See Gr 3, 140, 7.
- 40vM "RO" Moerbeke has corrected P $\Theta$  in Gr MS A. See Gr 3, 140, 7var.
- 40vM "Sit protracta" This translates  $\varepsilon \rho \chi \varepsilon \sigma \theta \omega$  in Gr MS A. See Gr 3, 140, 9var. Cf. 41rA and Gr 3, 144, 16var.
- 40νN "ei quidem quod" Coner's corrections (see 40νNvar). Gr MS A had το μεν, which Moerbeke no doubt translated as "quod quidem" and which Coner saw ought to be  $\tau \tilde{\omega}$   $\mu \acute{\epsilon} v$ ; hence this correction. See Gr 3, 140, 15var.
- 40vO "super BA" This translates επι την BA in Gr MS A. But Heiberg, following the Basel ed., would write  $\xi \pi i \tau \eta \zeta$  BA (=in linea BA). See Gr 3, 140, 23var and compare the comment to 40vQ ("in linea AB").
- 40vQ "bases" See Gr 3, 141, 34var and the comment to 40vE ("bases<sup>1,2</sup>").
- 40vQ "in linea AB" This properly translates επι της BA in Gr MS A. See the
- 40vR "educte" Moerbeke has translated εμβαλλομένη as if it were in the dative case, that is, as if the ending were  $\eta$ . It is in fact in the nominative case. See Gr 3, 142, 6.
- 40vR "27" Moerbeke has properly read ευδομον και εικοστον in Gr MS A as if it were ἔδδομον καὶ εἰκοστόν (see Gr 3, 142, 8var). In the extant copies of

- Apollonius' Conics the proper proposition is I.26, as Coner implied (see 40vRvar).
- 40vS "ipsi" Thus in Gr MS A. Should be "ipsius" (see Gr 3, 143, n. 2).
- 40vS "34" Thus in Gr MS A. In the extant copies of Apollonius' *Conics* the proper proposition is I.33, as Coner implied (see 40vSvar). Cf. Gr 3, 143, n. 3.
- 40vT "est" Coner's correction (see 40vTvar). Since Gr MS A had εστιν, I do not know what Moerbeke's original reading was, unless he wrote "erit" because he thought that it better expressed the consequential sense of the clause. See Gr 3, 142, 22.
- 40vT "XK2" Moerbeke has corrected ZK in Gr MS A. See Gr 3, 142, 23var.
- 40vT "EK" Moerbeke has erred. It was OK in Gr MS A. See Gr 3, 142, 25var.
- 40vT "yperbolam" Thus in Gr MS A (see Gr 3, 142, 25var). Coner erred in correcting it to "parabolam" (see 40vTvar). It is of interest that the Basel ed. also had παραβολής.
- 40vU After "AB" Coner has added "inter E et B" (see 40vUvar), no doubt because of the conclusion expressed in 41rC.
- 40vU "ipsi" Moerbeke has properly translated την in Gr MS A as if it were τη. See Gr 3, 144, 9var.
- 41rA "SK" Thus in Gr MS A. Coner (and not Moerbeke, as Heiberg implies) has properly changed it to SH. See 41rAvar and Gr 3, 144, 15var.
- 41rA "igitur2" Not in Gr MS A. See Gr 3, 144, 16var.
- 41rB " $QH\Omega^{1,2}$ " Moerbeke has corrected XN $\Omega$  in Gr MS A. See Gr 3, 144, 20var and 23var.
- 41rB "[quod ergo a BS]" Missing f om Gr MS A and Moerbeke's translation. I have followed Heiberg and Torelli in adding it. See Gr 3, 144, 25var.
- 41rD "EA" Moerbeke has corrected BA in Gr MS A. See Gr 3, 146, 2var.
- 41rD "7R8" Moerbeke has corrected A'PB (=9RB) in Gr MS A while Heiberg has accepted A'PB' (=9R8), which is in fact the same line as Moerbeke's 7R8. But Moerbeke's reading is incorrectly reported by Heiberg as "ar8" (see Gr 3, 146, 7var). Note that generally in this whole passage Moerbeke represented A', B' end  $\Gamma$ ' from Gr MS A as 9, 8 and 7.
- 41rE "98" Moerbeke has corrected AB' (=A8) in Gr MS A. See Gr 3, 146, 12var and 41rEvar.
- 41rE "8 $HM^1$ " Coner has corrected "-M" from Gr MS A's - $\Omega$ . See Gr 3, 146, 13var and 41rEvar.
- 41rG "autem2" Moerbeke has properly translated  $\delta \eta$  (=itaque) in Gr MS A as if it were  $\delta \dot{\epsilon}$ . See Gr 3, 148, 1var.
- 41rH "a4" Gr MS A had απο του, and so Moerbeke has in effect deleted του. See Gr 3, 148, 5var.
- 41rL After "autem2" Gr MS A had και, which Moerbeke did not specifically translate. See Gr 3, 150, 2var.
- 41rL-M 'ad... determinationem' This is a free version of the text in 32rN-O. See also the text in 40rN-P, with my comments thereto. I have added the signs

- of quotation missing from Gr MS A and Moerbeke's translation. See Gr 3, 150,
- 41rN "enim" This translates γαφ in Gr MS A. But Heiberg, following Torelli, prefers  $\alpha \alpha \alpha (=ergo)$ . See Gr 3, 150, 14var.
- 41rN "appositis... determinationem" This is more of the text given in 32rN-O. See my penultimate comment. I have added the signs of quotation missing from Gr MS A and Moerbeke's translation. See Gr 3, 150, 15var.
- 41rN "ZT3" Moerbeke has corrected ZB in Gr MS A. See Gr 3, 150, 21var.
- 41rO "datam DZ...DQ" Again part of the same text given in 32rN-O. I have added the signs of quotation missing from Gr MS A and Moerbeke's translation. See Gr 3, 150, 26var.
- 41rO "quod3". Thus in Gr MS A. Should rather be "que" (see Gr 3, 150, 27*var*).
- 41rP-Q "erit...Q" Gr MS A and Moerbeke's translation have omitted the signs of quotation, but I have added them. See Gr 3, 152, 5var. Again the text quoted is that of 32rO-P.
- 41rP Before "erit" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 152, 5var.
- 41rQ "super BZ" This translates  $\varepsilon \pi \iota \tau \eta \varsigma$  BZ in Gr MS A (see Gr 3, 152, 7). It would have been better translated "in BZ" (see the second comment to 40vQ).
- 41rQ "et2" In Gr MS A but omitted by Moerbeke. Added by Coner. See Gr 3, 152, 11var and 41rQvar.
- 41rR After "autem2" Gr MS A had ωσπερ, which Moerbeke did not translate. See Gr 3, 152, 19var.
- 41rS "destructa" This is perhaps too strong a translation for ἠφανισμένα in this context (see Gr 3, 152, 25). A better translation would have been "obscurata." The point that Eutocius is making is that he is going to present a reconstructed version of Dionysodorus' solution because the solution appearing in the exemplars he has seen contains demonstrations obscured by wholesale error through human negligence.
- 41vC "ZB, BK" Moerbeke has expanded the syncopated form ZBK in Gr MS A (see Gr 3, 154, 15). Coner has restored the Greek form by deleting the B in BK (see 41vCvar).
- 41vC "quod<sup>1</sup>" Moerbeke has corrected τω in Gr MS A. See Gr 3, 154, 20var.
- 41vD "8" In the extant copies of Apollonius' Conics the proper proposition is II.12, which Coner has implied (see 41vDvar). Cf. Gr 3, 155, n. 2.
- 41vE "ZM1" Coner's correction (see 41vEvar). Gr MS A and presumably Moerbeke's translation had  $\Lambda M$  (see Gr 3, 156, 2var). Heiberg reports this as Moerbeke's correction.
- 41vE "ZM2" Coner's correction (see 41vEvar). Gr MS A and presumably Moerbeke's translation had ZH (see Gr 3, 156, 2var). Heiberg reports this as Moerbeke's correction.

- 41vF "AB4" Coner's correction (see 41vFvar). Gr MS A and presumably Moerbeke's translation had AM (see Gr 3, 156, 11var).
- 41vF "ad circulum... BM" Missing from Gr MS A. Moerbeke has properly added it. See Gr 3, 156, 11-12var.
- 41vF "ergo2" Missing from Gr MS A and Moerbeke's translation. Properly added by Coner. See 41vFvar and Gr 3, 156, 12var.
- 41vF-G "circulus<sup>2</sup>... AB<sup>1</sup>" Missing from Gr MS A. Moerbeke has properly added it. See 41vF-Gvar and Gr 3, 156, 12-13var. Note that Coner has written AB, no doubt correcting Moerbeke's AM (cf. the comment to 41vF ["AB<sup>4</sup>"]). In fact, the -M appears to be visible under Coner's -B.
- 41vG "cuius" Moerbeke has properly added this. See Gr 3, 156, 13var.
- 41vG "AH1" Coner's correction (see 41vGvar). Gr MS A and Moerbeke had AB (see Gr 3, 156, 14var). Heiberg implies that the correction is Moerbeke's.
- 41vG "BM2" Coner's correction (see 41vGvar). Gr MS A and Moerbeke had AM (see Gr 3, 156, 18var).
- 41vH "Quoniam enim eiusdem basis" This translates επει γαο της αυτης βασεως in Gr MS A. But Coner saw that επει should rather be ἐπί and that the translation ought to be "super eadem enim basi" (see 41vHvar and Gr 3, 156, 23var).
- 41vJ "ZM" Moerbeke has corrected BM in Gr MS A. See 41vJvar and Gr 3, 158, 4var.
- 41vJ "A" Coner's correction (see 41vJvar). Gr MS A had  $\Delta$  and presumably Moerbeke wrote D. But in fact B is required. See Gr 3, 158, 5var.
- 41vM "et... ab MB" Missing from Gr MS A but properly added by Moerbeke. See 41vMvar and Gr 3, 158, 23var.
- 41vO "pyriis<sup>1,2</sup>" See the comments to 37rA and 40rQ.
- 41vO "eandem" Moerbeke has correctly translated κωνω την in Gr MS A as if it were την αὐτήν. See 41vOvar and Gr 3, 160, 8var.
- 41vP "vertice" Moerbeke has correctly read πορυφην in Gr MS A as if it were πορυφής. See Gr 3, 160, 10var.
- 41vQ "EA" Coner's correction (see 41vQvar). Gr MS A and presumably Moerbeke's translation had EZ. See Gr 3, 160, 16var.
- 41vQ "ZA3" Moerbeke has corrected  $Z\Delta$  in Gr MS A. See Gr 3, 160, 18var.
- 41vR "Cum... propositum esset" This translates προταθεντος in Gr MS A. See Gr 3, 160, 22var.
- 41vR After "basis<sup>2</sup>" Gr MS A had μεν (=quidem), which Moerbeke did not translate. See Gr 3, 160, 27var.
- 41vS "et enim... coni" Moerbeke has thus translated και γαρ και τουτο απεδειχθη οι κωνοι in Gr MS A. That is, he has not translated the second και and he has read οι κωνοι as if it were ότι οἱ κῶνοι. See Gr 3, 160, 28var and 162, 1var. Now Heiberg added δέ after οἱ and translated the whole as "nam

hoc quoque demonstratum est. Coni autem....' Heiberg's correction is the most economical one in view of the Greek text given in Gr MS A, for, with his correction assumed, καὶ . . . ἀπεδείχθη refers to the preceding clause (namely, that the ratio of the cones with the same base and altitudes equal respectively to TZ and ZH is given, "for this has also been demonstrated") and οἱ δὲ κῶνοι... τὰ ὕψη is clearly a needed additional step ("But the cones on equal bases are to each other as their altitudes"). Unfortunately, Moerbeke's translation contains an ambiguity, since, by retaining enim and adding quod, it seems to say "for this has been demonstrated: that the cones....' This implies that the oti clause supplies a reason for the statement of the preceding clause (that is, a reason for the statement that the ratio of the specified cones is given) rather than being simply an additional step toward the conclusion that the ratio of TZ to ZH is given. It should be evident to the reader that the preceding clause follows rather from the fact that the ratio of spherical segments is assumed as given and from the proved proposition (II.2) that the spherical segments are equal to the specified cones. Thus it does not follow from the fact that cones on equal bases are to each other as their altitudes, as Moerbeke's translation might imply. One could perhaps save Moerbeke's translation by placing a period after demonstratum est and reading quod as "Because." For then the overall meaning would be similar to that which Heiberg understood. Now the recently discovered Arabic text of Diocles' work confirms Moerbeke's addition of "quod" (=οτι) before "coni" but is without the ambiguity of Moerbeke's translation and in fact without that of Eutocius' text as given in Gr MS A. For Diocles, after indicating that the ratio of the cones with the same base and with altitudes equal to TZ and ZH is given, adds (as Gr MS A does not) "[and is] the ratio of TZ to ZH." Then follows in the Arabic text: "And this is because it has already been demonstrated that cones which are on equal bases are to each other as their altitudes." G. J. Toomer has kindly supplied me with the Arabic text of this passage from the edition of Diocles' work that he is preparing.

- 41vS "ZB1" Coner's correction (see 41vSvar). Gr MS A and presumably Moerbeke's translation had ZE. See Gr 3, 162, 4var.
- 41vT "proporcio" In Gr MS A but omitted by Moerbeke. Added by Coner. See 41vTvar and Gr 3, 162, 10var.
- 41vV-42rB Throughout this passage Coner has written K for X in Gr MS A and presumably for Q in Moerbeke's translation (see 41 vV var), though perhaps in the first instance, the correction TAK is from  $\Theta AZ$ . See Gr 3, 162, 25var and 164, end of variants. Note that Heiberg reports the correction of TAK as Moerbeke's, but note that he also reports the whole figure in MS O as being "from hand 2," by which I suppose he means Coner's hand, as indeed it is.
- 41vV "educantur" Moerbeke has translated εκβληθεισαν in Gr MS A as if it were ἐμδεδλήσθωσαν. See Gr 3, 162, 27var.

- 41vW "ergo<sup>2</sup>" Coner's correction (see 41vWvar). Since Gr MS A had αρα (=ergo), I do not know what Moerbeke's original reading was. See Gr 3, 164, 3.
- 41vW "ad" This translated the erroneous  $\pi \varrho o \varsigma$  of Gr MS A. As Coner realized, it ought to have been  $\tau \tilde{\eta}$  and translated "ipsi" (see 41vWvar and Gr 3, 164, 3var).
- 41vX "ad1" See the preceding comment and 41vXvar.
- 42rA "TAE1" Moerbeke has corrected  $\Theta \Lambda E$  in Gr MS A. See 42rAvar and Gr 3, 164, 8var.
- 42rA "LBE" Moerbeke has corrected ABE in Gr MS A. See Gr 3 164, 8var.
- 42rC "BO" Moerbeke has so changed E $\Theta$  in Gr MS A. But it should rather be EO. See Gr 3, 166, 6var.
- 42rD " $SC^2$ , RY" Moerbeke has corrected  $\Sigma$ PTY in Gr MS A. See 42rDvar and Gr 3, 166, 12var.
- 42rE "SCB" Moerbeke has corrected ΣTY in Gr MS A. See 42rEvar and Gr 3, 166, 15var.
- 42rE "est2" In Gr MS A but omitted by Moerbeke. Added by Coner. See 42rEvar and Gr 3, 166, 15var.
- 42rE "SB" and "BE" Corrections by Coner. Gr MS A had EB and B $\Sigma$ , which Moerbeke no doubt followed. See 42rEvar and Gr 3, 166, 16var.
- 42rF "Sed... OY" Opposite this in the margin Moerbeke wrote and erased "falsum in greco, ipsum, ut (?) que CO ad OYS ita que SE ad ER" (see 42rFvar), and indeed this was in Gr MS A (see Gr 3, 166, 20var). Thus Moerbeke changed OYS to OY and eliminated the repetitious "ita... ER" that had slipped into the text from the preceding sentence.
- 42rG "sub" Moerbeke has read απο in Gr MS A as if it were ὑπό. See Gr 3, 166, 26var.
- 42rG "G" Moerbeke has corrected H $\Gamma$  in Gr MS A. See Gr 3, 166, 28var.
- 42rG "XO" Moerbeke has corrected EE in Gr MS A. See Gr 3, 166, 31var.
- 42rH "D ad" See 42rHvar where Coner has changed the text falsely. The correct proportion is as Moerbeke has given it, namely, D/2G = CY/F.
- 42rI "ellipsim" See above, Part I, Chap. 1, Sect. III, List B, item (2). Cf. 42rJvar and the second comment to 42rL.
- 42rI After "recti" we should understand "ad axem" (see Gr 3, 168, 8, Latin translation). The whole description of the ellipse given in Moerbeke's translation (even with Coner's corrections of "ea" and "deficientia") is somewhat ambiguous. What is meant is the following: "If we describe about CY an ellipse such that the squares of the line segments drawn to the axis in angle XOB, i.e. in the half of a right angle, are equal to the rectangles applied to segment F but diminished by a rectangle similar to that with sides CY and F, it will pass through point X."

- 42rI "deficientia" See above, Part I, Chap. 1, Sect. III, List B, item (2). See also the comment to 42rM ("deficientia").
- 42rI "20mi" In the extant copies of Apollonius Conics the proper proposition is I.21, as Coner has implied (see 42rIvar). Cf. Gr 3, 169, n. 1.
- 42rI "YXC" Moerbeke has corrected ΓΞT in Gr MS A. See Gr 3, 168, 12var.
- 42rJ "ellipsim" See 42rJvar and above, Part I, Chap. 1, Sect. III, List B, item (2).
- 42rJ "circa2" Not in Gr MS A (see Gr 3, 168, 19). In introducing it, Moerbeke has made the meaning of the sentence somewhat ambiguous. The idea is that the hyperbola is given in position because point B, lines AB and BM and the asymptotes TK and KM are all given in position. Note that δεδοσθω in Gr MS A (translated by Moerbeke as "datum est") was corrected in Gr MS G to δεδόσθαι, a correction accepted by Heiberg (see Gr 3, 168, 18var).
- 42rK "BE" Moerbeke has corrected AE in Gr MS A. See 42rKvar and Gr 3, 168, 23var.
- 42rL "AB1" Moerbeke has corrected  $\Delta B$  in Gr MS A. See Gr 3, 168, 27var.
- 42rL Moerbeke has added below this passage in the margin a tentative identification of an ellipse with a section of an acute-angle cone (see 42rLvar). He was obviously influenced to do so by the treatment of the ellipse in 42rI.
- 42rL After "a" (i.e.  $\alpha\pi$ o) in Gr MS A, Heiberg would add  $\delta \epsilon$  (=autem). See Gr 3, 168, 31var.
- 42rM ''D ad'' See 42rMvar where Coner has again erred in changing the correct proportion found in Gr MS A and Moerbeke's translation. Cf. the comment to 42rH.
- 42rM "deficientia" Again Moerbeke was baffled by ελλειποντα in Gr MS A and so he left a lacuna, which Coner filled. See 42rMvar and Gr 3, 170, 7. It is evident that Moerbeke was confused over the Greek technique of indicating the nature of an ellipse. Cf. the first three comments to 42rI.
- 42rN "AK" Coner's correction (see 42rNvar). Gr MS A had AB, which Moerbeke noted and rejected. I would suppose that Moerbeke wrote AQ since he throughout accepted the Greek X for K. It is obvious that the asymptotes are AK (or AQ if we do not change X to K in the Greek text) and KM (or QM, without the above-noted change). See the comment to 41vV-42rB and Gr 3, 170, 8var. In the succeeding KM, Coner made his usual correction of Moerbeke's OM.
- 42rN "KA" Coner's correction (see 42rNvar). Gr MS A had KM, which Moerbeke no doubt changed to QA. Then Coner changed the Q- to K-. See Gr 3, 170, 12var.
- 42rN "T, L" Gr MS A had  $\Lambda$ ,  $\Theta$ , which Heiberg has accepted (see Gr 3, 170, 13var). However, Moerbeke was correct in reversing these letters since KA and MB are extended respectively to T and L rather than to L and T.

- 42rO "8um" In the extant copies of Apollonius Conics the proper proposition is II.12. Coner wrote "11" (or "12"?) in the margin. See 42rOvar and Gr 3, 171, n. 1.
- 42rP "F ad  $CY^{1,2}$ " Note Coner's incorrect changes in 42rPvar.
- 42rP "20<sup>um</sup>" In the extant copies of Apollonius' *Conics* the proper proposition is I.21, as Coner has implied (see 42rPvar). Cf. Gr 3, 171, n. 2.
- 42rQ "'SER1" Moerbeke has corrected  $\Sigma$ PE in Gr MS A. See 42rQvar and Gr 3, 170, 30var.
- 42rQ "OY3" Moerbeke has corrected OP in Gr MS A. See Gr 3, 170, 31var.
- 42rQ "ad \_\_\_ (lac.)" It could be that ER was written in the lacuna and then erased, with the correct "id quod ab ER" added. See Gr 3, 172, 1var.
- 42rR "existente" Moerbeke has properly read ισης in Gr MS A as if it were οὔσης. See Gr 3, 172, 3var.
- 42rR "quod¹" Moerbeke has properly read τω in Gr MS A as if it were τό. See Gr 3, 172, 4var.
- 42rR "XO1" Moerbeke has corrected  $\Xi\Theta$  in Gr MS A. See Gr 3, 172, 6var.
- 42rR "hoc... XO" Missing from Gr MS A and Moerbeke's translation but properly added by Coner. See 42rRvar and Gr 3, 172, 8-9var.
- 42rS "est" Moerbeke omitted translating ειναι in Gr MS A. Coner decided that "est" was needed because of Moerbeke's rendering of δια by "quia" (see 42rSvar and Gr 3, 172, 9-10).
- 42vA "vero" Moerbeke has symmetrically added this, though δε was omitted from Gr MS A. See Gr 3, 172, 18var. One would expect Moerbeke to add "autem" rather than "vero" since he ordinarily does not use "vero" until the last of a series of δέ clauses.
- 42vB "a" This translates απο in Gr MS A, but the text should have had  $\dot{v}$ πό (=sub). See Gr 3, 172, 23var.
- 42vB "ergo" Properly added by Coner though missing from Gr MS A and Moerbeke's translation. See 42vBvar and Gr 3, 172, 24var.
- 42vB After "ergo" Gr MS A had  $\eta$ , which Moerbeke omitted. Ordinarily in such a context he would have translated it as "que" (e.g., in the first clause of this sentence). See Gr 3, 172, 26.
- 42vC "contingens signum" That is, some point.
- 42vC "in<sup>2</sup>" Omitted from Gr MS A but properly added by Moerbeke. See Gr 3, 172, 31var.
- 42vD "autem" Added by Moerbeke. See Gr 3, 174, 5var.
- 42vE "KZL" Moerbeke has corrected KΛZ in Gr MS A. See Gr 3, 174, 16var.
- 42vG "BZ" Moerbeke first wrote TZ from Gr MS A and then corrected it. See 42vGvar and Gr 3, 174, 27var.
- 42vH "HZ" and "ZT" Coner has corrected these (see 42vHvar). Gr MS A had ΘZ and ZH, which Moerbeke no doubt followed. See Gr 3, 176, 2var.
- 42vH "ponitur" In Gr MS A but omitted by Moerbeke. Added by Coner. See 42vHvar and Gr 3, 176, 8var.

- 42vI "adiaceat" This translates προσκεισθω in Gr MS A. But Coner apparently understood it as προκείσθω and translated it "proponatur" (see 42vIvar and Gr 3, 176, 11var).
- 42vI "AE" Moerbeke has corrected  $A\Delta$  in Gr MS A. See 42vIvar and Gr 3, 176, 13var.
- 42vJ "quod" and "ei quod" Coner changed these to "ei quod" and "id quod" respectively (see 42vJvar). Gr MS A had to and to. The first should have been  $\tau \tilde{\omega}$ . See Gr 3, 176, 16var.
- 42vJ "excedentia" Coner's translation of υπερδαλλοντα (see 42vJvar and Gr 3, 176, 19). I do not know what Moerbeke's translation was, but apparently Moerbeke was as confused about the properties of a hyperbola as about those of an ellipse. What is meant here is that a hyperbola is described "such that the squares of the lines drawn [to the axis] are equal to the rectangles applied to H augmented by a rectangle similar to the rectangle with sides DE and H." Cf. the second comment to 42rM.
- 42vL "autem" In Gr MS A but omitted by Moerbeke. Added by Coner. See 42vLvar and Gr 3, 178, 2var.
- 42vL "medietatem" and "ipsi" Thus in Gr MS A, but Heiberg would change the Greek text so that they would respectively be "medietati" and "ipsam" (see Gr 3, 178, 3var and 4var).
- 42vL "ad" This translates εις in Gr MS A. See Gr 3, 178, 4. In this context "secundum" would have been a better translation.
- 42vM "Quod sit...  $QB^{1}$ " Gr MS A omitted the signs of quotation, but they were included by Moerbeke. See Gr 3, 178, 8-9var. Compare the text in 32rR.
- 42vM "KD1" Moerbeke has corrected KΛ in Gr MS A. See Gr 3, 178, 13var.
- 42vM "KD2" Moerbeke has corrected KAB in Gr MS A. At first Moerbeke wrote KDB and then deleted the B. See 42vMvar and Gr 3, 178, 14var.
- 42vN "Z" Moerbeke has corrected B in Gr MS A. See 42vNvar and Gr 3, 178, 16var.
- 42vN "T" Moerbeke has corrected  $\Theta\Delta$  in Gr MS A. See 42vNvar and Gr 3, 178, 17var.
- 42vN ''ZT ad TB'' Thus in Gr MS A. Should, however, be 'TB ad ZT'' (see Gr 3, 178, 19var).
- 42vN "quare et componenti" That is, by composition, RL/QL = BZ/TZ.
- 42vN "enim" Gr MS A had γαρ in an abbreviation. Heiberg would write γίνεται. See Gr 3, 178, 20var. The meaning of the whole sentence is this: "Accordingly this demonstration follows upon the things said above."
- 42vO "turbata vel eversa" This translates τεταραγμένη in Gr MS A. See Gr 3, 178, 22. That is, Moerbeke has given a literal translation followed by a more common expression. In translating the same text in 32rU he used "turbata" alone.
- 42vP "'DQ" Thus in Gr MS A (i.e.  $\Delta X$ ). It should be LQ. See Gr 3, 180, 2var.
- 42vP "BZ" Moerbeke has corrected EZ in Gr MS A. See Gr 3, 180, 2var.

- 42vQ "Et quoniam... FTK" Compare the text in 32vF.
- 42vQ After "ergo" Gr MS A had εστι, which Moerbeke did not translate. See Gr 3, 180, 8var. However he did translate it in the text in 32vF.
- 42vR "trigonis" Moerbeke has properly translated τοιγωνον in Gr MS A as if it were τοιγώνων. See Gr 3, 180, 17var.
- 42vS "ad MO1" Omitted from Gr MS A but added by Moerbeke. See Gr 3, 180, 18var.
- 42vU "Proportio... data1" Compare the text in 32vF.
- 42vU "ei" So corrected by Coner (see 42vUvar). But apparently Moerbeke also believed that  $\tau o$  in Gr MS A should rather be  $\tau \tilde{\psi}$ , as shown by his marginal statement. Again see 42vUvar and also Gr 3, 182, 12var.
- 42vU "data4" Gr MS A had δοθεν and Coner made the correction to "datum" (see 42vUvar). For this and the succeeding error, see Part I, Chap. 1, Sect. III, List G, item (32). Heiberg has misrepresented Coner's correction as applying to δοθεῖσαν in Gr 3, 182, 13 (and see var) instead of to δοθέν in Gr 3, 182, 12.
- 42vU "latitudo" Moerbeke did not realize that  $\pi\lambda\alpha\tau\sigma\varsigma$  in Gr MS A was in the accusative case. Coner corrected it to "latitudinem" (see 42vUvar).
- 42vV "et1" Not in Gr MS A but added by Moerbeke. See Gr 3, 182, 13var.
- 42vX "videatur" Moerbeke has properly translated δοκει in Gr MS A as if it were δοκη. See Gr 3, 182, 28var.
- 42vY After "MH2" Coner has made a confusing addition, which can be ignored (see 42vYvar). Heiberg, Gr 3, 184, 9var, wrongly indicates that the insertion was made before the succeeding "data."
- 42vZ "Quoniam est...  $D^1$ " Compare the text in 32vF-G.
- 42vZ "equalibus" Moerbeke has correctly read ισον in Gr MS A as if it were ἴσων. See Gr 3, 184, 16var.
- 42vZ "bases" Omitted from Gr MS A but correctly added by Moerbeke. See Gr 3, 184, 17var.
- 43rA "Et permutatim... D" Heiberg claims that the signs of quotation are missing from Moerbeke's text, but they are there. See Gr 3, 184, 21var. Compare the text in 32vG.
- 43rB-C "Quoniam... D" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 184, 27-28var. Compare the text in 32vM.
- 43rB "'AB" Moerbeke has corrected A $\Theta$  in Gr MS A. See Gr 3, 184, 27var and see the text in 32vM.
- 43rC "et1" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 43rCvar and Gr 3, 186, 4var.
- 43rD "Quoniam... PT" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 186, 11-13var. Compare the text in 32vR, where "ergo" was omitted from Gr MS A and Moerbeke's translation.
- 43rD "L" Moerbeke has corrected  $\Lambda\Gamma$  in Gr MS A. See Gr 3, 186, 14var.

- 43rE "NM<sup>2</sup>" Coner's correction (43rEvar). Gr MS A had ΛH, which Moerbeke no doubt followed. See Gr 3, 186, 18var.
- 43rE "NR1" Moerbeke has corrected HP in Gr MS A. See 43rEvar and Gr 3, 186, 18var. No doubt Moerbeke first wrote HR before correcting it.
- 43rF "Proportio... utraque" Compare the text in 32vS, where "data" is missing. See my comment to 32vS.
- 43rF "enim" Coner's correction (see 43rFvar). Gr MS A apparently had an abbreviation for αρα (=ergo). I thus suppose Moerbeke's reading was "ergo" (see Gr 3, 186, 23var). Apparently Moerbeke did not check the earlier text in 32vS, where "enim" appeared.
- 43rG "Similes... AG" Compare the text in 33rB, where the text and translation were slightly different.
- 43rH "que1" Heiberg assumes that Moerbeke thus translates αί rather than Gr MS A's η. See Gr 3, 188, 5var.
- 43rH " $PG^1$ " Moerbeke has corrected B $\Gamma$  in Gr MS A. See Gr 3, 188, 8var.
- 43rH " $LR^3$ " Gr MS A had PA. See Gr 3, 188, 10var.
- 43rH "RA" Moerbeke has erred. Gr MS A's reading of PN is correct. See Gr 3, 188, 10var.
- 43rJ "Proportio... data" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. Compare the text in 33rG. Note that we would have expected Eutocius to have added "quare et que AG" since this was the ultimate objective of his comment. See Gr 3, 188, 19var.
- 43rJ "simulutraque" Moerbeke has corrected συναμφοτερου in Gr MS A. See Gr 3, 188, 19var. Heiberg implies that Moerbeke first wrote "simulutriusque," but I am not sure that this is so.
- 43rL "quomodo iacet" See above, Part I, Chap. 1, Sect. III, List G, item (33).
- 43rM "Et quoniam...  $DB^1$ " Compare the text in 33rG, where "quidem" (i.e.  $\mu \acute{\epsilon} \nu$ ) does not appear. Note that here in 43rM Moerbeke has translated  $\eta \pi \epsilon \varrho$  (Gr 3, 190, 8) by "quam" alone. In the earlier passage he rendered it by his customary "quam quidem" (see Gr 1, 208, 7).
- 43rN "DZ1" Corrected by Coner (see 43rNvar). Gr MS A had AB, and Moerbeke perhaps wrote AB. See Gr 3, 190, 14var. Heiberg believed that it was Moerbeke who made the correction to DZ, but I believe that the Z, at least, is in Coner's hand.
- 43rO "Que TZ... ZD" Compare the text in 33rP.
- 43rP Before "quod1" Gr MS A had  $ovt\omega \varsigma$  (=ita), which Moerbeke failed to translate. See Gr 3, 190, 28var.
- 43rP "a<sup>6</sup> BD" Coner's correction (see 43rPvar). Gr MS A had απο EA and Moerbeke seems to have had "ab A" (see Gr 3, 192, 2var).

- 43rQ "ZD" Coner's correction (see 43rQvar). Gr MS A had  $\Delta$  alone and Moerbeke accordingly wrote D. See Gr 3, 192, 5var. Heiberg, wrongly I believe, reported the correction as Moerbeke's.
- 43rQ "quod<sup>5</sup>" and "ei quod<sup>6</sup>" Gr MS A had το in both places. Thus Moerbeke corrected the second one (and Heiberg, following Torelli, the first one) to τφ. See Gr 3, 192, 9var.
- 43rQ "ZBD2" Coner's correction (see 43rQvar). Gr MS A had  $\Delta$ ZB, which Moerbeke no doubt followed. See Gr 3, 192, 9var.
- 43rR "Et quoniam... BK" Gr MS A omitted the signs of quotation, but Moerbeke added them. See Gr 3, 192, 12-13var. Compare the text in 33rR. Note that "quam" was added by Moerbeke. In the text in 33rR Gr MS A had ηπερ, which Moerbeke translated by "quam quidem" and which Moerbeke transferred to this passage in 43rR, though omitting "quidem." See Gr 3, 192, 13var. It is remarkable that the presence here of the ratio "TB ad BK" did not alert Moerbeke to the fact that he had failed to translate it and the succeeding proportion in 33rR (see the comment to 33rR).
- 43rT "Minus... ZK" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 192, 26-27var. Compare the text in 33rR-S. Notice that in the earlier passage he was still translating υπο by "ab" in this context instead of by "sub," as in 43rT.
- 43rT "sicut" Moerbeke probably misread  $\omega \sigma \iota (=sint)$  in Gr MS A as  $\dot{\omega} \varsigma (=sicut)$ . Or perhaps he hastily wrote "sic" (=sicut) when he meant to write "sit" (=sint). See Gr 3, 192, 27.
- 43rT "que<sup>3</sup>... ita" Corrected by Coner (see 43rTvar). I am unsure of Moerbeke's original reading. See Gr 3, 192, 28var.
- 43rU-V "Quod ergo... ZH1" Compare the text in 33rS. Notice that after "ZH" in 43rU Coner added "hoc est que TZ ad ZH" on the basis of the text in 33rS (see 43rUvar). But in fact it probably should have been deleted from the earlier passage (see the comment to 33rS ["hoc... ZH3"]). Cf. Gr 1, 212, 29—214, 1 and Gr 3, 194, 5var. Notice that Heiberg has incorrectly indicated Coner's insertion as being after TZH.
- 43rV "ZK" Moerbeke has corrected ZH in Gr MS A. Moerbeke apparently first wrote ZH before making his correction (see 43rVvar and Gr 3, 194, 8var).
- 43rV "Et quoniam...  $BED^1$ " Compare the text in 33rT. By writing BZD and BED here in 43rV, Coner was apparently following the text in 33rT. Gr MS A had  $BE\Delta$  and  $BZ\Delta$  and presumably Moerbeke wrote BED and BZD. See 43rVvar and Gr 3, 194, 11var.
- 43rV "BED2" Coner's correction (see 43rVvar). Gr MS A had B $\Delta$ E and Moerbeke no doubt followed it. See Gr 3, 194, 12var.
- 43rW "quod<sup>3</sup>... equalibus<sup>1</sup>" The undesignated subject of the statement is the rectangle with sides BZ and ZD. It is also the subject of the clause that follows.
- 43rW After "minus" Gr MS A had εστι, which Moerbeke did not translate. See Gr 3, 194, 14var.

43rW "fit" Moerbeke has properly translated the abbreviation for γαο in Gr MS A as if it were γίνεται. See Gr 3, 194, 16var.

43rW "et1" Coner added this so that καν in Gr MS A would be translated as "et si" (see 43rWvar and Gr 3, 194, 17).

43rX "Que ZB...DZ" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 194, 20-21var. Compare the text in 33rT.

43rX "sint" By his translation Moerbeke has read ως in Gr MS A as if it were ωσιν. Heiberg prefers ωσιν ως (=sint ut). See Gr 3, 194, 22var.

43rY "ZE<sup>1,3</sup>" Coner's corrections (see 43rYvar). Gr MS A and Moerbeke had Z. See Gr 3, 194, 27var and 28var.

43rY "Est ergo ut que  $TB \dots NK$ " Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 196, 3-4var. Compare the text in 33rU.

43rY "BK" Gr MS A had  $\Theta$ K and so Moerbeke first wrote TK, which he then corrected. See 43rYvar and Gr 3, 196, 3var.

43r $\Theta$  "BK1" Gr MS A had  $\Lambda B$  and so Moerbeke first wrote LB, which he then corrected. See 43r $\Theta var$  and Gr 3, 196, 11var.

 $43r\Theta$ -Π "Quod autem...  $NK^{1}$ " Compare the text in 33rU.

43rΘ "TZ" Coner's correction (see 43rΘvar). Gr MS A had ΘK and so Moerbeke presumably wrote TK. See Gr 3, 196, 17var. Coner was no doubt led to his correction by the text in 33rU, and one wonders why Moerbeke did not make the correction.

43r $\Pi$  "ZK1" Moerbeke corrected ZE in Gr MS A. He no doubt first wrote ZE before making his correction. See 43r $\Pi$ var and Gr 3, 196, 19var.

43rΠ "Quod" Moerbeke has properly translated του in Gr MS A as if it were τό. The succeeding "a" was added by Coner (see 43rΠvar). I do not know what Moerbeke's original reading was, since Gr MS A had απο. See Gr 3, 196, 21var and 22var.

43r $\Phi$  "Que... ZH3" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 196, 25-26var. Compare the text in 33rV.

43r $\Phi$  "ipsarum" Coner's correction (see 43r $\Phi$ var). I do not know what Moerbeke's original reading was, since Gr MS A had  $\tau\omega\nu$  (see Gr 3, 198, 3).

43vA "proportionis ipsius" Moerbeke left a lacuna because Gr MS A had του απο where only τοῦ should have appeared. This is Coner's correction. See 43vAvar and Gr 3, 198, 7var.

43vB After "autem" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 198, 14var.

43vD "proportione eius" Coner's correction (see 43vDvar). Gr MS A had του, but Coner's correction implies τοῦ τοῦ (see Gr 3, 198, 21var).

43vD "proportioni eius" By this translation Moerbeke has shown that he read το in Gr MS A as if it were τῷ τοῦ. See Gr 3, 198, 22var.

- 43vE Before "multiplicans" we must understand "L" so that  $L \cdot D = O$ . Incidentally, "faciat" has been added by Moerbeke. See Gr 3, 198, 30var.
- 43vE, F "quod est" For this error see Part I, Chap. 1, Sect. III, List G, item (34). It was probably Coner who corrected each of these to "est quod" (see 43vE-Fvar). It would have been better simply to delete "quod" in each case, or at least to change the expression to "est qui." Moerbeke has often in this section translated o by "quod" rather than by "qui," i.e. as if it were δ or perhaps τὸ instead of δ (see Gr 3, 200, 2var, 5var and 30var).
- 43vE "N<sup>3</sup>" Moerbeke has corrected H in Gr MS A. See Gr 3, 200, 2var.
- 43vF "O" Moerbeke has corrected B in Gr MS A. See Gr 3, 200, 4var.
- 43vF "N" Coner's correction (see 43vFvar). Since Gr MS A apparently had N, I do not know what Moerbeke wrote. See Gr 3, 200, 7.
- 43vG "simul duo accepti" Sse above, Part I, Chap. 1, Sect. III, List C, item (31).
- 43vH "eadem" Moerbeke has correctly read αυτος in Gr MS A as if it were δ αὐτός. See Gr 3, 200, 18var.
- 43vH "ex proportione eius<sup>1,2</sup>" Moerbeke has translated του in Gr MS A as if it were τοῦ τοῦ. See Gr 3, 200, 19var and 22var.
- 43vH "ei" This translates τω in Gr MS A, but Coner would correct to "proportioni eius" (see 43vHvar), thus understanding the Greek as if it were τῶ τοῦ. See Gr 3, 200, 20var. Notice that Moerbeke himself has made this same correction in 43vI (see Gr 3, 200, 23var).
- 43vI "est<sup>3</sup>" In Gr MS A but omitted by Moerbeke. Added by Coner. See 43vIvar and Gr 3, 200, 26var.
- 43vJ Following "B" Gr MS A had E, which Moerbeke properly deleted after first writing it. See 43vJvar and Gr 3, 200, 30var.
- 43vK After "ad invicem" Gr MS A had τα μεγεθη (=magnitudines), which Moerbeke failed to translate. See Gr 3, 202, 7var.
- 43vK-L "proportio<sup>2</sup>... BGD<sup>1</sup>" I have added the signs of quotation missing from Gr MS A and Moerbeke's translation. Compare the text in 33vC. Note also that the quotation signs are missing from the quotations in 43vL-M, M, N, O, P, P-Q, S, T-U, and U. See Gr 3, 202, 7var; 204, 3var; 206, 2-5var, 7-9var.
- 43vL "conis" Moerbeke has properly corrected κωνικων in Gr MS A. See Gr 3, 202, 16var.
- 43vL-M "Sed...  $TG^1$ " See the comment to 43vK-L. Compare the text in 33vC-D.
- 43vM Before "et2" Coner added "sphaerae" (see 43vMvar), which was in Gr MS A but not translated by Moerbeke. See Gr 3, 202, 21var.
- 43vM "Proportio autem...  $TG^2$ " See the comment to 43vK-L. Compare the text in 33vD, where the specification of the cones appears in the preceding clause.

- 43vN "Quoniam enim eiusdem basis" This translates επει γαφ της αυτης δασεως in Gr MS A. Coner read επει as ἐπί and translated the whole phrase as "Super eadem enim base" (see 43vNvar and Gr 3, 202, 25var).
- 43vN "Proportio autem... TZ" See the comment to 43vK-L. Compare the text in 33vD.
- 43vO " $TG^2 \dots TZ$ " In Gr MS A (with  $\Theta\Gamma$  instead of  $\Theta Z$ ) but omitted by Moerbeke. Added by Coner. See 43vOvar and Gr 3, 204, 3var.
- 43vO "Proportio autem . . .  $TG^5$ " See the comment to 43vK-L. Compare the text in 33vD, where Coner corrected the false HAT to HTA, no doubt on the basis of this text in 43vO.
- 43vP "Proportio<sup>1</sup> autem...  $TZ^2$ " See the comment to 43vK-L. Compare the text in 33vD-E.
- 43vP-Q "Proportio autem2... TH1" See the comment to 43vK-L. Compare the text in 33vE.
- 43vQ Before "hoc" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 204, 12var.
- 43vR "AT" Coner's correction (see 43vRvar). Gr MS A had AB, which Moerbeke no doubt followed. See Gr 3, 204, 18var. Heiberg reports this as Moerbeke's correction.
- 43vR " $GB^2$ " Gr MS A had B $\Gamma$ . See Gr 3, 204, 22var. Both this and the preceding GB have signs of transposition (i.e. " $\ddot{G}\ddot{B}$ ") which I believe to be Coner's and which Heiberg implies are Moerbeke's.
- 43vS "Oportet... TG3" See the comment to 43vK-L. Compare the corrected text in 33vE-F.
- 43vS "id1" In Gr MS A but omitted by Moerbeke. Coner has added it. See 43vSvar and Gr 3, 204, 24.
- 43vS "ab1" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 43vSvar and Gr 3, 204, 24var.
- 43vS "GT" Coner's correction (see 43vSvar). Gr MS A had E $\Theta$  and presumably Moerbeke followed this. See Gr 3, 204, 25var.
- 43vS "que" Heiberg has misread this as "quam" (see Gr 3, 204, 28var).
- 43vT "TH3" Coner's correction (see 43vTvar). I am not sure what Moerbeke wrote, for Gr MS A had  $\Theta$ H. See Gr 3, 206, 2var.
- 43vT-U "quod ab  $AT^4 ... TH^1$ " See the comment to 43vK-L. Compare the text in 33vF.
- 43vU "quod a  $GT^2 \dots TH^3$ " See the comment to 43vK-L. Compare the text in
- 43vV "quod3" Moerbeke has read του in Gr MS A as if it were τό. See Gr 3, 206, 14var.
- 43vV "super TH6" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 43v Vvar and Gr 3, 206, 17-18var.

- 43vW "ita... AT" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 43vWvar and Gr 3, 206, 18var.
- 43vX "ei" Moerbeke has correctly read το in Gr MS A as if it were τω. See Gr 3, 206, 26var.
- 43vX "est2" It was not in Gr MS A and has been deleted either by Moerbeke or Coner. Heiberg would substitute  $\tau \tilde{\omega}$  (=ei). See 43vXvar and Gr 3, 206, 27var.
- 43vY "Dico... BG" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 207, 32var. Compare the text in 33vG, where Moerbeke translated δή as "etiam" while translating it in 43vY as "itaque."
- 44rA "cubi qui ab AB" Not in Gr MS A but added by Moerbeke. See Gr 3, 208, 7-8var and see the next comment.
- 44rA "Sed... BG4" Properly added by Coner though missing from Gr MS A and Moerbeke's translation. See 44rAvar and Gr 3, 208, 8-9var. My reporting of Coner's addition here and Moerbeke's addition noted in the preceding comment differs slightly from that of Heiberg, for I assume that Moerbeke took "ad cubum qui a BG" from Gr MS A, which according to Heiberg was rather the partial source of Coner's addition.
- 44rB "ad quadratum... BG" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 44rBvar and Gr 3, 208, 16-17var.
- 44rC "Dico... TB3" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 209, beginning of variant readings. Compare the text in 33vH and my comments thereto.
- 44rD "fit proportioni eius" Coner's correction and addition (see 44rDvar). Gr MS A had γαρ τω and Heiberg, interpreting Coner's correction, wrote γίνεται τω του (see Gr 3, 208, 26var).
- 44rD "cubi" Moerbeke has correctly read μυθω in Gr MS A as if it were μύδου. See Gr 3, 208, 27var.
- 44rD "Proportio autem... GTB" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. Compare the text in 33vH-1. The comparison shows Moerbeke's vacillation in translating ὑπό, earlier by "ab" and then later by "sub."
- 44rF "proportione eius quod" Moerbeke has translated του in Gr MS A as if it were τοῦ τοῦ. See Gr 3, 210, 5var. Cf. also 44rF-G (Gr 3, 210, 7var).
- 44rG "sub<sup>2</sup>" Coner's correction (see 44rGvar). Gr MS A had απο and presumably Moerbeke wrote "a" (see Gr 3, 210, 11var).
- 44rG-H "Proportio autem... TH2" and "Dico... TH6" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 211, beginning of variant readings. Compare the text in 33vI-J.
- 44rH "quod<sup>3</sup>" Moerbeke has corrected του in Gr MS A. See Gr 3, 210, 14var.
- 44rH "ab3" Omitted from Gr MS A and Moerbeke's translation. Added by Coner. See 44rHvar and Gr 3, 210, 16var.
- 44rH-I "Demonstrandum... TZ2" I have added the signs of quotation omitted from Gr MS A and Moerbeke's translation. Compare the text in 33vJ.

- 44rI "GD" Thus in Gr MS A. Coner corrects it to GT. See 44rIvar and Gr 3, 210, 19var, where Heiberg mistakenly reports the correction as Moerbeke's.
- 44rI "quod3" Added by Coner (see 44rIvar). In Gr MS A but omitted from Moerbeke's translation. See Gr 3, 210, 20var.
- 44rJ "maius" Thus in Gr MS A. Should be "minus" (see Gr 3, 210, 27var).
- 44rJ Before "idem" Heiberg would add  $\ddot{o}$  (=quod). See Gr 3, 210, 28var.
- 44rJ "sub2" Coner's addition (see 44rJvar). It was omitted from Gr MS A and Moerbeke's translation. See Gr 3, 210, 29var.
- 44rK-L "Ducatur... KE1" I have added the signs of quotation omitted from Gr MS A and Moerbeke's translation. Compare the text in 33vK, with its somewhat different translation.
- 44rL "Equalis... TB2" In Gr MS A but omitted by Moerbeke. Added by Coner. See 44rLvar and Gr 3, 212, 6-10var.
- 44rL-M "Oportet... TB1" Compare the text in 33vK-L, with its slightly different translation.
- 44rN "quod<sup>1</sup>" Added by Coner (see 44rNvar). Not in Gr MS A. See Gr 3, 212, 19var.
- 44rO "et permutatim... TA5" I have added the signs of quotation missing from Gr MS A and Moerbeke's translation. See Gr 3, 212, 25var. Compare the text in 33vL-M, with its somewhat different translation.
- 44rO "KL2" Coner's correction and not Moerbeke's, as Heiberg implies (see 44rOvar). Gr MS A and Moerbeke's translation had K. See Gr 3, 212, 27var.
- 44rO "quod" Missing from Gr MS A and Moerbeke's translation. Added by Coner. See 44rOvar and Gr 3, 212, 28var.
- 44rP "ipsi" Moerbeke has properly read της in Gr MS A as if it were τη. See Gr 3, 214, 1var.
- 44rR "AT2" Thus in Gr MS A. Should be BT. See Gr 3, 214, 9var.
- 44rS "a  $GT^3$ " Coner's correction (see 44rSvar). Gr MS A had  $v\pi o \Gamma\Theta B$  and presumably Moerbeke wrote "sub GTB" (see Gr 3, 214, 17var).
- 44rS "TH4" The -H is in Coner's hand (see 44rSvar). I do not know what letter was written by Moerbeke, for Gr MS A had  $\Theta$ H. See Gr 3, 214, 19.
- 44rS-T "Sed.... GT" The first part of this passage in 44rS, namely "Sed... GTB," was added by Coner, as were "ergo" and "in TH" in 44rT (see 44rSvar and Tvar). In addition, Coner corrected "sub1" in 44rT to "a" (see 44rTvar). Thus for the whole passage Gr MS A had only outwo to  $\alpha\pi$ 0 A $\Theta$ προς το υπο  $\Gamma\Theta$ , which indeed Moerbeke translated. With Coner's additions the acceptable Greek text becomes ώς δὲ τὸ ἀπὸ ΑΘ ἐπὶ τὴν ΘΗ πρὸς τὸ ύπο ΓΘΒ ἐπὶ τὴν ΘΗ οὕτως το ἀπο ΑΘ προς το ύπο ΓΘΒ. το ἄρα ἀπο  $A\Theta$  ἐπὶ τὴν  $\Theta$ H πρὸς τὸ ἀπὸ  $\Gamma\Theta$ . See Gr 3, 214, 19-20var and 21var, where Heiberg has reported Coner's additions in a somewhat confused manner.
- 44rT "ad3... eo" Coner's addition (see 44rTvar). Not in Gr MS A or in Moerbeke's translation (see Gr 3, 214, 23var). Moerbeke correctly wrote the succeeding phrase "quod a TB" though it was missing from Gr MS A.

- 44rU "ex proportione eius quod" See the comment to 44rF and Gr 3, 214, 31var.
- 44rV " $BG^2$ " Coner has written -G (see 44rVvar). I do not know what Moerbeke's original reading was, for Gr MS A had B $\Gamma$ . See Gr 3, 216, 6.
- 44rW "AT" Thus in Gr MS A. Coner correctly changed it to AB. See 44rWvar and Gr 3, 216, 8var.
- 44rX "Palam... dupla" Compare the text in 33vQ, where there are some differences in text and translation.
- 44rX "BA3" Gr MS A had AB. See Gr 3, 216, 18var.
- 44rX "que ab his" Coner's important addition (see 44rXvar). Moerbeke had failed to translate  $\tau\omega\nu$   $\alpha\pi\sigma$  in Gr MS A. See Gr 3, 216, 18var. The meaning is that the square of AB is greater than the sum of the squares of the lines containing the obtuse angle.
- 44rY "equali" Moerbeke has properly read ισον in Gr MS A as if it were ἴσου. See Gr 3, 216, 21var.
- 44rY-Z "et hoc... dicentur" Heiberg was suspicious of this passage and so deleted it. See Gr 3, 216, 24-25var.
- 44rZ "Sit... emisperio" Compare the text in 33vR-S.
- 44rZ "TEZ" Moerbeke has corrected ΘEZE in Gr MS A. See Gr 3, 216, 30var. Heiberg claims that Moerbeke originally wrote TEZE. This may be so, but I am not sure that a final -E has been erased.
- 44rZ "LE" Coner's correction (see 44rZvar). Gr MS A had  $\Delta E$  and presumably Moerbeke wrote DE. See Gr 3, 217, 32var.
- 44vB "Quod... habet" Compare the text in 33vS, with slight differences in the translation. In the earlier passage Gr MS A had  $\delta\eta$  (=itaque), while here it had  $\delta\epsilon$  (=autem). See Gr 1, 226, 6var and Gr 3, 218, 7.
- 44vC "que" Added by Moerbeke, not in Gr MS A. See Gr 3, 218, 13var.
- 44vC "Quod autem... AB" Compare the text in 33vS.
- 44vC "sub" Heiberg reports this as Coner's correction of Moerbeke's "ab" (see Gr 3, 218, 18var). But I believe that it was written directly by Moerbeke.
- 44vD "trigona" Moerbeke has read τριγωνω in Gr MS A as if it were τρίγωνα. See Gr 3, 218, 21var.
- 44vD "fit" Moerbeke has properly read the abbreviation for γαο in Gr MS A as if it were γίνεται. See Gr 3, 218, 21var.
- 44vE "Maius... simulutroque" Compare the text in 33vS.
- 44vE "quod ab AR ei" Coner's addition (see 44vEvar). Omitted from Gr MS A and Moerbeke's translation. Heiberg, following the Basel ed., would alter it to  $\tau \tilde{\phi}$  darò AP (=ei quod ab AR). See Gr 3, 218, 27var.
- 44vE "sub ARG" Coner's correction (see 44vEvar). I am not sure what Moerbeke's original reading was. Heiberg, Gr 3, 218, 27var, reports only the "sub" as Coner's correction.
- 44vE After "quod<sup>5</sup>" Gr MS A had και, which Moerbeke did not translate. See Gr 3, 220, 1var.

- 44vF "fit<sup>1,2</sup>" Moerbeke properly read the abbreviation for γαρ εστι in Gr MS A as if it were γίνεται. See Gr 3, 220, 3var and 5var.
- 44vF After "maius" Moerbeke or Coner erased "eo" by which Moerbeke had translated the false reading of του in Gr MS A. See 44vFvar and Gr 3, 220, 3var.
- 44vF "sub  $AKG^1$ " Coner's correction (see 44vFvar). Gr MS A had  $\alpha\pi$ 0 K $\Gamma$  and presumably Moerbeke wrote "a KG" (see Gr 3, 220, 4var).
- 44vF "secundum" Coner corrected this to "3" (see 44vFvar). That is, the proper citation to the *Elements* is Prop. II.3. Cf. Gr 3, 220, 6var.
- 44vF "elementationis" See above, Part I, Chap. 1, Sect. III, n. 9.
- 44vG "Ei... MKG" Compare the text in 33vT and my comments. The correct reading here in 44vG of XKA and MKG should have alerted Moerbeke, as it did Coner, to the error and omission in Gr MS A in 33vT.
- 44vG "quod4" By this translation Moerbeke has corrected τα in Gr MS A. See Gr 3, 220, 11var.
- 44vH "XKA" Coner's correction (see 44vHvar). Gr MS A had  $\Xi$ AK and presumably Moerbeke wrote XAK. See Gr 3, 220, 15var.
- 44vH "quod²" and "eo quod³". These translate το and τω in Gr MS A, Moerbeke having read the latter as τοῦ. Heiberg, following the Basel ed., would transpose τό and τοῦ. See Gr 3, 220, 16var.
- 44vH " $GAR^{1,2}$ " Coner's corrections (see 44vHvar). Gr MS A had A $\Gamma$ P and presumably Moerbeke wrote AGR. See Gr 3, 220, 17var.
- 44vH "Quare... AR" Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 220, 18-19var. Compare the slightly different translation in 33vT.
- 44vI-J "Quam...  $BK^1$ " Gr MS A omitted the signs of quotation, but they were added by Moerbeke. See Gr 3, 220, 26-27var. Compare the text in 33vT.
- 44vJ "BK" Coner's correction (see 44vJvar), no doubt from the correct reading of BK in 33vT. Here in 44vJ Gr MS A had ΓK and presumably Moerbeke wrote GK. See Gr 3, 220, 27var. Heiberg wrongly reported the correction as Moerbeke's.
- 44vJ "BK2" Coner's correction (see 44vJvar). Gr MS A apparently had BK and so I am not sure what Moerbeke's original reading was. See Gr 3, 222, 1.
- 44vJ "quod ABK" Moerbeke translated το απο ABK in Gr MS A as if it were τὸ ABK. See Gr 3, 222, 6var.
- 44vK "MK<sup>2</sup>" Coner's correction (see 44vKvar). Gr MS A and Moerbeke's translation had MN. See Gr 3, 222, 10var. Heiberg wrongly reports the correction as Moerbeke's.
- 44vK "AR2" Moerbeke has corrected APK in Gr MS A. See 44vKvar and Gr 3, 222, 10var.
- 44vK "AB, quod quidem est" Coner's correction. I am not sure what Moerbeke's original reading was, but apparently he thought he saw οσπεφ instead of οπεφ in Gr MS A (see 44vKvar and Gr 3, 222, 11), and this confused him.

- 44vL "ipsi2" Thus in Gr MS A. Should be "ipsius" (see Gr 3, 222, 16var).
- 44vL ''ZA'' Thus in Gr MS A but corrected by Coner to ZL. See 44vLvar and Gr 3, 222, 16var.
- 44vL "LZ1" Coner's correction (see 44vLvar). Gr MS A had AZ, as no doubt did Moerbeke's translation. See Gr 3, 222, 16var.
- 44vL ''NL'' Moerbeke or Coner corrected NMΛ in Gr MS A. See 44vLvar and Gr 3, 222, 17var.
- 44vM-N "Maiorem ergo... M" Compare the text in 33vU-V, with slight differences in translation.
- 44vM " $ZT^1$ " Gr MS A had B $\Theta$ Z and Moerbeke wrote BZT. Then either Moerbeke or Coner deleted B. See 44vMvar and Gr 3, 222, 21var. Cf. the text in 33vU, where Moerbeke had ZT.
- 44vM "BA" Thus in Gr MS A. It ought to be BD. See Gr 3, 222, 22var.
- 44vN "AN" Thus in Gr MS A. It should be LN. See Gr 3, 222, 30var.
- 44vO "NTZ" Coner's correction (see 44vOvar). Gr MS A had N $\Theta\Xi$  and presumably Moerbeke wrote NTX. See Gr 3, 224, 2var.
- 44vO "Palam... BAD" Moerbeke omitted the signs of quotation, which I have added. Compare the text in 33vV.
- 44vO ''BAD'' Coner's correction (see 44vOvar), no doubt corrected from the text in 33vV. Gr MS A had EZΘ and presumably Moerbeke wrote EZT (see Gr 3, 224, 6var).
- 44vP "ex traditione" See above, Part I, Chap. 1, Sect. III, List G, item (35).
- 44vP "Melesio" and "Isedoro" These transliterated μηλησιω and ισηδωρω in Gr MS A. See Gr 3, 224, 9var. They were corrected by Coner to "Milesio" and "Isidoro" (see 44vPvar).

## Commentary on the Liber Archymedis de conoydalibus et speroydalibus (45rA-52vO)

- 45rA-B "Mitto.... dubitata" This translation is very awkward. The meaning is clearly expressed by Heath, Archimedes, p. 99: "In this book I have set forth and send you the proofs of the remaining theorems not included in what I sent you before, and also of some others discovered later which, though I had often tried to investigate them previously, I had failed to arrive at because I found their discovery attended with some difficulty. And this is why even the propositions themselves were not published with the rest. But afterwards, when I had studied them with greater care, I discovered what I had failed in before."
- 45rB "omnino difficultatem habere" Moerbeke seems to have read δυσποτολον εχειν in Gr MS A as if it were δύσκολον ἔχειν. See Gr 1, 246, 6var.

- "inventiones" This translates ευρεσιας in Gr MS A. Heiberg would write εύρέσιος. See Gr 1, 246, 7var.
- 45rC "paramikeas... superlatas" Again Moerbeke has followed his practice of first transliterating technical terms and then providing them with Latin approximations. These are the spheroidal figures (ellipsoids) which Archimedes speaks of as "oblong" and "flat" (see Gr 1, 246, 14).
- 45rD "vocetur" This translates καλεισθω in Gr MS A. Heiberg, following Torelli, and no doubt because of the succeeding clauses, would change this to μαλεῖσθαι (=vocari). See Gr 1, 246, 19var.
- 45rF "Problematizabantur autem" Moerbeke's effort to translate προεβαλλεν τοδε, which Gr MS G changed to προεβάλλετο δέ. See Gr 1, 248, 11var.
- 45rG "ad alias" This translates ποτι τα αλλα in Gr MS A. But obviously ποτ' άλλαλα (=ad invicem) is required. See Gr 1, 248, 18var. The question posed is equivalent to Proposition 25 (=Gr. 24), where we find "ad invicem" (see 49vO).
- 45rG "supponebamus". This translates υπετιθεμεθα in Gr MS A. Heiberg would write ὑποτιθέμεθα (=supponimus). See Gr 1, 248, 19var.
- "propinquissime" This translates εγγιστα in Gr MS A. It refers to the asymptotes of the hyperbola. Note that Moerbeke's translation assumes a preceding at that was not in Gr MS A. See Gr 1, 248, 21var. Compare Gr 1, 248, 24 and 27, where αι appeared in Gr MS A before εγγιστα.
- 45rI "propinguissimis" By this translation Moerbeke properly read τας in Gr MS A as if it were  $\tau \bar{\alpha} \nu$ . Similarly, by his translation "manentem diametrum" in the preceding sentence he has read τα in Gr MS A as if it were τάν. See Gr 1, 250, 2var and 4var.
- 45rI "poteusam, i.e. adexistentem" Moerbeke again renders a technical term by a transliteration followed by an alternative Latin term. The meaning of the whole sentence is that the straight line between the vertex of the conoid and the vertex of the cone enveloping the conoid is called the line "adjacent to the axis.''
- 45rL "quam" Omitted from Gr MS A but properly added by Moerbeke in imitation of the similar text in 45rM. See Gr 1, 250, 29var.
- 45rL "simulutraque" This translates συναμφοτερα in Gr MS A. Heiberg would change it to συναμφοτέραις (=simulutrisque). See Gr 1, 250, 29var. In addition, Heiberg would change the succeeding τω αξονι in Gr MS A to τῷ τε άξονι in conformity with the similar construction given for the last term in the proportion ("ambabus... axi3" in 45rM). Assuming Heiberg's correction and Moerbeke's style of translation, the text would read "simulutrisque equalis, scilicet axi portionis et duple poteuse axi" as in the similar passage in 45rT-U.
- 45rM "simulutraque" Heiberg has made the same corrections noted in the preceding comment. See Gr 1, 252, 8var and 9var.

- 45rN "tripla" Moerbeke's error. It should be "triple." He had properly translated it in 45rM. He was perhaps momentarily thrown off by a missing iota subscript (i.e. τριπλασια instead of τριπλασια). However the definite article (even without its iota subscript, i.e. τα instead of τα) should have prevented this error.
- 45rN "sectio" Moerbeke has correctly read τομας in Gr MS A as if it were τομά. See Gr 1, 252, 14var.
- 45rN "restituatur" Moerbeke has translated αποκαταστη in Gr MS A as if it were ἀποκατασταθη. See Gr 1, 252, 15var.
- 45rN "paramales... speroydale" Note Moerbeke's incorrect transliteration, which was no doubt a mere slip of the pen. Again we see Moerbeke following the practice of transliterating the technical term and then adding the Latin equivalent. See Gr 1, 252, 17.
- 45rO Before "epiplates" Gr MS A had το πεφιλαφθεν σχημα υπο τας του οξυγωνιου κωνου τομας (see Gr 1, 252, 20-21), which Moerbeke did not translate, perhaps because he intended his translation of the same phrase in the preceding sentence ("figura comprehensa a sectione oxygonii coni") to be understood in this sentence. Again Moerbeke has presented the term for a flat spheroid in a manner similar to his treatment of the term for an oblong spheroid, i.e. by transliterating the Greek term and then following it with a Latin equivalent.
- 45rP "speroydalem figuram" Gr MS A had σφαιροειδεως σχηματων. Thus Moerbeke has changed the second word to a singular form. Heiberg, on the other hand, preferred to change the first word to a plural form. See Gr 1, 252, 27var.
- 45rQ "que" Moerbeke has read  $\alpha \varsigma$  in Gr MS A as if it were  $\ddot{\alpha}$ . See Gr 1, 254, 4var.
- 45rR "Portiones" Moerbeke has correctly read τμαμα in Gr MS A as if it were τμάματα. See Gr 1, 254, 14var.
- 45rR "habeant" Moerbeke has translated εχοντι in Gr MS A as if it were έχωντι. See Gr 1, 254, 16var.
- 45rS "omologas, i.e. correspondentes" Again note Moerbeke's practice of transliterating the Greek term before giving a Latin equivalent. He did so in this case because ordinarily the term was to be rendered by "eiusdem proportionis" or "conproportionalis" or simply "proportionalis."
- 45rT "[non]" Following Heiberg, I have added this. See Gr 1, 254, 27var and 45rTvar.
- 45rT After "eundem2" Heiberg would add τοῦτον, which with a change of gender for agreement with "proportionem" would be equivalent to "hanc" (see Gr 1, 256, 1var). Cf. the similar expressions in 45rL, M, U, W, where "hanc" appears in each case.
- 45rX-vA "ad alia" This translates ποτι τα αλλα in Gr MS A. The Greek should be ποτ ἄλλαλα (=ad invicem). See Gr 1, 258, 5var.

- 45vA "triplam" That is, cubed or triplicated.
- 45vA "quia" Heiberg, Gr 1, 258, 6var, claims that Moerbeke is translating this as if it were δη ὅτι, but in fact Moerbeke occasionally translated διότι by "quia" (see the Index of Latin Terms).
- 45vA "portione" Thus in Gr MS A. It should be "figura" (see Gr 1, 258, 12var).
- 45vB After "et" Gr MS A had επιταγματα, which Moerbeke failed to translate. See Gr 1, 258, 16-17.
- 45vB After "proposita" Gr MS A had ευτυχει (=vale), which Moerbeke failed to translate. See Gr 1, 258, 18.
- 45vC "omnibus" Moerbeke has correctly read πασαι in Gr MS A as if it were πάσαις. See Gr 1, 258, 19var.
- 45vC "conus<sup>2</sup>... coni<sup>5</sup>" This appears twice in Gr MS A, but Moerbeke has properly translated it only once. See Gr 1, 258, 23-25var.
- 45vC-D "apotmama, i.e. abscisio, coni" Once more notice Moerbeke's practice of transliterating the Greek term before giving its Latin equivalent. He introduced "abscisio" instead of "portio" because he had always used the latter to translate  $\tau \mu \bar{\eta} \mu \alpha$  (= $\tau \mu \bar{\alpha} \mu \alpha$ ).
- 45vD "copulata" Moerbeke has properly read επιζευχθεισας in Gr MS A as if it were ἐπιζευχθεῖσα. See Gr 1, 260, 2var.
- 45vF 'tomos' Moerbeke had no appropriate word for the frustum of a cylinder; hence he merely transliterated τομος of Gr MS A. See Gr 1, 260, 11. For Moerbeke's earlier confusion of the word with τομεύς, see above, Part I, Chap. 1, Sect. III, List G. item (6).
  - 45vF "sectionum" Moerbeke has correctly read τομα in Gr MS A as if it were τομαν. See Gr 1, 260, 15var.
  - 45vG "multitudine" Moerbeke has correctly read πληθη in Gr MS A as if it were πλήθει. See Gr 1, 260, 19var.
  - 45vH "Demonstratio... est" See Heath, Archimedes, p. 105.
  - 45vH, I, J "ordinata" and "habentia" (both cases) Moerbeke has inadvertently used the neuter gender because μεγέθεα is neuter. Needless to say the feminine should have been used because of the Latin translation magnitudines.
  - 45vI "habentia" This translates εχοντι in Gr MS A. Heiberg would write ἔχωντι (=habeant). See Gr 1, 260, 28var. The fact that the clause began with "Si" apparently compelled Moerbeke to introduce "sint" (not in the Greek text) and to use "habentia" for ἔχοντι instead of his customary rendering of it as "habent."
  - 45vI, J "omnes ad quas dicuntur" This translates Gr MS A in each case. See Gr 1, 262, 4 and 6. It means "the sum of those which are proportional to them." Notice that in the case of the second "dicuntur" Moerbeke has correctly read λεγωνται in Gr MS A as if it were λέγονται.
  - 45vK "M" Moerbeke has corrected M N in Gr MS A. See Gr 1, 262, 14var.
  - 45vK Before "quam" Heiberg would add καί. See Gr 1, 262, 16var.

- 45vL "X1" Moerbeke has corrected Z in Gr MS A. See Gr 1, 262, 18var.
- 45vM "habent" Moerbeke has correctly read εχωντι in Gr MS A as if it were εχοντι. The same is true for "habent" in 45vN. See Gr 1, 264, 3var and 8var.
- 45vN ''dicantur'' Moerbeke has read λεγωτι in Gr MS A as if it were λέγωνται. See Gr 1, 264, 12var.
- 45vN "S<sup>2</sup>" In Gr MS A but should be deleted. The same is true for "S" in 45vO. See Gr 1, 264, 13var and 18var.
- 45vN, O "non... ad unum" In each case Moerbeke has correctly read μηδεποθεν in Gr MS A as if it were μηδὲ ποθ' εν. See Gr 1, 264, 13var and 16var
- 45vO " $\Omega^{1,2}$ " In Gr MS A but ought to be deleted. See Gr 1, 264, 15var and 19var.
- 45vP "accidat" That is, "be applied." This translates παρεμπεση in Gr MS A. Heiberg would change it to παραπέση. See Gr 1, 266, 3var.
- 45vQ ''lateri'' Moerbeke has thus read ταις... πλευφαις in Gr MS A as if it were τα... πλευφα. See Gr 1, 266, 10var.
- 45vQ "medietati" Moerbeke has correctly read ημισα in Gr MS A as if it were ήμισέα. See Gr 1, 266, 13var.
- 45vR "Sint<sup>3</sup>" Moerbeke has read η in Gr MS A as if it were ἔστω. See Gr 1, 266, 22var.
- 45vS "quorum" This translates  $\omega v$  in Gr MS A. Heiberg, following Torelli, would write  $\dot{\epsilon}\phi$   $\dot{\delta}v$  (=in quibus). See Gr 1, 266, 22var.
- 45vS "TI" and "KL" That is, line T + I and line K + L.
- 45vS "Ipsarum quidem T, I linearum" Moerbeke has read τα μεν ΘΙ γραμμα in Gr MS A as if it were τᾶν μὲν ΘΙ γραμμᾶν. See Gr 1, 266, 26var. The text is somewhat ambiguous. What is meant is that T + I = 2I. Similarly the next clause means K + L = 3K.
- 45vU ''quoniam... excedunt'' Heiberg would delete this. See Gr 1, 268, 8-9 and 269, n. 1.
- 45vV "maiora" Moerbeke has correctly read μειζον in Gr MS A as if it were μείζονα. See Gr 1, 268, 14var.
- 45vW "equalis" Moerbeke has corrected ισαι in Gr MS A. See Gr 1, 268, 21var.
- 45vW "excedentibus" Moerbeke has read υπερεχουσαι in Gr MS A as if it were ὑπερεχουσαν. See Gr 1, 268, 24var.
- 45vW "elicis" Heiberg misreports this as "helicis" (see Gr 1, 270, 2var).
- 46rB "maiorem" Moerbeke has correctly read μειζον or μειζων in Gr MS A as if it were μείζονα. See Gr 1, 270, 12var.
- 46rB "ad alia" This translates ποτι τα αλλα in Gr MS A. It should be ποτ  $\mathring{a}\lambda\lambda\alpha\lambda\alpha$  (=ad invicem). See Gr 1, 270, 19var.
- 46rC "erit" Moerbeke has correctly read επειτα in Gr MS A as if it were ἐσσεῖται. See Gr 1, 270, 21var.

- 46rC "tetragono quod" Moerbeke has thus corrected τετραγωνον το in Gr MS A. See Gr 1, 270, 22var.
- 46rC "equedistante sibi" Moerbeke has correctly read παραλληλούς αυτάς in Gr MS A as if it were παραλλήλου αὐτα. See Gr 1, 270, 23var.
- 46rC "in conicis elementis" See 46rCvar and Gr 1, 271, n. 4. Moerbeke's marginal reference to Prop. III.20 of Apollonius' Conics was drawn from a scholium in Gr MS A. See Gr 3, 322. In the extant codices the proper reference is to Prop. III.17.
- 46rC "4" Not in Gr MS A. Added by Moerbeke. See Gr 1, 270, 25var.
- 46rD "abscindantur" Moerbeke has properly read αποτμηθεοντι in Gr MS A as if it were ἀποτμαθέωντι. See Gr 1, 270, 26var.
- 46rD "in ipsis" Moerbeke has properly read εις αυταν in Gr MS A as if it were είς αὐτά. See Gr 1, 272, 2var.
- 46rD "que" By this translation Moerbeke has properly read ταν in Gr MS A as if it were τάς. See Gr 1, 272, 5var.
- 46rE "sint" Moerbeke has thus interpreted an unclear reading in Gr MS A. See Gr 1, 272, 10var.
- 46rF "secus... sectione" This literally translates παρ' αν δυνανται αι απο τας τομας in Gr MS A (see Gr 1, 272, 16-17). It is equivalent to the modern term parameter and stands for the "straight line to which the rectangle which has its breadth equal to the abscissa of a point and is equal to the square of the ordinate must be applied as base." See Heath, Archimedes, p. clxviii. See also the expanded translation of this passsage by Heiberg in Gr 1, p. 273. Moerbeke was obviously unsure of the meaning of this conventional expression, for he wrote  $\pi\alpha\varrho\alpha\nu\dots\alpha\pi$ o in the margin and added another translation (see 46rFvar).
- 46rF Before "usque ad axem" we are to understand "a vertice sectionis" and after "axem" the word "coni" (see Heiberg's Latin translation of Gr 1, 272, 17 at Gr 1, 273). This "line [drawn from the vertex of the section] as far as the axis' is, in modern terms, the semiparameter.
- 46rH "M1" Thus in Gr MS A. It should be N. See Gr 1, 274, 1var.
- 46rH "secuscadentia" That is, the rectangle applied to a line equal to N. The whole sentence can be written in modern form as  $x^2 = Ny$ , where x is any line which is drawn from the section to the diameter (axis) DK of the section and which is parallel to AE and where y is the distance from D to the point at which the parallel line meets DK.
- 46rH "habebit et" This translates εχοι και in Gr MS A. Heiberg would write ἔχοι οὖν κα. See Gr 1, 274, 7var.
- 46rK "diametro" Moerbeke has thus corrected the reading of μησ in Gr MS A. See Gr 1, 274, 22var.
- 46rK "cum". This translates μετα in Gr MS A, which is obviously wrong. Instead of μετα Heiberg, following Torelli, would write διαμέτρου (see Gr 1,

- 274, 23var). The translation ought to read "a diametro sectionis rectanguli coni" instead of "ab ea que cum sectione rectanguli coni."
- 46rK "5" Gr MS A had  $\delta$ " (=4.). See Gr 1, 276, 1var.
- 46rL "sectionis" Moerbeke has correctly read τα... τομα in Gr MS A as if it were τας... τομας. See Gr 1, 276, 4var.
- 46rL "hoc est" Not in Gr MS A but added by Moerbeke. See Gr 1, 276, 6var, where Heiberg has added η. The reading τουτέστι in the Basel ed. seems preferable because of its appearance in the same context in 46rM (see Gr 1, 276, 13).
- 46rN "polygonium" That is, a regular polygon.
- 46rN "etiam" Gr MS A had δη, which Moerbeke on occasion translated as etiam (see the Index of Latin Terms). Hence Heiberg should have indicated Moerbeke's agreement with Gr MS A rather than have suggested that Moerbeke omitted the word. Heiberg would change the δη to δέ. See Gr 1, 276, 22var.
- 46rO "secant" Moerbeke has correctly read τεμνονται in Gr MS A as if it were τέμνοντι. See Gr 1, 276, 25var.
- 46rO "autem²" This translates δε in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 278, 2var.
- 46rO "rectilineum" Not in Gr MS A but added by Moerbeke. See Gr 1, 278, 3var.
- 46rO "id ipsum" This translates το αυτο in Gr MS A. Heiberg would simply write αὐτό. See Gr 1, 278, 3var.
- 46rP "ipsum" Moerbeke has correctly read τα in Gr MS A as if it were τό. See Gr 1, 278, 7var.
- 46rQ "Habent" Moerbeke has correctly read εχωντι in Gr MS A as if it were ἔχοντι. See Gr 1, 278, 12var.
- 46rQ "id ipsum" This translates το αυτο το in Gr MS A. Heiberg would write τὸ αὐτό. See Gr 1, 278, 18var.
- 46rS "sit" Its subject is to be understood as "circulus  $\Psi$ " (see Heiberg's Latin translation of Gr 1, 278, 26).
- 46rS "polygonium" That is, a regular polygon.
- 46rS "quoddam" Moerbeke has correctly read τη in Gr MS A as if it were τι. See Gr 1, 280, 4var.
- 46rS "AE[GZ]" Moerbeke changed  $\Delta E$  in Gr MS A to AE. I have added -[GZ]. See Gr 1, 280, 5var.
- 46vA "6" Gr MS A had  $\varepsilon'$  (=5.). See Gr 1, 280, 16var.
- 46vD "7" Gr MS A had 5' (=6.). See Gr 1, 282, 12var.
- 46vD "ad invicem" Moerbeke has correctly read ποτι τα αλλα in Gr MS A as if it were ποτ' ἄλλαλα. See Gr 1, 282, 14var.
- 46vE After "diametris" Moerbeke wrote and deleted "tetragonorum" (see 46vEvar). Gr MS A seems to have improperly written τμαμα (see Gr 1, 282, 15var). Heiberg has reported Moerbeke's "tetragonorum" but not its deletion.

- 46vF "KL1" Moerbeke has corrected KA in Gr MS A. See Gr 1, 282, 25var.
- 46vF "autem2" This translates δε in Gr MS A. Heiberg would change it to  $\delta \dot{\eta}$  (=itaque). See Gr 1, 282, 25var.
- 46vG "habent<sup>1,2</sup>" Moerbeke has correctly read εχωντι in Gr MS A as if it were ἔχοντι. See Gr 1, 284, 7var.
- 46vG "conproportionales" This translates ομολογοι in Gr MS A. It would be less ambiguous if Moerbeke had translated it as "correspondentes" (see Heiberg's Latin translation of Gr 1, 284, 8 on Gr 1, 285).
- 46vH "8" Gr MS A had  $\zeta'$  (=7.). See Gr 1, 284, 9var.
- 46vI "coni" Omitted from Gr MS A but properly added by Moerbeke. See Gr 1, 284, 17var.
- 46vJ "DG" Gr MS A had  $\Gamma\Delta$ . See Gr 1, 284, 24var.
- 46vJ "[coni]" I have added. It was in Gr MS A but Moerbeke failed to translate it. See Gr 1, 284, 25var.
- 46vK "autem" Thus in Gr MS A. Heiberg, following Torelli, would write δή (=itaque). See Gr 1, 286, 4var.
- 46vK "recta producta educatur" This translates ευθεια αχθεισα εμδεδλησθω in Gr MS A. Heiberg would write εὐθεῖαι ἀχθεῖσαι ἐκδεδλήσθων, which would be translated "recte producte educantur" in Moerbeke's style. See Gr 1, 286, 4var.
- 46vK "AB" Thus in Gr MS A. It ought to be DB. See Gr 1, 286, 11var.
- 46vL "sunt" Moerbeke has correctly read εντη in Gr MS A as if it were έντι. See Gr 1, 286, 13var.
- 46vL "autem3" Thus in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). The same is true for the "autem" in 46vM. See Gr 1, 286, 16var and 21var.
- 46vM "enim" Omitted from Gr MS A but properly added by Moerbeke. See Gr 1, 286, 18var.
- 46vO "sub2" Omitted from Gr MS A but properly added by Moerbeke. See Gr 1, 288, 8var.
- 46vO "DB" Moerbeke has corrected AB in Gr MS A. See Gr 1, 288, 10var.
- 46vP "EG" Thus in Gr MS A. It ought to be EZ. See Gr 1, 288, 13var.
- 46vP "LX" Moerbeke has corrected A\(\mathbb{E}\) in Gr MS A. See 46vPvar and Gr 1, 288, 15var.
- 46vP "AB" Thus in Gr MS A. It ought to be DB. See Gr 1, 288, 17var.
- 46vP "ZL" Thus in Gr MS A. It ought to be XL. See Gr 1, 288, 19var.
- 46vR "ergo" Omitted from Gr MS A but properly added by Moerbeke. See 46vRvar and Gr 1, 290, 1var.
- 46vR "G, M sunt" Gr MS A had ΓM... εστι. See Gr 1, 290, 5. Hence Moerbeke should have written "GM est" so that the whole sentence would state that the line GM is in the surface of the cone, as is apparent from Apollonius, Conics, Prop. I.1.
- 46vS "9" Gr MS A had  $\eta'$  (=8.). See Gr 1, 290, 12var.

- 46vT "ipsius" This translates αυτου in Gr MS A. Following the Basel ed. Heiberg would write ά τοῦ. See Gr 1, 290, 17var. The acceptance of this change would necessitate the deletion of "ipsius" in Moerbeke's translation, since "sectio" implies ά and "coni" implies τοῦ.
- 46vT "erecte" Moerbeke has correctly read ενεστακουσας in Gr MS A as if it were ἀνεστακούσας. See Gr 1, 290, 18var.
- 46vT "autem" See the second comment to 46vL and Gr 1, 290, 21var.
- 46vT Before "stans" Gr MS A had απο του κεντρου (=a centro), which Moerbeke failed to translate. See Gr 1, 290, 22var.
- 46vU "DG" Gr MS A had  $\Gamma\Delta$ . See Gr 1, 290, 25var.
- 46vV "que2" and "ipsi2" These translate  $\alpha$  and  $\alpha$  in Gr MS A. Heiberg would write  $\dot{\alpha}$  (=cui) and  $\dot{\alpha}$  (=que). See Gr 1, 292, 4var and 5var.
- 46vV "circulus" and "vel ellipsis" Thus in Gr MS A (see Gr 1, 292, 9var), but both ought to be deleted because they are redundant with "circulus" and "oxygonii coni sectio" in 46vW and furthermore because "ellipsis" is a non-Archimedean term. The meaning, of course, is that, if  $N^2 = ZD \cdot DH$ , it is a circle that is described. But if  $N^2 \neq ZD \cdot DH$ , then an ellipse (or as stated here, "the section of an acute-angled cone") is described of such a nature that the square of the other diameter is to  $EB^2$  as  $N^2$  is to  $ZD \cdot DH$ . See Gr 1, 293, notes 2-4. But cf. 46vW-X, where "circulus vel oxygonii coni sectio" properly appears.
- 46vW "sectio" Moerbeke has correctly read τομαν in Gr MS A as if it were τομά. See Gr 1, 292, 13var.
- 46vW After "Conus" Heiberg would add  $\delta \epsilon$  (=autem). See Gr 1, 292, 24var.
- 46vX "erit aliquod" Moerbeke has correctly read εσσειτι in Gr MS A as if it were ἐσσεῖταί τι. See Gr 1, 294, 5var.
- 46vY "L<sup>2</sup>" Moerbeke has corrected A in Gr MS A. See Gr 1, 294, 11var and Mugler, Vol. 1, p. 176, 3var.
- 47rA "quod" Omitted from Gr MS A but added by Moerbeke. See Gr 1, 294, 12var.
- 47rA "ipsi" Moerbeke has correctly read  $\tau \alpha \zeta$  in Gr MS A as if it were  $\tau \tilde{\alpha}$ . See Gr 1, 294, 12var.
- 47rC "quidem que KB" Moerbeke's effort to translate the erroneous ποτ' α KB in Gr MS A. Heiberg would write τὸ ὑπὸ τᾶν AK, KB, which we could translate in Moerbeke's style by "quod sub AK, KB" (see Gr 1, 296, 1var).
- 47rE "10" Gr MS A had  $\theta'$  (=9.). See Gr 1, 296, 9var.
- 47rE "[non recta]" Omitted from Gr MS A and Moerbeke's translation, but it is necessary. See Gr 1, 296, 11var and "ut dictum est" in 47rF.
- 47rG ''ducantur'' Moerbeke has correctly read αχθω in Gr MS A as if it were ἄχθων. See Gr 1, 296, 26var.
- 47rJ "ipsi" Moerbeke has correctly read τας in Gr MS A as if it were τα. See Gr 1, 298, 17var.

- 47rJ ''ADB'' For the most part the syncopated forms are not used in this section of the work. Hence Heiberg would write  $A\Delta$ ,  $\Delta B$ . See Gr 1, 298, 22var.
- 47rJ After "diametro" Moerbeke has cited in the margin Apollonius, Conics, Prop. I.20 (see 47rJvar), a citation he took from the scholium in Gr MS A (see Gr 3, p. 322). In the extant copies of the Conics the proper reference would be to Prop. I.21.
- 47rK "ellipseos" Thus in Gr MS A. Should be deleted. See Gr 1, 298, 26var.
- "sunt<sup>3</sup>" Moerbeke has read εωντι in Gr MS A as if it were εντι or εοντι. Heiberg, following Torelli, would write ἐσσοῦνται. See Gr 1, 300, 1var.
- 47rL "ellipsim" Thus in Gr MS A, but it ought to be deleted. See Gr 1, 300, 7var. Of course, "sectionem oxygonii coni" is to be understood.
- 47rM "altera diameter" That is, "of the ellipse" (see Heiberg's Latin translation of Gr 1, 300, 8 on Gr 1, 301).
- 47rM Before "Sit" Gr MS A had added  $\iota'$  (=10.). See Gr 1, 300, 11var.
- 47rM "AB, GD" Moerbeke has thus corrected  $\alpha$  B $\Gamma\Delta$  in Gr MS A. See Gr 1, 300, 14var.
- 47rN "circulus" Moerbeke has thus inadvertently mistranslated κυλινδρος in Gr MS A. See Gr 1, 300, 16var.
- 47rN Before "Sed" Gr MS A had added  $\iota\alpha'$  (=11.). See Gr 1, 300, 20var.
- 47rN "maius" Moerbeke has read μειζων in Gr MS A as if it were μείζον. See Gr 1, 300, 21var.
- 47rO "est ipsi" Moerbeke has correctly read εντα in Gr MS A as if it were ἐντὶ τα. See Gr 1, 302, 1var.
- 47rO "GZ" Thus given correctly in Gr MS A. But Moerbeke had some hesitation about this reading. See 47rOvar and Gr 1, 302, 1var.
- 47rO "diametrum" By this translation Moerbeke has shown that he understood the succeeding τα in Gr MS A as if it were τάν. See Gr 1, 302, 2var.
- 47rO "cylindrus" Moerbeke has correctly read του κυλινδοου in Gr MS A as if it were μύλινδρος. See Gr 1, 302, 3var.
- 47rQ "ipsi1" Moerbeke has correctly read τας in Gr MS A as if it were τα. See Gr 1, 302, 11var.
- 47rQ "ZNH" Moerbeke has thus changed ZMH in Gr MS A, but he should simply have written ZH. See 47rQvar and Gr 1, 302, 12var.
- 47rQ "superficie" Omitted from Gr MS A but added by Moerbeke. It should rather be "periferia" (see Gr 1, 302, 13var).
- 47rR "quod10" Moerbeke has correctly read τω in Gr MS A as if it were τό. See Gr 1, 302, 22var.
- 47rS "equales1" Moerbeke has correctly read ισα in Gr MS A as if it were ἴσαι. See Gr 1, 304, 3var.
- 47rS "equales2" Thus in Gr MS A. Should rather be "equidistantes" (see Gr 1, 304, 4var).
- 47rS "KT" Thus in Gr MS A. Should rather be KO. See Gr 1, 304, 4var.

- 47rS "est<sup>2</sup>" Moerbeke has correctly read εν τη in Gr MS A as if it were έντι. See Gr 1, 304, 5var.
- 47rS "et²" or "et³" In a blind reference given in Gr 1, 304, 5var, Heiberg asserts that  $\kappa\alpha\iota$  (=et) in Gr MS A has been omitted by Moerbeke. But both "et²" and "et³" are in Moerbeke's hand.
- 47rT ''[10b.]'' I have added. Gr MS A had  $\iota\beta'$  (=12.). See Gr 1, 304, 12var.
- 47rU ''[10c.]'' I have added.
- 47rV Before "et quod" Gr MS A had απερ, which Moerbeke did not translate. See Gr 1, 304, 21var.
- 47rV "[10d.]" I have added. Gr MS A had y' = 13.). See Gr 1, 306, 1var.
- 47rV "conoydalis" Thus in Gr MS A, but obviously it should be "coni" (see Gr 1, 306, 4var).
- 47rV "sectio2... figuram" That is, the parabola by whose rotation the paraboloid is generated.
- 47rW "[10e.]" I have added.
- 47rW "[aut]" Omitted from Gr MS A and Moerbeke's translation, but it is necessary. See Gr 1, 306, 12var.
- 47rX "ipsa... figuram" That is, the hyperbola by whose rotation the hyperboloid is generated.
- 47rX "que comprehendit" Moerbeke has properly read παραλαμδανουσα in Gr MS A as if it were περιλαμδανούσα. See Gr 1, 306, 15var.
- 47rY "vero" Not in Gr MS A but added by Moerbeke. See Gr 1, 306, 21var.
- 47rY "Ipsa... figuram" That is, the ellipse by whose rotation the ellipsoid is generated.
- 47rZ "sectio" Omitted from Gr MS A but properly added by Moerbeke. See Gr 1, 306, 29var.
- 47rΘ "existentibus" Moerbeke has properly read εωντων in Gr MS A as if it were ἐόντων. See Gr 1, 308, 8var.
- 47vA "manifeste" Moerbeke has properly read φανεφον in Gr MS A as if it were φανεφαί. See Gr 1, 308, 11var.
- 47vA "11" Gr MS A had  $\iota\delta'$  (=14.). See Gr 1, 308, 12var.
- 47vC "recto" Written above by Moerbeke because Gr MS A had  $oq\theta \omega$  αλλω. But it should be deleted since "recto" establishes that the second plane is perpendicular to the cutting plane. See 47vCvar and Gr 1, 308, 24var.
- 47vC ''ABG'' Moerbeke has corrected BΓ in Gr MS A. See Gr 1, 308, 26var.
- 47vC "GA" Moerbeke has corrected  $\Gamma\Delta$  in Gr MS A. See 47vCvar and Gr 1, 308, 27var.
- 47vC "secundum AG" By this translation Moerbeke has revealed that he read κατα παν α  $A\Gamma$  as if it were κατὰ τὰν  $A\Gamma$ . See Gr 1, 310, 1var.
- 47vD "ipsi" Moerbeke has correctly read  $\alpha$  in Gr MS A as if it were  $t\tilde{\alpha}$ . See Gr 1, 310, 3var.
- 47vE "ABG" Gr MS A had A $\Gamma$ B. See Gr 1, 310, 8var.

- 47vE "rectas" See Gr 1, 310, 11var.
- 47vE "autem3" This translates  $\delta \epsilon$  in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 310, 13var.
- 47vF "Semicirculus... TZ" Heiberg would delete this. See Gr 1, 310, 16-18 and 311, n. 2.
- 47vF "TK" Gr MS A had K $\Theta$ . See Gr 1, 310, 16var.
- 47vF "fit" Moerbeke has correctly read the abbreviation for γαρ in Gr MS A as if it were for γίνεται. See Gr 1, 310, 17var.
- 47vG "CM2" Thus in Gr MS A. Should be BM. See Gr 1, 310, 25var.
- 47vH "CMB" Moerbeke has corrected TAB in Gr MS A. See 47vHvar and Gr 1, 312, 2var. After "CMB" Heiberg added in his translation the equivalent of "BC/CM = AL/AG. Therefore" and Commandino further added the equivalent of " $TK^2/(AT \cdot TG) = AL^2/AG^2$ " (see Gr 1, 312, 2-5var).
- 47vI "habentia" Moerbeke has correctly read εχοντι in Gr MS A as if it were ἔχοντα. See Gr 1, 312, 9var.
- 47vI "sectio<sup>2</sup>" Moerbeke has correctly read τομας in Gr MS A as if it were τομά. See Gr 1, 312, 11var.
- 47vI "diametri" Moerbeke has correctly read διαμετρος in Gr MS A as if it were διαμέτροι. See Gr 1, 312, 11var.
- 47vI "12" Gr MS A had  $\iota \epsilon'$  (=15.). See Gr 1, 312, 13var.
- 47vI "plano" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 312, 14var.
- 47vL "planum" Moerbeke has correctly read επιπεδώ in Gr MS A as if it were ἐπίπεδον. See Gr 1, 314, 3var.
- 47vM "ET,  $TZ^1$ " Moerbeke has corrected  $\Theta$ E, EZ in Gr MS A. See Gr 1, 314, 9var.
- 47vO After " $CN^3$ " Heiberg would add in his translation of Gr 1, 314, 24 that MC > BC.
- 47vO ''symptoma'' Moerbeke was apparently puzzled so that he merely transliterated συμπτωμα from Gr MS A. The meaning is ''a property'' of a hyperbola.
- 47vO "igitur" Missing from Gr MS A but added by Moerbeke. See Gr 1, 314, 26var.
- 47vO "est<sup>5</sup>" Added by Moerbeke. See Gr 1, 314, 26var.
- 47vO "ambligonii2" Should be "oxygonii" (see above, Part I, Chap. 1, Sect. III, List G, item [37]).
- 47vO-P "Similiter... GL" Heiberg would delete this. See Gr 1, 316, 1-3 and 317, n. 2.
- 47vP "13" Gr MS A had  $\iota \delta'$  (=14.). See Gr 1, 316, 4var.
- 47vP "speroydali" Moerbeke has correctly read σφαιφοειδες in Gr MS A as if it were σφαιφοειδεί. See Gr 1, 316, 8var.

- 47vR After "autem2" Gr MS A had εστω, which Moerbeke did not translate. See Gr 1, 316, 17var.
- 47vS "etiam". This translates  $\delta \eta$  in Gr MS A. Heiberg would write  $\delta \epsilon$  (=autem). See Gr 1, 318, 1var.
- 47vS "productis" Moerbeke has correctly read αγμενας in Gr MS A as if it were ἀγμενᾶν. See Gr 1, 318, 4var.
- 47vT "ML" Moerbeke has corrected MΠ in Gr MS A. See Gr 1, 318, 11var.
- 47vU "minora sunt" Moerbeke has correctly read ελασσων εντι in Gr MS A as if it were ἐλάσσονά ἐντι. See Gr 1, 318, 17var.
- 47vU "que continentur" By this translation it is evident that Moerbeke read περιεχομενα in Gr MS A as if it were περιεχομένων. See Gr 1, 318, 17var.
- 47vV "que<sup>2</sup>" Moerbeke has correctly read ταν in Gr MS A as if it were τά. See Gr 1, 318, 25var.
- 47vW "[14]" I have added this and the subdivisions a-c. Gr MS A had  $\iota\epsilon'$  (=15.). See Gr 1, 320, 1var.
- 47vX "ipsius<sup>2</sup>" Moerbeke has correctly read αυτη in Gr MS A as if it were αὐτᾶς. See Gr 1, 320, 13var.
- 47vY "producta" Moerbeke has correctly read αγομενας in Gr MS A as if it were ἀγομένα. See Gr 1, 320, 18var.
- 47vY "conoydale" By this translation it is evident that Moerbeke read the preceding τφ in Gr MS A as if it were τό. See Gr 1, 320, 19var.
- 48rA "in ipsam" This is an attempt by Moerbeke to render ες αυτα in Gr MS A. Heiberg suggests that by his translation Moerbeke understood ἐς αὐτό. See Gr 1, 320, 26var. But "ipsam" is obviously a feminine form that does not refer to conoydale. It could be that Moerbeke understood it to refer to conoydalis figura. Still it is more likely that Moerbeke, as Cremonensis, Commandino, Rivault and Torelli later, understood it as ἐσ αὐτάν with a meaning equivalent to παρ' αὐτάν ("parallel to it").
- 48rA "diameter" For the inappropriateness of this term here, see Heath, Archimedes, p. 126, note.
- 48rA "sectione" Moerbeke has correctly read του in Gr MS A as if it were τομφ. See Gr 1, 320, 29var.
- 48rC "autem" This translates δε in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 322, 10var.
- 48rC "autem2" In Gr MS A, but Heiberg would delete it. See Gr 1, 322, 12var.
- 48rD "igitur" Heiberg would delete it here but leave it after "Recta" in the next sentence. It appeared in both places in Gr MS A. See Gr 1, 322, 16var and 17var.
- 48rD After "erit" Gr MS A had τι (see Gr 1, 322, 21), which Moerbeke did not translate. Something like "aliquid" or "pars" would have made the meaning more explicit. For example, see the use of "aliquid" in 48rK.

- 48rE "et<sup>3</sup>" Not in Gr MS A but added by Moerbeke. Heiberg would add εἰ μέν (=si quidem). See Gr 1, 322, 25var.
- 48rF After "diametri" Heiberg would add the equivalent of "recte autem contingentes sectiones conorum secundum extremitatem diametri" (see Gr 1, 324, 2-3var).
- 48rG "BG" Thus in Gr MS A. As we know from a marginal note (48rGvar), Moerbeke thought it perhaps should be ABG, and indeed he was correct in so thinking. See Gr 1, 324, 10var.
- 48rH "super" Translates επι in Gr MS A. Heiberg would write ποτί (=ad). See Gr 1, 324, 15var.
- 48rH "autem" This translates δε in Gr MS A. Heiberg would write δή (=itaque). See Gr 1, 324, 15var.
- 48rI "15" Gr MS A had  $\iota \varsigma'$  (=16.). See Gr 1, 324, 23var.
- 48rI "autem" See the comment to 48rH ("autem") and Gr 1, 326, 2var.
- 48rK "demonstrabitur" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 326, 16var and Heiberg's translation.
- 48rL Before "speroydalium" (i.e. after the article των) Heiberg, following Barrow, would add πωνοειδέων ἢ τῶν (=conoydalium vel). See Gr 1, 326, 17var.
- 48rL "continget" Gr MS A had the present tense. See Gr 1, 326, 21var.
- 48rM "aliud" Moerbeke has thus deleted συ after αλλο in Gr MS A. See Gr 1, 326, 24var.
- 48rM "intra" Thus in Gr MS A. Should be "extra" (see Gr 1, 326, 26var).
- 48rM "contingentes" Moerbeke has incorrectly changed the singular form found in Gr MS A. See 48rMvar and Gr 1, 326, 27.
- 48rM "sunt" Moerbeke has correctly read εωντι in Gr MS A as if it were έντι. See Gr 1, 326, 28var.
- 48rN "contingant" Moerbeke has correctly read επιψαυοντι in Gr MS A as if it were ἐπιψαύωντι. See Gr 1, 328, 2var.
- 48rN "Quod" Thus in Gr MS A. It should be "Si" (see Gr 1, 328, 4var).
- 48rN "secundum" This translates κατ in Gr MS A. Heiberg would write κα ποτ'. See Gr 1, 328, 4var.
- 48rO "recta" Moerbeke has correctly read  $og\theta\alpha\nu$  in Gr MS A as if it were  $\dot{o}$ οθά. See Gr 1, 328, 11var.
- 48rP "contingentium" Moerbeke has read επιψαυουσων in Gr MS A as if it were ἐπιψαυόντων. See Gr 1, 328, 17var.
- 48rP After "erunt" Heiberg would change  $\alpha i$  in Gr MS A to  $\alpha \alpha i$  (=et). See Gr 1, 328, 18var.
- 48rO "erunt" Moerbeke has correctly read εωντι in Gr MS A as if it were ἐσσοῦνται. See Gr 1, 328, 23var.
- 48rQ "18" Gr MS A had  $\iota \zeta'$  (=17.). See Gr 1, 328, 24var.

- 48rS "autem1" This translates δε in Gr MS A. Heiberg, following Nizze, would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 330, 7var.
- 48rS "oxygonii coni sectio" Heiberg would delete this because of the indication in 48rT that section *ABGD* is either a circle or an ellipse. See Gr 1, 330, 9 and 331, n. 1.
- 48rS "etiam" This translates  $\delta \eta$  in Gr MS A. Heiberg, following Nizze, would write  $\delta \dot{\varepsilon}$  (=autem). See Gr 1, 330, 11var.
- 48rS "itaque" This translates  $\delta \eta$  in Gr MS A. Heiberg would write  $\delta \epsilon$  (=autem). See Gr 1, 330, 12var.
- 48rT "contingunt" Moerbeke has correctly read επιψαυωντι in Gr MS A as if it were ἐπιψαύοντι. See Gr 1, 330, 17var.
- 48rT 'ipsam' Moerbeke has correctly read αυται in Gr MS A as if it were αὐτᾶς. See Gr 1, 330, 17var and 48rTvar.
- 48rU "contingentes" Gr MS A had επιψαυωντι. Moerbeke first wrote "contingunt" and then changed it to "contingentes" (see 48rUvar). Heiberg would follow Moerbeke's first effort by rendering the Greek as ἐπιψαύοντι and then would add καί after "sectionem" (see Gr 1, 330, 20var).
- 48rU "signis" Thus in Gr MS A. Heiberg would delete this and Torelli would write instead ἐπιπέδοις (=planis). See Gr 1, 330, 23var.
- 48rU "factarum" This translates ταν γενομεναν in Gr MS A. Heiberg would write ἀγομενᾶν (=ductarum). See Gr 1, 330, 24var.
- 48rV "19" Gr MS A had  $\iota \eta'$  (=18.). See Gr 1, 332, 1var.
- 48rV After "secatur" Gr MS A had υπο του επιπεδου, which Moerbeke did not translate, no doubt because he thought it superfluous. See Gr 1, 332, 3var.
- 48rV After "angulos" Heiberg would add ἢ μὴ ποτ' ὀρθάς (= aut non ad rectos angulos). See Gr 1, 332, 7var.
- 48rW "et<sup>1</sup>" Moerbeke has read το in Gr MS A as τε. See Gr 1, 332, 9var.
- 48rX "speroydale" See Gr 1, 332, 19var.
- 48rY "ZN1" Moerbeke has corrected ZH in Gr MS A. See Gr 1, 332, 25var.
- 48rY "itaque" Moerbeke has correctly read δια in Gr MS A as if it were δή. See Gr 1, 334, 1var.
- 48rY "Adaptantur" Moerbeke has correctly read εφαρμόζωντι in Gr MS A as if it were ἐφαρμόζοντι. See Gr 1, 334, 3var.
- 48rZ "quod" Moerbeke has correctly read τω in Gr MS A as if it were τό. See Gr 1, 334, 5var.
- 48rZ "[recta]" Omitted from Gr MS A and Moerbeke's translation, but I have added it as necessary. See Gr 1, 334, 7var.
- 48rZ "ZN2" Gr MS A had NZ. See Gr 1, 334, 9var.
- 48rZ "que ad partem E" Moerbeke has read επι τας in Gr MS A as if it were ἐπὶ τὰ αὐτὰ τῷ Ε. See Gr 1, 334, 10var.
- 48vA "adaptantur" Moerbeke has read εφαρμοζουντι in Gr MS A as if it were ἐφαρμόζοντι. Heiberg would write ἐφαρμοξοῦντι. See Gr 1, 334, 19var.

- 48vB "ipsi<sup>3,4</sup>" Moerbeke has correctly read το in Gr MS A as if it were τω. See Gr 1, 334, 26var.
- 48vB "eidem portioni utraque portionum" Moerbeke has read το αυτο τμαμα εκατερον των τμαματων as if it were τῷ αὐτῷ τμάματι . . . . Heiberg would, more economically, just change εκατερον to ἐφ' ἐκάτερον. Torelli changed the same word to ξκατέρω. See Gr 1, 334, 27var.
- 48vC "20" Gr MS A had  $\theta$  (=19.). See Gr 1, 336, 1var.
- 48vC "erit" This translates εσται in Gr MS A. Heiberg would write έστι. See Gr 1, 336, 5var.
- 48vC-D "in portionem figuram" Gr MS A had only τμαμα. Heiberg would write only σχημα. See Gr 1, 336, 5var. Note that Moerbeke added "in" and "figuram" above (see 48vCvar and Dvar). Note further that Heiberg reported "portione" as Moerbeke's final reading though there is no evidence of the deletion of the final m. Indeed Moerbeke customarily used the accusative case with "in" after "inscribere."
- 48vD "compositam" Moerbeke has read correctly των συγκειμενων as if it were συγκείμενον. See Gr 1, 336, 7var.
- 48vD "sectio" Moerbeke has correctly read τομας in Gr MS A as if it were τομά. See Gr 1, 336, 11var.
- 48vE "super" This translates επι in Gr MS A. Heiberg would write ποτί (=ad). See Gr 1, 336, 15var.
- 48vE "autem6" In Gr MS A but Heiberg would delete it. See Gr 1, 336, 19var.
- 48vF "medietate" Moerbeke has correctly read ημισεως in Gr MS A as if it were ἡμίσεος. See Gr 1, 336, 20var.
- 48vF "autem" This translates δε in Gr MS A. Heiberg would write δή (=itaque). See Gr 1, 336, 23var.
- 48vG "ipsi" Moerbeke has correctly read  $\tau \alpha \zeta$  in Gr MS A as if it were  $\tau \tilde{\alpha}$ . See Gr 1, 336, 27var.
- 48vG "usque" Moerbeke has correctly read εσται in Gr MS A as if it were ἔστε. See Gr 1, 336, 29var. But in 48vQ he fails to make the same necessary correction.
- 48vH "cylindri" Thus in Gr MS A. It should be "circuli" (see Gr 1, 338,
- 48vH After "solida" Gr MS A had εκ των, which Moerbeke properly omitted. See Gr 1, 338, 7var.
- 48vH "ex<sup>7</sup>... parte<sup>3</sup>" Written twice in Gr MS A. See Gr 1, 338, 8-10var.
- 48vI "ipsius" Moerbeke has correctly read το in Gr MS A as if it were τω or τοῦ. See Gr 1, 338, 16var.
- 48vI "autem<sup>2</sup>" This translates δε in Gr MS A. Heiberg would write  $\delta \acute{\eta}$  (=itaque). See Gr 1, 338, 18var.
- 48vJ "21" Gr MS A had n' (=20.). See Gr 1, 340, 1var.

- 48vK "semicirculo" Thus in Gr MS A. It should be "medietate" (see Gr 1, 340, 4var). Cf. below in 48vO ("medietate").
- 48vK "compositum" See the comment to 48vD ("compositam") and Gr 1, 340, 7var.
- 48vL "ABGD" Thus in Gr MS A. Heiberg, following Nizze, would write ABΓ. See Gr 1, 340, 14var.
- 48vL "AG" Moerbeke has corrected  $\Delta\Gamma$  in Gr MS A. See 48vLvar and Gr 1, 340, 18var. After "AG" Heiberg, following Torelli, would add the equivalent of "Sit itaque equidistans ipsi AG" (*ibid.*, 19var).
- 48vN Before "ad B" there should perhaps be added "a centro speroydalis" (see Gr 1, 340, 27var).
- 48vO "medietate" Moerbeke has read ημισεως in Gr MS A as if it were ήμισέος. See Gr 1, 342, 11var.
- 48vO "autem²" This translates δε in Gr MS A. Heiberg would write δή (=itaque). See Gr 1, 342, 12var.
- 48vP "basem" Moerbeke has so corrected δασιας in Gr MS A. Heiberg, Gr 1, 342, 12var, would retain the plural form.
- 48vP "sectionem" Moerbeke has correctly read τας... τομας in Gr MS A as if it were τὰν... τομάν. See Gr 1, 342, 12var, 13var.
- 48vP "quidem<sup>2</sup>" This translates μεν in Gr MS A. Heiberg would write οὖν (=igitur). See Gr 1, 342, 14var.
- 48vQ "DB" Moerbeke has corrected AB in Gr MS A. See Gr 1, 342, 20var.
- 48vQ "recte" Moerbeke has correctly read ευθεια in Gr MS A as if it were εὐθεῖαι. See Gr 1, 342, 22var.
- 48vQ "erunt" This translates εσται in Gr MS A. Heiberg, following Torelli, would write ἔστε (=usque). See Gr 1, 342, 22var and the second comment to 48vG.
- 48vR "Super" This translates ε $\varphi$ ' in Gr MS A. Heiberg would write ἀ $\varphi$ '. See Gr 1, 344, 2var.
- 48vR "versus D" Moerbeke has correctly read to  $\Delta$  in Gr MS A as if it were  $\tau \tilde{\phi}$   $\Delta$ . See Gr 1, 344, 5var.
- 48vR "cylindrorum" Gr MS A had κυλινδοου and Moerbeke first translated it properly as "cylindri" and then changed it to "cylindrorum" (see 48vRvar and Gr 1, 344, 8var).
- 48vS "in minori" Moerbeke has properly read ελασσον in Gr MS A as if it were ἐλάσσονι. See Gr 1, 344, 10var.
- 49rA "22" Gr MS A had  $\alpha\alpha'$  (=21.). See Gr 1, 344, 18var.
- 49rA "abscisa" Moerbeke has correctly read αποτετμημενου in Gr MS A as if it were ἀποτετμαμένον. See Gr 1, 344, 21var.
- 49rA "eundem" Not in Gr MS A but added by Moerbeke. See Gr 1, 344, 24var and Heiberg's translation. Cf. 49rB ("eundem").
- 49rC "circulus" Not in Gr MS A but added by Moerbeke. See Gr 1, 346, 11var.

- 49rC "axis autem BD" This corrects αξονα δε ταν BΔ in Gr MS A. See Gr 1, 346, 11var.
- 49rC "dimidius totius" This translates ημισεος ολι in Gr MS A, which represents a correction of ἡμίσεος to ἡμιόλιος. Heiberg would simply write ἡμίσεος. See Gr 1, 346, 14var.
- 49rC "quoniam... coni<sup>2</sup>" Heiberg would delete this. See Gr 1, 346, 14-15 and 347, n. 1.
- 49rD "alia" Moerbeke has correctly read αλλφ in Gr MS A as if it were ἄλλο. See Gr 1, 346, 19var.
- 49rD "composita" See the comment to 48vD ("compositam") and Gr 1, 346, 20var.
- 49rD "quam quanto" Moerbeke has thus translated πηλικώ in Gr MS A. Heiberg would write ἢ ἁλίκω. See Gr 1, 346, 22var.
- 49rD "portio" By this translation Moerbeke has shown that he correctly understood τω... τμαμα in Gr MS A as if it were τὸ... τμᾶμα. See Gr 1, 346, 22var.
- 49rE "BI" Moerbeke has corrected B $\Gamma$  in Gr MS A. See Gr 1, 348, 1var.
- 49rG "hiis" This translates τοις κυλινδροις in Gr MS A. See Gr 1, 348, 10var.
- 49rG 'inscriptam' Moerbeke has correctly read περιγεγραμμενου in Gr MS A as if it were ἐγγεγραμμένου. See Gr 1, 348, 13var.
- 49rG "DE" Moerbeke has corrected AE in Gr MS A. See Gr 1, 348, 17var.
- 49rH "eorum qui" Moerbeke has read τον in Gr MS A as if it were των. See Gr 1, 348, 17var.
- 49rH "ei²" Moerbeke has correctly read τον in Gr MS A as if it were  $\tau \tilde{\phi}$ . See Gr 1, 350, 2var.
- 49rI "habere" Moerbeke has correctly read ειχεν in Gr MS A as if it were ξχειν. See Gr 1, 350, 6var.
- 49rI "AD" Gr MS A had  $\Delta A$ . See Gr 1, 350, 7var.
- 49rI "ZE" Thus in Gr MS A. It should be ZO. See Gr 1, 350, 7var.
- 49rI After "habentium" Heiberg, following Nizze, would add the equivalent of "equalem ipsi *DE* ad unumquemque cylindrorum qui in figura inscripta axem habentium" (see Gr 1, 350, 8-10var). Note that Moerbeke realized that Gr MS A was deficient here, for he wrote in the margin "deficit puto" (see 49rlvar).
- 49rJ "est" Heiberg would delete this. See Gr 1, 350, 15var.
- 49rJ, K "DI" In the first instance Gr MS A had ΔΓ, which Moerbeke (followed by Heiberg) thus changed. See 49rJvar and Gr 1, 350, 15var. But in both instances the reading should probably have been DB. See S. Heller, "Ein Fehler in einer Archimedes-Ausgabe, seine Entstehung und seine Folgen," Abhandlungen der Bayerischen Akademie der Wissenschaften. Mathematischnaturwissenschaftliche Klasse, Neue Folge, 63. Heft (1954), pp. 5-38, and particularly p. 16. Heller makes an interesting comparison between Moerbeke's and Cremonensis' translations of the erroneous text of Gr MS A in connection

- with this proposition. The comparison is much in Moerbeke's favor (see pp. 20-21).
- 49rJ "inscripta" Moerbeke has correctly read γεγαμμενφ in Gr MS A as if it were ἐγγεγαμμένφ. See Gr 1, 350, 16var.
- 49rJ "in basi" Thus in Gr MS A. It should be "bases" (see Gr 1, 350, 18var).
- 49rJ "maiores" Moerbeke has correctly read μειζων in Gr MS A as if it were μείζονες. See Gr 1, 350, 21var.
- 49rK "toto" Not in Gr MS A and in fact not needed. See Gr 1, 350, 23var.
- 49rK "multo" This translates πολλφ in Gr MS A (see Gr 1, 350, 24). For the difficulties connected with this word in this context, see Heller, "Ein Fehler," pp. 12-14. With the correction of DI to DB it obviously cannot be translated "by an even greater amount" but rather by something like "furthermore." Notice that "multo" is missing from the similar context of 49rQ.
- 49rL "altera alteram" Moerbeke's correction of εκαστον in Gr MS A. See Gr 1, 352, 7var.
- 49rL "in minori" Moerbeke has correctly read ελασσων in Gr MS A as if it were ἐλάσσονι. See Gr 1, 352, 7var.
- 49rL "quam in quanto" Moerbeke has read η παλιν κω in Gr MS A as if it were η πηλίκω. Heiberg would write η άλίκω. See Gr 1, 352, 7var.
- 49rM " $DE^2$ " Gr MS A had E $\Delta$ . See Gr 1, 352, 16var.
- 49rM "habet" Moerbeke has correctly read ειχε in Gr MS A as if it were έχει. See Gr 1, 352, 17var.
- 49rN "cylindro" Moerbeke has correctly interpreted the erroneous πυλινδοων in Gr MS A. See Gr 1, 352, 19var.
- 49rO "equalem" Moerbeke has correctly interpreted the erroneous ισαν in Gr MS A. See Gr 1, 352, 25var.
- 49rO "[diametri]" Missing from Gr MS A and Moerbeke's translation. I have added it. See Gr 1, 352, 28var.
- 49rO "igitur" Moerbeke has correctly read γουν in Gr MS A as if it were ov. See Gr 1, 354, 1var.
- 49rO "quorum" Thus in Gr MS A. It should be "cuius" (see Gr 1, 354, 2var).
- 49rP "omnium rectarum" Gr MS A had  $\pi \varrho o \varsigma \tau \alpha v \varepsilon u \theta \varepsilon \iota \alpha v \pi \alpha \sigma \alpha v$ . See Gr 1, 354, 7var. Thus Moerbeke saw that  $\pi \varrho o \varsigma$  should be omitted and that the succeeding phrase was a genitive plural instead of an accusative singular.
- 49rQ "circulum" Moerbeke has correctly read κυλινδοον in Gr MS A as if it were κύκλον. See Gr 1, 354, 12var.
- 49rR "23" Gr MS A had  $\alpha\beta$ " (=22.). See Gr 1, 354, 21var.
- 49rS "figuram" This translates σχημα in Gr MS A. Heiberg would write τμαμα (=portionem). See Gr 1, 356, 2var.
- 49rS "sectio" Missing from Gr MS A. Added by Moerbeke. See Gr 1, 356, 2var.

- 49rS "[coni]" Though it was missing from Gr MS A and Moerbeke's translation, I have added it. Heiberg erroneously reports it as given by Moerbeke. See Gr 1, 356, 3var.
- 49rT "AG2" Moerbeke's error. It was  $A\Delta$  in Gr MS A. See Gr 1, 356, 8var.
- 49rT "autem<sup>2</sup>" This translates δε in Gr MS A. Heiberg would write δή (=itaque). See Gr 1, 356, 8var.
- 49rU " $AG^2$ " Gr MS A had  $\Gamma$ A. See Gr 1, 356, 14var.
- 49rV After "autem" Gr MS A had εστι, which Moerbeke did not translate. See Gr 1, 358, 3var.
- 49rV "erit2" Heiberg takes this to refer to the preceding clause and then adds ώστε ἐσσεῖται (=quare erit). See Gr 1, 358, 5var.
- 49rW "conoydalis" Moerbeke has correctly read πωνοειδες in Gr MS A as if it were πωνοειδέος. See Gr 1, 358, 10var.
- 49rX "autem" See the comment to 49rT ("autem2") and Gr 1, 358, 19var.
- 49rX Before "solidum" Heiberg, following Torelli, would add σχημα (=figura). See Gr 1, 358, 23var.
- 49rY "erunt ducta" Gr MS A simply had εσσειται. Moerbeke first wrote "erunt educta' and then deleted both e- and -a from "educta" (see 49rYvar). Heiberg would write διάχθω... ἔστε (=producantur usque). See Gr 1, 358, 27var.
- "DE" Moerbeke has corrected AE in Gr MS A. See Gr 1, 360, 2var.
- 49vA "[in]" In Gr MS A but omitted by Moerbeke. See Gr 1, 360, 2.
- "habent2" Moerbeke has correctly read εχωντι in Gr MS A as if it were ἔχοντι. See Gr 1, 360, 6var. Cf. "habent" in 49vB. See ibid., 8var.
- 49vB "conproportionales" This ambiguously translates ομολογοι in Gr MS A. See Gr 1, 360, 8. The term "correspondentes" would have been less ambiguous. The same holds for "conproportionalium" below.
- 49vC ''B'' Moerbeke has corrected BE in Gr MS A. See 49vCvar and Gr 1, 360, 13var.
- 49vD "habentium" Moerbeke has correctly read εχοντα in Gr MS A as if it were ἐχόντων. See Gr 1, 360, 19var.
- 49vD "ipsorum" Moerbeke apparently read αὐτῶν in Gr MS A, though it was perhaps αὐτοῦ, which Heiberg accepts. See Gr 1, 360, 22var.
- 49vF "24" Gr MS A had  $\pi \gamma'$  (=23.). See Gr 1, 362, 7var.
- 49vG "et alio... axem2" In Gr MS A but Heiberg would delete it. See Gr 1, 362, 14-15 and 363, n. 1.
- 49vG "ABG" Moerbeke has corrected BΓ in Gr MS A. See Gr 1, 362, 15var.
- 49vJ "LM" Thus in Gr MS A, but it ought to be LN, as is evident from Fig. Cs. 23. See Gr 1, 364, 9var.
- 49vJ "itaque" Moerbeke has thus corrected δι' in Gr MS A. See Gr 1, 364,
- 49vJ "L<sup>3</sup>" Moerbeke has corrected A in Gr MS A. See 49vJvar and Gr 1, 364, 10*var*.

- 49vJ "habent" Moerbeke has correctly read εχωντι in Gr MS A as if it were ξχοντι. See Gr 1, 364, 12var.
- 49vJ "ad invicem" Moerbeke has correctly read ποτι ταλλαλα in Gr MS A as if it were ποτ' ἄλλαλα. See Gr 1, 364, 12var.
- 49vK, L "NL" Moerbeke has corrected NA in Gr MS A. See 49vKvar, Lvar and Gr 1, 364, 18var and 25var.
- 49vL-M "Et abscisio....  $AK^1$ " Heiberg would delete this. See Gr 1, 364, 22—366, 6 and 367, n. 1.
- 49vL "basis" Moerbeke has correctly read δασιας in Gr MS A as if it were δάσιος. See Gr 1, 366, 1var.
- 49vM "LN<sup>1,2</sup>" Moerbeke has corrected AN in Gr MS A. See 49vMvar and Gr 1, 366, 3var and 4var.
- 49vM "Habet<sup>3</sup>" Moerbeke has read εχοι in Gr MS A as if it were ἔχει. Heiberg, less economically, would retain εχοι and add οὖν κα. See Gr 1, 366, 6var.
- 49vM "AQ" Moerbeke has corrected A $\Gamma$  in Gr MS A. See 49vMvar and Gr 1, 366, 9var.
- 49vN " $LN^{2,3}$ " Thus in Gr MS A. It should be LK. See Gr 1, 366, 11var and 13var.
- 49vN " $LK^{1,2}$ " Thus in Gr MS A. It should be LN. See Gr 1, 366, 12var and 13var.
- 49vN After "et<sup>2</sup>" Gr MS A had τω, which Moerbeke properly ignored. See Gr 1, 366, 13var.
- 49vO "portiones1" That is, the segments of the conoid.
- 49vO "25" Gr MS A had  $\kappa\delta'$  (=24.). See Gr 1, 366, 20var.
- 49vP "ipsorum" Moerbeke has correctly read αυτης in Gr MS A as if it were αὐτῶν. See Gr 1, 366, 24var.
- 49vP " $K^1$ " and " $L^1$ " Moerbeke has respectively corrected AK and A $\Lambda$  in Gr MS A. See Gr 1, 368, 3var.
- 49vQ "K" Moerbeke has corrected IK in Gr MS A. See Gr 1, 368, 9var.
- 49vQ "autem<sup>2</sup>" This translates δε in Gr MS A. Heiberg would write δή (=itaque). See Gr 1, 368, 10var.
- 49vR "est" Heiberg wrongly reports this as missing from Moerbeke's translation. See Gr 1, 368, 13var.
- 49vR "L" Moerbeke has corrected  $\Delta$  in Gr MS A. See Gr 1, 368, 13var.
- 49vR "L<sup>2</sup>" Moerbeke has corrected A in Gr MS A. See Gr 1, 368, 16var.
- 49vS "autem<sup>1,4</sup>" This translates δε in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 368, 20var and 25var.
- 49vT "longitudine<sup>2</sup>" Moerbeke has correctly read μακων in Gr MS A as if it were μάκει. See Gr 1, 370, 4var.
- 49vT ''TH'' Gr MS A had ΘB and perhaps Moerbeke's ill-formed -H is in fact -B. See Gr 1, 370, 7.
- 49vU "TB1" Moerbeke has corrected EB in Gr MS A. See Gr 1, 370, 10var.

- 49vU "BD" Moerbeke has corrected  $K\Delta$  in Gr MS A. See 49vUvar and Gr 1, 370, 11var.
- 49vU "utraque enim emiolia est" Heiberg would delete this. See Gr 1, 370, 14 and 371, n. 2.
- 49vV "K<sup>2</sup>" Moerbeke has corrected AK in Gr MS A. See Gr 1, 370, 18var.
- 50rA After "tetragonum" Gr MS A had KE, which Moerbeke properly did not translate. See Gr 1, 370, 22var.
- 50rA "L<sup>2</sup>" Moerbeke has corrected A in Gr MS A. See Gr 1, 370, 23var.
- 50rA "26" Gr MS A had  $\kappa \epsilon'$  (=25.). See Gr 1, 370, 24var.
- 50rB "simulutrique" See Gr 1, 370, 28var. Cf. the second comment to 45rL.
- 50rC "que AG" Omitted from Gr MS A but added by Moerbeke. See Gr 1, 372, 10var.
- 50rC "BD" Moerbeke has corrected BAΔ in Gr MS A. See Gr 1, 372, 11var.
- 50rC "poteusa" Moerbeke's spelling is preferable to ποτιουσα in Gr MS A. See Gr 1, 372, 11var.
- 50rD "etiam" This translates  $\delta \eta$  in Gr MS A. Heiberg would write  $\delta \dot{\epsilon}$  (=autem). See Gr 1, 372, 18var.
- 50rD "HD<sup>2</sup>" Moerbeke has corrected KΔ in Gr MS A. See Gr 1, 372, 21var.
- 50rE "enim" Moerbeke has correctly read γε in Gr MS A as if it were γάρ. See Gr 1, 372, 23var.
- 50rE "alia" Moerbeke has correctly read αλλφ in Gr MS A as if it were ἄλλο. See Gr 1, 372, 25var.
- 50rF "etiam" Moerbeke thus translates δη in Gr MS A. Heiberg would write δέ (=autem). See Gr 1, 372, 29var.
- 50rG "quam" Omitted from Gr MS A but properly added by Moerbeke. See Gr 1, 374, 7var.
- 50rH After "habebit" Moerbeke left a lacuna and wrote in the margin  $\alpha\mu\epsilon\tau\varrho\iota\bar{\alpha}$  from Gr MS A. See above, Part I, Chap. 1, Sect. III, List A, item (6). With the abbreviation expanded as suggested by Heiberg, the whole clause "habebit... TE (! TR)" could be translated "therefore, the ratios of the [two sets of] three magnitudes being dissimilarly ordered [i.e. the one set being in perturbed proportion with the other] the said cylinder will have the same ratio to cone  $\Psi$  as ZD to TE (! TR)." To make this clear we should note (via Euclid, V, def. 18) that three magnitudes a, b and c are in perturbed proportion with three other magnitudes A, B and C when a/b = B/C and b/c = A/B. Or in the case at hand (where a = cylinder GYFA, b = cone GBA, c = cone  $\Psi$ , A = ZD, B = HD and C = TR), cylinder GYFA/cone GBA = HD/TR and cone GBA/cone  $\Psi$  = ZD/HD. Multiplying the ratios of the two proportions, we see that cylinder GYFA/cone  $\Psi$  = ZD/TR, as Archimedes here indicates.
- 50rH "quam<sup>3</sup>" Missing from Gr MS A but added by Moerbeke. See Gr 1, 376, 2var.

- 50rH "TE" Moerbeke wrote this instead of  $\Theta$ O in Gr MS A (see 50rHvar). However, it should have been changed to TR. See Gr 1, 376, 2var.
- 50rI "equales" Moerbeke has correctly read ισα in Gr MS A as if it were ἴσαι. See Gr 1, 376, 3var.
- 50rI ''in hoc¹'' This translates εν τω in Gr MS A. Heiberg, following the Basel ed., would write ἴσον τῷ (=equale ei). See Gr 1, 376, 7var.
- 50rI "ZDB" Gr MS A had ZBΔ; indeed Moerbeke wrote ZBD but added marks indicating that the last two letters should be interchanged, a correction that Heiberg failed to notice. See 50rIvar and Gr 1, 376, 7var.
- 50rI "ZEB" Gr MS A had ZOB, which Moerbeke knew was false (see 50rlvar). However, he should have changed it to ZIB. See Gr 1, 376, 8var.
- 50rI-J "et<sup>3</sup>... excedunt" Heiberg would delete this. See Gr 1, 376, 9-10 and 377, n. 1.
- 50rJ "[N]" I have added this. Gr MS A apparently had τον. But Moerbeke did not realize that it ought to have been τὸ N, and so he ignored the reading in Gr MS A. See Gr 1, 376, 12var.
- 50rK, L "DB" Gr MS A had  $B\Delta$ . See Gr 1, 376, 21var and 25var.
- 50rK, L "EB" Gr MS A had BE. See Gr 1, 376, 22var and 27var.
- 50rK-L "Dupla... costa" Heiberg would delete this on linguistic grounds. See Gr 1, 376, 23-25 and 377, n. 2.
- 50rL Before "ei²" Moerbeke left a lacuna because he realized that something had been left out of Gr MS A (see 50rLvar). Heiberg would add  $\Xi N$  (=XN). See Gr 1, 376, 26var.
- 50rL After "EB" Moerbeke left a lacuna because he realized that something had been left out of Gr MS A (see 50rLvar). Heiberg would add ἴσον ἐστὶ τὸ ΞΜ·ἁ γὰο Ξ, which can be translated in Moerbeke's style as "equale est quod XM; que enim X" (see Gr 1, 376, 27var).
- 50rL "M" Moerbeke has corrected N in Gr MS A. See 50rLvar and Gr 1, 376, 28var.
- 50rM-N "conproportionale accidentium circa (! penes) NX (! X) excedens (! excedentium)" That is, "to the corresponding space of those applied to X and exceeding..." In writing "conproportionale" Moerbeke has correctly read on λογον in Gr MS A as if it were δμόλογον. It would have been less ambiguous had he translated it as correspondens. See Gr 1, 378, 10var and Heiberg's translation. By "accidentium" Moerbeke has read περιπεπτωκότων as if it were παραπεπτωκότων (ibid.). Notice further that Moerbeke's "circa NX excedens" translated Gr MS A's περι ταν NΞ... υπερδαλλον, which, together with a following τω assumed by Moerbeke to be taken with τετραγώνω (Moerbeke's "tetragonali"), Heiberg would rewrite παρὰ τὰν Ξ... ὑπερδαλλόντων (ibid.).
- 50rO "ad unum" Moerbeke has correctly read ποθεν in Gr MS A as if it were ποθ" εν. See Gr 1, 378, 19var.

- 50rO "circa" This translates  $\pi\alpha\varrho\alpha$  in Gr MS A. See Gr 1, 378, 20. Cf. the comment to 50rM-N. In speaking of the spaces applied to line X, Moerbeke sometimes translates παρά by penes and sometimes by circa.
- 50rO After "hec" Gr MS A had  $\delta\epsilon$ , which Moerbeke properly did not translate. See Gr 1, 378, 21var.
- 50rO "ad nullum" Moerbeke has read ουδε ποθεν in Gr MS A as if it were οὐδὲ ποθ' ἕν. See Gr 1, 378, 22var.
- 50rR "figura2" Not in Gr MS A but added by Moerbeke. See Gr 1, 380, 12var.
- "conus2" Gr MS A had Ψ κωνος. See Gr 1, 380, 19var. 50rS
- 50rT "equale enim utrumque" Heiberg would delete this. See Gr 1, 380, 25-26 and 381, n. 2.
- 50rU "quam" Added by Moerbeke, though missing from Gr MS A. See Gr 1, 382, 1var.
- 50rU "accidentium" This translates παραβληματων in Gr MS A. See Gr 1, 382, 2. Ordinarily he would translate this by "adjectorum" but the meaning is clearly that of the corresponding space "of those applied" to X. It could be simply that he was reading the Greek as if it were παραπεπτωμότων. Cf. the comment to 50rM-N.
- 50rU "circa" See the comment to 50rO ("circa") and Gr 1, 382, 2.
- 50rU "est" See Gr 1, 382, 4var.
- 50 rW "ad  $\Psi$ " By this translation it is evident that Moerbeke has read the preceding to in Gr MS A as tov. See Gr 1, 382, 16var.
- 50 rX "27" Gr MS A had  $\varkappa \varsigma'$  (= 26.). See Gr 1, 382, 23 var.
- 50rX "coni habentem basem" By this translation Moerbeke reveals that he has correctly understood του μωνου του βασιν εχοντος in Gr MS A as if it were τοῦ κώνου τὸ βάσιν ἔχον. See Gr 1, 382, 26var.
- 50rX, Y "simulatrique" The first one renders the erroneous αι συναμφοτεραι in Gr MS A. Heiberg would write ά συναμφοτέραις (=simulutrisque). See Gr 1, 382, 28var. The second one incorrectly renders the correct συναμφοτεραις in Gr MS A. See Gr 1, 384, 1.
- 50vA " $AG^{1}$ " Gr MS A had  $\Gamma$ A. See Gr 1, 384, 8var.
- 50vA "itaque ipsa" Moerbeke has correctly read the erroneous δια τα αυτα in Gr MS A as if it were δη αύτα. See Gr 1, 384, 13var.
- 50vB "autem5". This translates δε in Gr MS A. Heiberg would write δή(=itaque). See Gr 1, 384, 18var.
- 50vB "quoniam" Moerbeke first wrote "erit" and then corrected it (see 50vBvar). The Greek copies from Gr MS A diverge in their readings. MSS DE have εσσει το and MSS GH have ἐσσεῖται. Heiberg, following the Basel ed., has settled for ἐπεὶ τό (the article going with the succeeding ἐπίπεδον [=planum]). See Gr 1, 384, 19var.
- 50vC "existens \_\_\_ (lac.)... sectio" This translates εουσα αλλη... τομα in Gr MS A. Moerbeke was puzzled by αλλη (see 50vCvar). Following the Basel

- ed., Heiberg would write ἐούσας δὴ... τομᾶς (=existente itaque... sectione). See Gr 1, 384, 22var. Needless to say, the genitive absolute seems to be required.
- 50vC "recta" Moerbeke has correctly read ευθειων in Gr MS A as if it were εὐθείας. See Gr 1, 384, 27var.
- 50vD Moerbeke was puzzled by the expression beginning "invento igitur" and consequently he placed an exclamation point in the margin (see 50vDvar). After "igitur" Heiberg would add καὶ ἀπότμαμα τι ἐσσεῖται κώνου βάσιν ἔχον τὰν αὐτὰν τῷ τε τόμφ καὶ τῷ τμάματι, which, following Moerbeke's style, we could translate "et erit aliqua abscisio coni habens basem eandem cum tomo et portione" (see Gr 1, 386, 8-9var).
- 50vE "enim" Moerbeke has correctly read γουν in Gr MS A as if it were γάο. See Gr 1, 386, 13var.
- 50vE "[que HD]" Following Torelli and Heiberg, I have added this. It was omitted from Gr MS A and Moerbeke's translation. See Gr 1, 386, 13var.
- 50vE ''habeat'' Moerbeke has read εχει in Gr MS A as if it were ἐχέτω. See Gr 1, 386, 14var.
- 50vE "sit, si possibile est" Moerbeke has thus corrected the erroneous ει γαρ μη δυνατον εστιν in Gr MS A. See Gr 1, 386, 16var, where similar corrections by Commandino and Torelli are also given.
- 50vE "alia" Moerbeke has correctly read αλλω in Gr MS A as if it were ἄλλο. See Gr 1, 386, 18var.
- 50vF "minorem portione" By adding "minorem" Moerbeke corrects τμηματος in Gr MS A. Heiberg, like the Basel ed., would correct it by writing σχήματος. See Gr 1, 388, 3var. Moerbeke's correction makes good sense, for if it were adopted, the whole clause would read: "Since the circumscribed figure (being greater than the segment) exceeds the inscribed [figure] (being less than the segment) by a space that is less than that by which the segment exceeds cone Ψ, it is evident that..." Heiberg misreports Moerbeke's reading by not noting that the latter had added "minorem" and thus changed the expected "portionem" to the ablative case.
- 50vG "figura" This translates σχηματι in Gr MS A. Heiberg would write τμάματι (=portione). See Gr 1, 388, 6var.
- 50vG ''erit'' This translates εσσειται in Gr MS A, but Moerbeke realized that it was in error, for he seems to have deleted it (see 50vGvar). Heiberg would write ἔστε (=usque). See Gr 1, 388, 6var. Cf. the comments to 48vG (''usque'') and 48vQ (''erunt<sup>1</sup>'').
- 50vG "qui³" This renders τον in Gr MS A. Heiberg would write τῶν (=eorum qui). See Gr 1, 388, 12var. The same is true for "qui²" in 50vJ. See Gr 1, 388, 28var.
- 50vH "habent<sup>1,2</sup>" Moerbeke has correctly read εχωντι in Gr MS A as if it were ξχοντι. See Gr 1, 388, 15var and 18var.

- 50vH Before "quoniam" Heiberg, following Commandino, would add αί δὲ δάσιες αὐτῶν (=bases autem ipsorum) and consequently delete "igitur" in the succeeding clause. See Gr 1, 388, 16var and 18var.
- 50vI "ZDB<sup>1,2</sup>" Moerbeke has corrected ZΛB in Gr MS A. See 50vIvar and Gr 1, 388, 21var and 25var.
- 50vI After "T" Moerbeke left a lacuna and wrote καθασ in the margin, as in Gr MS A. Heiberg, following Torelli, would write καθ' δ αί (=in quo recte). See Gr 1, 388, 23var.
- 50vI "concidunt" Like the scribes of Gr MSS E and G, Moerbeke has correctly read συμπιπτωντι in Gr MS A as if it were συμπίπτοντι. See Gr 1, 388, 23var.
- 50vJ "DE1" Moerbeke first wrote BE and then corrected it. See 50vJvar. This seems to have been a mere slip on Moerbeke's part since Gr MS A had  $\Delta E$ . See Gr 1, 388, 28.
- 50vJ After "aliorum" Gr MS A had δε, which Moerbeke did not translate. See Gr 1, 390, 3var.
- 50vK "NX" Thus in Gr MS A. Heiberg would write Ξ alone. See Gr 1, 390, 7var.
- 50vK "tomi qui" Omitted from Gr MS A but properly added by Moerbeke. See Gr 1, 390, 9var.
- 50vK "habent" Moerbeke has thus read εχωντι in Gr MS A as if it were ἔχοντι. Heiberg, following Torelli, prefers ἔχοντα. See Gr 1, 390, 12var.
- 50vL "alios" Moerbeke has correctly read αλλαλους in Gr MS A as if it were ἄλλους. Notice that Moerbeke first wrote "invicem" and then followed that with his correction. See 50vLvar and Gr 1, 390, 12var.
- 50vL 'ad nullum'.' Moerbeke has correctly read ουδε ποθεν in Gr MS A as if it were οὐδὲ ποθ' εν. See Gr 1, 390, 14var and 17var.
- "NX" Apparently Gr MS A had  $\Xi$  alone. Hence Moerbeke wrongly changed it. See Gr 1, 390, 15.
- 50vM 'habent' Moerbeke, like the scribes of Gr MSS E and G, has read εχωντι in Gr MS A as if it were ἔχοντι. See Gr 1, 390, 22var.
- 50vN "X" Moerbeke has corrected EE in Gr MS A. See Gr 1, 390, 26var.
- 50vN "ens maior" Moerbeke has correctly read μειξεον in Gr MS A as if it were μείζον ἐόν. See Gr 1, 392, 1var.
- 50vP 'habet... quam' Moerbeke has read εχωντι in Gr MS A as if it were ἔχει ň. Heiberg, following Torelli, would write ἔχων ň. See Gr 1, 392, 13var.
- 50vP "28" Gr MS A had  $\kappa \zeta'$  (=27.). See Gr 1, 392, 17var.
- 50vQ "portio" Thus in Gr MS A. It should be "figura" (see Gr 1, 392, 22var). Hence the later "portionis" ought to be "figure" (ibid., 24var).
- 50vO "per2" Moerbeke has correctly read του μεν δια in Gr MS A as if it were διά. See Gr 1, 392, 24var.
- 50vR "T" Moerbeke has corrected  $\Theta \Delta$  in Gr MS A. See Gr 1, 392, 27var.

- 50vR "ordinatum esse" This translates τεταχθαι in Gr MS A. Heiberg would write τε ἄχθαι (=ductum esse). See Gr 1, 394, 3var.
- 50vS "autem<sup>2</sup>" This translates δε in Gr MS A. Heiberg would write δή (=itaque). See Gr 1, 394, 11var.
- 50vT "habentibus" Moerbeke has correctly read εχον τον in Gr MS A as if it were ἐχόντων. See Gr 1, 394, 17var.
- 50vU "in minori" Moerbeke has correctly read ελασσον in Gr MS A as if it were ἐλάσσονι. See Gr 1, 394, 21var.
- 50vU "dimidii speroydalis" Thus in Gr MS A. But it should be in apposition to "portione" (that is, the segment which is half the spheroid). See Gr 1, 394, 24var.
- 50vV "erit" This translates εσσειται in Gr MS A. Heiberg, following Torelli, would write ἔστε (=usque). See Gr 1, 396, 6var and the comment to 50vG ("erit").
- 50vW ''divisus'' Moerbeke has correctly read διαιφουμένος in Gr MS A as if it were διαιφημένος. See Gr 1, 396, 8var.
- 50vW Before "igitur" Gr MS A had  $\delta \eta$ , which Moerbeke did not translate and which Heiberg would delete. See Gr 1, 396, 11var.
- 50vW "equales<sup>3</sup>" Moerbeke has thus corrected ισα in Gr MS A. See Gr 1, 396, 12var.
- 50vX "etiam" This translates  $\delta \eta$  in Gr MS A. Heiberg would write  $\delta \epsilon$  (=autem). See Gr 1, 396, 15var.
- 50vX "autem" This translates δε in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 396, 16var.
- 50vX ''tetragono<sup>2</sup>'' Moerbeke has correctly read τετραγωνων in Gr MS A as if it were τετραγώνου. See Gr 1, 396, 18var.
- 50vY "aut portionem" Moerbeke has thus translated μεν η τμαματι in Gr MS A. Heiberg would write merely ένὶ τμάματι. See Gr 1, 396, 21var.
- 50vY "ante ipsum" Moerbeke has read προ του αυτου in Gr MS A as if it were πρὸ αὐτοῦ. See Gr 1, 396, 22var.
- 50vY " $TE^1$ " This renders  $\tau \alpha \nu \Theta E$  in Gr MS A. Heiberg, following Gr MS G, would write  $\tau \tilde{\alpha} \Theta E$  (=ipsi TE). See Gr 1, 398, 5var.
- 50vY After "primum" Gr MS A apparently had των (=eorum), which Moerbeke did not translate. See Gr 1, 398, 7. He did so render the των after "primus" (though he may have started to delete the "eorum" there). See 50vYvar.
- 50vY "habentem" Moerbeke has correctly read εχοντι in Gr MS A as if it were έχοντα. See Gr 1, 398, 8var.
- 51rA "BD" Moerbeke has thus changed BA in Gr MS A. He should have written BT. See Gr 1, 398, 11var.
- 51rA "quod4" and "sub2" Not in Gr MS A but added by Moerbeke. See Gr 1, 398, 12var.

- 51rA "circulum" Thus in Gr MS A, but it should be "cylindrum" (see Gr 1, 398, 13var).
- 51rB After "cylindro" Heiberg, following Torelli, would add  $\delta \lambda \omega$  (=toto). See Gr 1, 398, 22var.
- 51rC "ad nullum" See the comment to 50vL ("ad nullum<sup>1,2</sup>") and Gr 1, 398, 27var.
- 51rC "gnomones" Not in Gr MS A but added by Moerbeke. See Gr 1, 398,
- 51rC "neque ad unum" See the comment to 50vL ("ad nullum<sup>1,2</sup>") and Gr 1, 398, 30var.
- 51rD "ablatos1,2" Moerbeke has correctly read αφαιρομένους in Gr MS A as if it were ἀφαιρημένους. See Gr 1, 400, 3var and 7var.
- 51rE "quam" Not in Gr MS A but added by Moerbeke. See Gr 1, 400, 9var.
- 51rE "XQ" Not in Gr MS A but added by Moerbeke. See 51rEvar. Heiberg would not accept this. Furthermore, he would delete  $X\Psi$ ,  $X\Omega$ . See Gr 1, 400, 11*var*.
- 51rF "quarum" Moerbeke has thus corrected α in Gr MS A. See Gr 1, 400, 15var.
- 51rF "equali" Moerbeke has correctly read των ισων in Gr MS A as if it were τω ίσω. See Gr 1, 400, 16var.
- 51rF "maiora quam tripla" Moerbeke has correctly read μειζον η τριπλασιον in Gr MS A as if it were μείζονα ἢ τριπλάσια. See Gr 1, 400, 18var.
- 51rF "dupla" Thus in Gr MS A. It should be "tripla" (see Gr 1, 400, 21var).
- 51rG "emiolia2" Moerbeke has correctly read ημιολιφ in Gr MS A as if it were ήμιόλια. See Gr 1, 400, 23var.
- 51rG After "basem" Gr MS A had µev, which Moerbeke did not translate. See Gr 1, 400, 24var.
- 51rG "medietate" Thus in Gr MS A. It should be "emiolio" (see Gr 1, 400, 25var).
- 51rH "dimidium" Moerbeke has correctly read αμισθον in Gr MS A as if it were ἁμίσεον. See Gr 1, 402, 2var.
- 51rH "in quo" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 402, 6var.
- 51rl Before "qui2" Gr MS A had των, which Moerbeke did not translate. See Gr 1, 402, 12.
- 51rJ "ipsum" Moerbeke has read αυτο in Gr MS A as if it were αὐτό, while Heiberg would read it as αὐτό (=se ipsum). See Gr 1, 402, 14var. Moerbeke was perhaps puzzled by the text here, for before "ad" he put an exclamation point in the margin. See 51rJvar.
- 51rJ ''qui<sup>2</sup>'' Gr MS A had τον. Heiberg would write των (=eorum qui). See Gr 1, 402, 17var.

- 51rK "inscripta" Thus in Gr MS A, but it should be "circumscripta" (see Gr 1, 402, 22var).
- 51rK After "entem" Heiberg, following Torelli, would add καὶ ἄξονα ἔχοντα (=et axem habentem). See Gr 1, 402, 23var.
- 51rK After "proportionem" Gr MS A had ομοιως τεταγμενώ αυτώ τεταγωνώ, which Heiberg would alter as follows: δν τὸ ὁμοίως τεταγμένον αὐτῷ τεταάγωνον (=quam quadratum eodem loco positum). See Gr 1, 402, 24var and 25var. Moerbeke was obviously concerned about this passage, for opposite his translation he placed an exclamation point in the margin. See 51rKvar. Notice that Moerbeke made no effort to translate τεταγμένω, though Heiberg mistakenly reports that the equivalent of Gr MS A's reading is in Moerbeke's translation.
- 51rL "trigono" This is an obvious error, for Gr MS A had  $\pi \varrho \omega \tau \omega$  (=primo). See Gr 1, 402, 29. It looks as if Moerbeke wrote this in an erasure of three letters, and so perhaps he first wrote "p'mo" (=primo). But if so, I do not know why he would have made the change.
- 51rL "quidem" In Gr MS A, but Heiberg would delete this. See Gr 1, 404, 8var.
- 51rM "Dimidium" Moerbeke has correctly read του ημισους in Gr MS A as if it were τὸ ἡμίσεον. See Gr 1, 404, 13var.
- 51rM "Et quoniam" This translates επει alone in Gr MS A. Heiberg would add δέ after ἐπεί. See Gr 1, 404, 14var.
- 51rN "29" Gr MS A had  $\varkappa \eta'$  (=28.). See Gr 1, 404, 15var.
- 51rN "portio" Thus in Gr MS A. It should be "figura" (see Gr 1, 404, 21var).
- 51rO "quoniam" Moerbeke has correctly read επι in Gr MS A as if it were ἐπεί. See Gr 1, 404, 26var.
- 51rP "Ducantur" This represents Moerbeke's correction of  $\alpha \chi \theta \omega$  in Gr MS A. See Gr 1, 406, 2var.
- 51rP 'contingentes' Moerbeke has correctly read επιψαυουσαν in Gr MS A as if it were ἐπιψαύουσαι. See Gr 1, 406, 3var. Moerbeke first wrote 'contingentis' (see 51rPvar).
- 51rP "ei quod" Moerbeke has correctly read to in Gr MS A as if it were  $t\tilde{\phi}$ . See Gr 1, 406, 5var.
- 51rP "Contingunt" Moerbeke has correctly read επιψαυωντι in Gr MS A as if it were ἐπιψαύοντι. See Gr 1, 406, 6var.
- 51rP "autem²" This translates δε in Gr MS A. Heiberg would write δή (=itague). See Gr 1, 406, 6var.
- 51rP After "speroydale" Heiberg, following Torelli, would add  $\kappa\alpha\tau\dot{\alpha}$   $\tau\dot{\alpha}$  B,  $\Delta$  (=secundum B, D). See Gr 1, 406, 6var.
- 51rP "que BD" Moerbeke has correctly read  $\tau \alpha$  B,  $\Delta$  in Gr MS A as if it were  $\alpha$  B $\Delta$ . See Gr 1, 406, 7var.
- 51rP After "cadet" Gr MS A had  $\delta \epsilon$ , which Moerbeke properly omitted. See Gr 1, 406, 7var.

- 51rQ "TD" Moerbeke has corrected  $\Theta A$  in Gr MS A. See Gr 1, 406, 9var.
- 51rQ "autem2" This translates  $\delta \epsilon$  in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 406, 9var.
- 51rQ "cylindri" Moerbeke's correction of κυλινδρος in Gr MS A. See Gr 1, 406, 12var.
- 51rQ "itaque" This translates  $\delta \eta$  in Gr MS A. Heiberg would write  $\delta \epsilon$  (=autem). See Gr 1, 406, 14var.
- 51rR "autem" This translates  $\delta \varepsilon$  in Gr MS A. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 1, 406, 17var. Heiberg makes other changes in the text of this sentence, which do not, however, alter the basic meaning (ibid., 17var and 18var).
- 51rT Before "coni  $\Psi^1$ " Gr MS A had  $\mu\epsilon\nu$ , which Moerbeke did not translate. See Gr 1, 408, 6var.
- 51rT "dimidio<sup>2</sup>" Moerbeke has corrected ημισεως in Gr MS A. See Gr 1, 408, 8var.
- 51rT After "emiolius" Gr MS A had οπερ αδυνατον (=quod quidem impossibile), which Moerbeke failed to translate. See Gr 1, 408, 8var.
- 51rT "igitur" Heiberg falsely reports this as missing from Moerbeke's translation. See Gr 1, 408, 9var.
- 51rT "maius" Omitted from Gr MS A but correctly added by Moerbeke. See Gr 1, 408, 9var.
- 51rT "Sed neque minus" Omitted from Gr MS A but added by Moerbeke. Heiberg, interpreting Commandino, would write the Greek equivalent of "Si autem minus cono Ψ est dimidium speroydalis" (see Gr 1, 408, 11-12var). Hence he would not accept Moerbeke's addition of "enim" in the next sentence (ibid., 12var).
- 51rT-U ''in<sup>3</sup>... ex'' Omitted from Gr MS A but properly added by Moerbeke. See Gr 1, 408, 12-13var and 13var.
- 51rV "Dimidium" Moerbeke no doubt read the preceding του in Gr MS A as τό. See Gr 1, 408, 23var.
- 51rV "ergo" Not in Gr MS A but added by Moerbeke. See Gr 1, 408, 25.
- 51rW "30" Gr MS A had no number here, but it ought to have been  $\kappa\theta'$  (=29.). See Gr 1, 410, 1var.
- 51rW "quam" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 410, 6var.
- 51rX "figure<sup>1</sup>" Moerbeke has properly read τμηματος in Gr MS A as if it were σχήματος. See Gr 1, 410, 9var.
- 51rY "dimidium" Moerbeke has thus corrected αμισους in Gr MS A. See Gr 1, 410, 19var.
- 51rY "que ZH" Moerbeke has corrected του AZH in Gr MS A. See Gr 1, 410, 20var.
- 51rY "ad DZ" By this translation, Moerbeke has properly read  $\pi \circ \tau \circ \Delta Z$  in Gr MS A as if it were  $\pi \circ \tau \circ \Delta Z$ . See Gr 1, 410, 24var.

- 51rY ''itaque'' Moerbeke has properly read δε in Gr MS A as if it were δή. See Gr 1, 410, 25var.
- 51vA "cum portione" Omitted from Gr MS A but added by Moerbeke. See Gr 1, 412, 1var.
- 51vB "in minori<sup>2</sup>" Moerbeke has correctly read ελασσον in Gr MS A as if it were ἐλάσσονι. See Gr 1, 412, 10var.
- 51vC After "quidem" there is a lacuna and Moerbeke implies by a reference in the margin that Gr MS A had BH, which he labels as false (see 51vCvar). In fact, Heiberg would leave the BH and then add after "tripla est" the following:  $\tau \tilde{\alpha} \zeta B\Theta$ ,  $\tilde{\alpha} \delta \tilde{\epsilon} B\Delta \tau \tilde{\alpha} \zeta BP$ ,  $\delta \tilde{\eta} \lambda \sigma v$ ,  $\delta \tau \iota \tau \varrho \iota \pi \lambda \alpha \sigma \iota \tilde{\alpha} \tilde{\epsilon} \sigma \tau \iota v$ , which we could translate "ipsius BT, que autem BD ipsius BR, palam quod tripla est" (see Gr 1, 412, 14-15var). Heiberg seems to say that Moerbeke has omitted the succeeding TR, which is not true.
- 51vC The "habet" after "hanc" is in Gr MS A but is superfluous and ought to be deleted. See Gr 1, 412, 19var.
- 51vD "DH" and "DZ" Thus in Gr MS A, but they should be interchanged. See Gr 1, 414, 1var.
- 51vD "utique similiter" For this error, see above, Part I, Chap. 1, Sect. III, List C, item (39). If correctly taken as "dissimiliter" the whole sentence then means "Therefore, the ratios being dissimilarly perturbed, the cylinder... will have to cone  $\Psi$  the same ratio as DZ to TR."
- 51vD "Sint" Moerbeke has correctly read εστω in Gr MS A as if it were ἔστων. See Gr 1, 414, 4var.
- 51vD "ipsius" Moerbeke has correctly read τα in Gr MS A as if it were τας. See Gr 1, 414, 6var.
- 51vE "XO" Moerbeke has corrected  $\Xi\Theta$  in Gr MS A. See 51vEvar and Gr 1, 414, 7var.
- 51vE "Que" This translates τα in Gr MS A. Heiberg, following the marginal reading of Gr MS G, would write ταν (=Ipsarum). See Gr 1, 414, 8var.
- 51 vF "ipsi" Moerbeke has correctly read ταν in Gr MS A as if it were τα. See Gr 1, 414, 12var.
- 51vF "in" This translates εν in Gr MS A. Heiberg, following Torelli, would write ένί (=una). See Gr 1, 414, 15var.
- 51vG "NO1" Moerbeke has corrected  $\Theta$  in Gr MS A. See 51vGvar and Gr 1, 414, 20var.
- 51vG "habebunt autem sic" This translates εξουντι δε ωδε in Gr MS A. Moerbeke notes in the margin that the verb perhaps ought to be "protrahantur" (see 51vGvar). Heiberg accordingly would interpret εξουντι with the preceding clause and substitute διάχθω δέ for δε ωδε. See Gr 1, 414, 25var, where "protrahatur" is incorrectly given as Moerbeke's marginal reading.
- 51vH "hiis" Moerbeke has correctly read τους in Gr MS A as if it were τοῖς. See Gr 1, 416, 6var.

- 51vI ''qui'' This translates τον in Gr MS A. Heiberg would write των (=eorum qui). See Gr 1, 416, 9var.
- 51vI "DE2" Thus in Gr MS A. It should be DG. See Gr 1, 416, 11var.
- 51vJ "secundum ipsum" Moerbeke has correctly read ματα τον in Gr MS A as if it were ματ' αὐτόν. See Gr 1, 416, 18var.
- 51vJ "quam" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 416, 20var.
- 51vK, L "neque ad unum" See the comment to 50vL ("ad nullum<sup>1,2</sup>") and Gr 1, 416, 28var.
- 51vO "ipsius4" Moerbeke has correctly read τα in Gr MS A as if it were τας. See Gr 1, 418, 24var.
- 51vO "ad3" No doubt a slip on Moerbeke's part. Gr MS A had και (=et). See Gr 1, 418, 25.
- 51vP "DE" Thus in Gr MS A, but it ought to be DT. See Gr 1, 418, 29var.
- 51vP "duabus<sup>2</sup>... tertiis" Moerbeke has corrected τριτα δυο μορια in Gr MS A. See Gr 1, 420, 1var.
- 51vS "cono  $\Psi$ " By this translation Moerbeke has shown that he interpreted the preceding  $\tau$ 0 in Gr MS A as  $\tau$ 0 $\tilde{\nu}$ . See Gr 1, 420 19var.
- 51vS "qui²" This translates τον in Gr MS A. Heiberg would write τῶν (=eorum qui). See Gr 1, 420, 22var. The same is true for "qui²" in 51vT (ibid., 28var).
- 51vT "ipsum" See the comment to 51rJ ("ipsum") and Gr 1, 420, 25var.
- 51vU, V "que... evenerunt" Moerbeke has suddenly changed his translation of this clause from "que... acciderunt." In either case the meaning is "which have been applied" (see Gr 1, 422, 1 and 6).
- 51vU "habet" Not in Gr MS A but added by Moerbeke. See Gr 1, 422, 5var.
- 51vV "ante dictum extremum" This translates προ του λεγομεν[ου] του εσχατου in Gr MS A and is unintelligible for the argument. Heiberg would write πρώτου λεγομένου τοῦ ἐσχάτου, which we can translate in Moerbeke's style "primo dicto ultimo" (="with the last [space] being enumerated as the first"). See Gr 1, 422, 8var.
- 51vV "omnes1" Moerbeke has correctly read παντος in Gr MS A as if it were πάντες. See Gr 1, 422, 8var.
- 51vV "gnomonibus" Moerbeke has correctly read γνωμονεσι in Gr MS A as if it were γνωμόνεσσι. See Gr 1, 422, 13var.
- 51vW After "quod" Heiberg, following the interpretation of Torelli, would add τὰ χωρία πάντα τὰ παρὰ τὰν ΞΝ παραπεπτωμότα ποτί (which I have reported in a manner slightly different from that of Heiberg because of the different word order in Moerbeke's Latin text of what follows). It would be translated in Moerbeke's style "omnia spatia secus XN accidentia ad" as I have suggested in my addition to the text. See Gr 1, 422, 15-16var. The addition is necessary, for without it the first ratio of the proportion has no antecedent term.

- 51vX "scilicet medietatibus" This translates ταις τε ημισεαις in Gr MS A. Heiberg, following Torelli, would write τῷ τε ἡμισέα (=scilicet medietati). See Gr 1, 422, 24var.
- 52rA "ZD" Moerbeke has corrected ZΛ in Gr MS A. See Gr 1, 422, 28var.
- 52rA "ergo" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 424, 2var.
- 52rA "quam<sup>3</sup>" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 424, 3var.
- 52rB "portio1" Not in Gr MS A but added by Moerbeke. See Gr 1, 424, 5var.
- 52rB "31" Gr MS, A failed to have the expected  $\lambda'$  (= 30.). See Gr 1, 424, 8var.
- 52rB "plano" Not in Gr MS A but added by Moerbeke. See Heiberg's translation of Gr 1, 424, 9.
- 52rC "habentis basem" This translates του δασιν εχοντος in Gr MS A. Heiberg would write τὸ δάσιν ἔχον (=habens basem or, with the gender changed, habentem basem). See Gr 1, 424, 11var.
- 52rC "equalis simulutrique" Moerbeke has read αι συναμφοτεραι in Gr MS A as if it were ά ἴσα συναμφοτέρα. See Gr 1, 424, 13var.
- 52rD "sectio" Moerbeke has correctly read τομαν in Gr MS A as if it were τομά. See Gr 1, 424, 19var.
- 52rD "ABGD" Thus in Gr MS A. Heiberg, following Nizze, would write ABΓ. See Gr 1, 424, 20var.
- 52rD "ducantur" Moerbeke has correctly read αχθω in Gr MS A as if it were ἄχθων. See Gr 1, 424, 22var.
- 52rD "planum equedistans" Thus in Gr MS A. Should be "plana equedistantia" with the verb in the Latin text changed to "erigantur" (see Gr 1, 424, 23 and 24var).
- 52rE After "portionum" Heiberg, following Nizze's interpretation, would add τὰ B, Z. ἄχθω οὖν ἁ τᾶς κορυφὰς τῶν τμαμάτων. We can translate this in Moerbeke's style as "que B, Z. Ducatur igitur que [recta] vertices portionum" (see Gr 1, 424, 26var). If this is accepted, "copulate" must be changed to "copulans" (ibid., 426, 1var).
- 52rG "habentis basem<sup>1,2</sup>" See the first comment to 52rC and Gr 1, 426, 17var and 21var.
- 52rG "TZ" Moerbeke has corrected  $\Delta Z$  in Gr MS A. See 52rGvar and Gr 1, 426, 19var.
- 52rH "est2" Not in Gr MS A but added by Moerbeke. The same is true of the "est" in 52rI. See Gr 1, 426, 25 and 428, 11.
- 52rH "cylindri" Gr MS A had πυλινδρων (=cylindrorum), which Moerbeke wrongly changed. See Gr 1, 428, 1var.
- 52rJ "Inscripta" and "circumscripta" These translate εγγεγοαμμενον and περιγεγραμμενον in Gr MS A. Heiberg would write ἐγγεγράφθω (=Inscribatur) and περιγεγράφθω (=circumscribatur). See Gr 1, 428, 11var and

- 12var. Compare the similar readings in 52rH, which represent Archimedes' conventional way of expressing this procedure.
- 52rJ "equalem" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 428, 13var.
- 52rK "quod oportebat" Moerbeke has properly read ως δει in Gr MS A as if it were δ ἔδει. See Gr 1, 428, 22var.
- 52rL "32" The number was omitted from Gr MS A but ought to have been  $\lambda\alpha'$ (=31.). See Gr 1, 428, 22var.
- 52rL "simulutrique" Gr MS A had συναμφοτεραις (=simulutrisque). See Gr 1, 428, 28var.
- 52rM "portionis" Thus in Gr MS A. Heiberg, following Torelli, would write σχήματος (=figure). See Gr 1, 430, 5var.
- 52rM After "plani" Heiberg would add  $\delta \epsilon$  (=autem). See Gr 1, 430, 7var.
- 52rM, P "itaque" This translates δη in Gr MS A. Heiberg would write δέ (=autem). See Gr 1, 430, 8var and 25var.
- 52rQ "TD2" Moerbeke has corrected ΘA in Gr MS A. See 52rQvar and Gr 1, 432, 7var.
- 52rR "eadem autem" Moerbeke has thus rendered ο αυτος in Gr MS A. See Gr 1. 432. 13var.
- 52rR "diametrum KL" By this translation Moerbeke has shown that he has read τα before KA as if it were τάν. See Gr 1, 432, 16var.
- 52rS "speroydalis" By this translation Moerbeke has shown that he read the preceding to tou in Gr MS A as if it were tou. See Gr 1, 432, 22var.
- 52rS "ZE, BE" Moerbeke has corrected EE, BE in Gr MS A. It should be ZE, ED. See 52rSvar and Gr 1, 432, 25var.
- 52rS-T "hoc... BE" Heiberg would delete this. See Gr 1, 432, 25—434, 5 and 433, n. 1.
- 52rT "simulutrique" Gr MS A had συναμφοτεραις (=simulutrisque). See Gr 1, 434, 2.
- 52rU "medietate" Moerbeke has correctly read του ημισυ in Gr MS A as if it were τοῦ ἡμίσεος. See Gr 1, 434, 7var.
- 52rU "dimidio" Moerbeke has correctly read τω ημισυ in Gr MS A as if it were τω ήμισέω. See Gr 1, 434, 10var.
- 52rU "quadruplum enim utrumque" Heiberg would delete this. See Gr 1, 434, 12-13 and 435, n. 1.
- 52rV "Habebit" Moerbeke has thus read εχοι in Gr MS A. Before the succeeding και Heiberg would add κα. See Gr 1, 434, 17var.
- 52rV "ZH" Moerbeke has corrected ZN in Gr MS A. See 52rVvar and Gr 1, 434, 19var. Cf. ZH<sup>1</sup> in 52rW, for which see ibid., 22var.
- 52rW "Quod...  $XD^2$ " This translates υπερεχει δε του υπο ταν ZH,  $\Xi\Delta$  α υπο ταν ZE, EΔ in Gr MS A. Heiberg, following the Basel ed., would write τό for του and τοῦ for  $\alpha$ , thus in effect interchanging ZE, ED and ZH, XD in Moerbeke's translation. See Gr 1, 434, 24var.

- 52rX "EH" Moerbeke has corrected EN in Gr MS A. See Gr 1, 436, 3var.
- 52rX "eandem enim... BE" Heiberg would delete this. See Gr 1, 436, 9 and 437, n. 1.
- "ZT" Thus in Gr MS A. It should be ZE. See Gr 1, 436, 9var. 52rX
- "Habebit" Gr MS A had εχοι. See Gr 1, 436, 14var.
- 52rY "utique" This translates av in Gr MS A. Heiberg, following Nizze, prefers ovv. He misreports Moerbeke's reading as "itaque" (see Gr 1, 436, 14*var*).
- 52vA "quam" Not in Gr MS A but properly added by Moerbeke. See Gr 1, 436, 16var.
- "ZT" Thus in Gr MS A. It should be ZE. See Gr 1, 436, 18var.
- "EH4" Moerbeke has corrected EN in Gr MS A. See Gr 1, 436, 21var. 52vA
- "ED3" Moerbeke has added this in the margin (see 52vAvar). There was apparently a lacuna in Gr MS A or at least ED was omitted from that MS. See Gr 1, 436, 21var.
- 52vB After "proportionem" Gr MS A apparently had  $E\Delta$ , which Moerbeke properly omitted. See Gr 1, 436, 23var.
- "EH1" Moerbeke has corrected EN in Gr MS A. See Gr 1, 436, 23var.
- "HD" Moerbeke has corrected N\D in Gr MS A. See Gr 1, 436, 26var. 52vB
- "XE" Thus in Gr MS A. It should be XD. See Gr 1, 436, 29var. 52vC
- "quam" Not in Gr MS A but added by Moerbeke. See Gr 1, 438, 1var. 52vC
- 52vC "ei<sup>5</sup>" Moerbeke has correctly read το in Gr MS A as if it were τω. See Gr 1, 438, 4var.
- "33" The proposition number was missing from Gr MS A but it ought to have been  $\lambda\beta'$  (=32.). See Gr 1, 438, 12var.
- 52vE "habentis basem" See the first comment to 52rC and Gr 1, 438, 16var.
- "equalis simulutrique" Gr MS A had αι συναμφοτεραι ισα. Heiberg has settled for à συναμφοτέραις ἴσα, though he suggests that à συναμφοτέρα ἴσα might have been intended. See Gr 1, 438, 17var.
- 52vF "alio" Moerbeke has correctly read αλλα in Gr MS A as if it were ἄλλφ. See Gr 1, 438, 22var.
- 52vG "contingent" Moerbeke has thus translated επιψαυσωντι in Gr MS A, no doubt understanding it as ἐπιψαυσοῦντι. See Gr 1, 440, 3var.
- "autem<sup>3</sup>... medietate" This represents a correction of μειζον οντος τω ημισεον in Gr MS A. Heiberg, following Torelli, would write μείζον δὲ ἢ τὸ ήμίσεον. See Gr 1, 440, 8var. The succeeding "cuius" refers to "portio" and not to "speroydalis."
- 52vH "ipsi" and "que" Moerbeke has thus rendered  $\tau \alpha \varsigma$  and  $\alpha$  in Gr MS A. Heiberg, following the Basel ed., would write  $\dot{\alpha}$  and  $\tau \ddot{\alpha}$  and so in effect interchange these two words. See Gr 1, 440, 9var and 10var.
- 52vH "habentis basem" See the first comment to 52rC and Gr 1, 440, 12var.
- 52vI "TD" Moerbeke has corrected ΘA in Gr MS A. See 52vIvar and Gr 1, 440, 20var.

- 52vI "priori" It is evident that Moerbeke has read the preceding article το in Gr MS A as τω. See Gr 1, 440, 20var.
- 52vI "inscripti<sup>1,2</sup>" In the first instance this translates εγγεγοαμμενφ and in the second εγγεγοαμμενου. Both should be ἐγγεγοαμμένου. See Gr 1, 440, 22var and 23var. Similar corrections must be made for "inscripti<sup>1,2</sup>" in 52vJ (*ibid.*, 442, 3var and 7var) and "inscripti" in 52vK (*ibid.*, 11var) and "inscripti<sup>1,2</sup>" in 52vM (*ibid.*, 25var and 444, 6var). Similar corrections are also necessary for the definite articles that accompany these participles in Gr MS A.
- 52vJ "habens" Moerbeke has read εχοντα in Gr MS A as if it were έχον. See Gr 1, 442, 4var.
- 52vJ "BE2" Thus in Gr MS A. It should be BT. See Gr 1, 442, 9var.
- 52vK "BX" Thus in Gr MS A. It should be BT. See Gr 1, 442, 13var.
- 52vK "ZE" Moerbeke has corrected ZC (!) in Gr MS A. His own marginal rendition may be ZS, not ZC, as Heiberg supposed. See 52vKvar and Gr 1, 442, 17var.
- 52vL "speroydalis" Heiberg would delete this. See Gr 1, 442, 18.
- 52vM "demonstratum... ad  $BE^2$ " Heiberg would delete this. See Gr 1, 444, 2-3 and 443, n. 2.
- 52vM "[minori...in]" Missing from Gr MS A and Moerbeke's translation. But I have added it as mathematically necessary. See Gr 1, 444, 4-5var.
- 52vN "quoniam basem habent" Missing from Gr MS A but added by Moerbeke. See 52vNvar and Gr 1, 444, 9var. Heiberg reads Moerbeke's marginal comment as "supplevi," but here and elsewhere Moerbeke writes "suplevi" (see the Index of Latin Terms).
- 52vN "cum ea" Moerbeke has properly read  $\tau$ ov in Gr MS A as if it were  $\tau \tilde{\phi}$ . See Gr 1, 444, 10var.
- 52vN "autem2" Not in Gr MS A but added by Moerbeke. Heiberg would prefer ovv (=igitur). See Gr 1, 444, 11var.

## Commentary on Euthochii Ascalonite rememoracio in libros Archymedis de equerepentibus (53rA-55rW)

53rB "Ropen" For this word, see Robert Grosseteste's Commentum in Aristotelis Ethicam (E. Franceschini, "Roberto Grossetesta, vescovo di Lincoln, e le sue traduzioni latine," Atti del Reale Istituto Veneto di Scienze, Lettere ed Arti, Vol. 93, 2nd part [1933-34], p. 110): "In greco habetur ropin; est autem rope subitus motus brachii libre ex parte qua pondus est maius; quemadmodum enim appensa in iugis que maioris ponderis sunt utiliora sunt, sub hac metaphora loquitur hic, et posset quoque hoc nomen rope convenienter hic transferri per momentum vel motum vel inclinationem, secundum predictam metaphoram..." In his translation of the Nicomachean Ethics Grosseteste

- rendered the word by incrementum, auxilium and inclinatio (see ed. R. A. Gauthier in Arist. Lat., vol. XXVI 1-3, Fasc. 5, p. 726). Moerbeke's addition of "i.e. reptionem" is another instance of his practice of first transliterating a technical term and then following it by a Latin word that approximates it.
- 53rB "amantibus addiscere". This is Moerbeke's translation of τοις φιλομαθεσιν in Gr MS A. See Gr 3, 264, 7.
- 53rD "ABG2" Thus in Gr MS A. It should perhaps have been B, G. See Gr 3, 264, 18var.
- 53rD "neutrum altero" This literally translated Gr MS A. It would have been better for Moerbeke to have written "neutra altera" in order to link it with partes. See Heiberg's translation of Gr 3, 264, 19.
- 53rE "equales... repere" I have added the quotation marks. Compare the same text in 17rA, where ισορροπειν was rendered by "equaliter inclinare" instead of "equaliter repere" (see Gr 2, 124, 3 and Gr 3, 266, 3).
- 53rE-F "et que... considerantibus". This translation is somewhat ambiguous. It simply means that the rest of the suppositions are in fact axioms that are clearly evident to anyone who pays the slightest attention to them.
- 53rF "Equalium... invicem2" and "Inequalium... posita" Compare the same texts in 17rC and D. In Gr 3, 266, 10-11var Heiberg reports that the quotation marks are missing from the second quotation in Moerbeke's text. However, a single sign opposite the line including the quotation can be found in the margin of MS O.
- 53rF 'ipsarum' Moerbeke has correctly read αυτην in Gr MS A as if it were αὐτῶν. See Gr 3, 266, 9var.
- 53rG "BH" Moerbeke has corrected B $\Gamma$  in Gr MS A. See Gr 3, 266, 15var.
- 53rI "BG ad EZ" Thus in Gr MS A. It should be "EZ ad BG" (see Gr 3, 266, 27var).
- 53rI " $ABG^2$ " and " $MKL^1$ " These are the syncopated forms standing for AB, BG and MK, KL.
- 53rJ "ipsorum" Gr MS A had των. As a genitive absolute it should have been translated by the ablative "ipsis" (see Gr 3, 268, 5).
- 53rJ-K "Omnis... figuram" Compare the same text in 17rE. For "curva (! cava)" see the third comment to 23vJ.
- 53rK "perimetrum" Moerbeke has correctly read περιδιαμετρον in Gr MS A as if it were περίμετρον. See Gr 3, 268, 16var.
- 53rL Before "enim<sup>2</sup>" Gr MS A had μεν (=quidem), which Moerbeke failed to translate. See Gr 3, 268, 21var.
- 53rM "esset" This translates εσται in Gr MS A. See Gr 3, 270, 2var.
- 53rM "secundum" Thus in Gr MS A. Following Torelli, Heiberg would write  $\delta'$  (=4.). See Gr 3, 270, 5var.
- 53rM "Sit... possibile est" Compare the text in 17rL.
- 53rN "Quare" This translates ωστε ουν in Gr MS A. See Gr 3, 270, 10var.

- 53rO "quintum" Thus in Gr MS A. Heiberg, following Torelli, would write ζ' (=7.). See Gr 3, 270, 12var.
- 53rO "Aut... non" This translates Gr MS A. Except for the erroneous "ab" (i.e.  $\alpha\pi$ 0), which ought to be deleted, the text is sounder here than it was in 17vC-D. See the comment to 17vD ("H") and Gr 3, 270, 13var. If Moerbeke had compared the two texts, he would have been able to improve the version in 17vC-D.
- 53rO "aut3" Moerbeke thus has translated η in Gr MS A. He should have translated it as "quam" (see Heiberg's translation of Gr 3, 270, 16).
- 53rP "Et...  $G^2$ " See the similar text in 17vD. Here he translated συμμετρον of Gr MS A by "commensuratum" and there by "commensurabile" (see Gr 2, 138, 3 and Gr 3, 270, 22). Again we should conclude that Moerbeke made no effort to make his translations of the same texts consistent.
- 53rP "et ut" This translated ωστε in Gr MS A. See Gr 3, 270, 22var.
- 53rP-Q "aut secundum equalem reptionem". This is ambiguous but so is the reading given by Gr MS A: η κατα την ισορροπιαν (see Gr 3, 270, 25). Following his usual practice, Moerbeke would have had to translate  $\eta$  (= $\mathring{\eta}$ ) either by "aut" or by "quam" and he chose the former, though neither would have made the Latin clear. What Eutocius intended was that A is greater than G in respect to equilibrium, that is, from magnitude AB is subtracted some quantity B such that the remainder A is commensurable with G and at the same time has greater moment than G.
- 53rQ "in principio... Theodosii" That is, Prop. X.1 of the Elements of Euclid and Prop. III.9 of the Spherics of Theodosius.
- 53rQ "undecimum" Thus in Gr MS A. Heiberg, following Torelli, would write iy' (=13.). See Gr 3, 272, 1var.
- 53rQ-R "Et... BG" Compare the text in 18rE, where the translation quite properly has "erunt" instead of "cadent" to render ἐσσοῦνται in Gr MS B, while here Moerbeke has used "Cadent" to translate πεσουνται in Gr MS A, which Heiberg rejects in favor of the term used in 18rE. See Gr 2, 152, 6 and Gr 3, 272, 2var.
- 53rQ "LM" Moerbeke has corrected Λ in Gr MS A. See Gr 3, 272, 2var.
- 53rR "AE1" Moerbeke has corrected A $\Theta$  in Gr MS A. See Gr 3, 272, 6var.
- 53rR "AZ1" Moerbeke has corrected ΛZ in Gr MS A. See Gr 3, 272, 8var.
- "Trigonum... rectas" Compare the similar text in 18rF-G. Here Gr MS A omitted τρίγωνον, which Moerbeke perhaps took from the earlier text. See Gr 2, 152, 14 and Gr 3, 272, 11var.
- 53rT "ZG1" Not in Gr MS A but added by Moerbeke. See 53rTvar and Gr 3, 272, 19var.
- 53rT "ABG" Thus in Gr MS A. It should be ADG. See Gr 3, 272, 20var.
- 53rU-V "Sed... RP1" Compare the similar text in 18rH, where "quidem" is missing perhaps because Gr MS B (which Moerbeke was using for his transla-

- tion) had  $\tilde{\eta}$  instead of  $\tilde{\eta}\pi\epsilon\varrho$ , though Gr MS A there as well as here had the latter word. See Gr 2, 154, 3 and Gr 3, 272, 26.
- 53rV " $DB^{1,2}$ " Gr MS A had  $\Delta\Omega$  (= $D\Omega$ ), which is correct. See Gr 3, 274, 1. Perhaps Moerbeke's error arose from the fact that in the figure he included for the earlier text he or the scribe of Gr MS B had omitted  $\Omega$  (see Fig. Cg. 13).
- 53rV After " $GA^3$ " Heiberg, following the Basel ed., would add  $\alpha \alpha \alpha (=ergo)$ . See Gr 3, 274, 4var.
- 53rW "Quod... centra" Compare the similar text in 18rJ-K, where Moerbeke gave a somewhat different rendering. Note also that the Greek text there had ἐντί instead of ἐσσεῖται. See Gr 2, 154, 24 and Gr 3, 274, 8. I have added the quotation marks missing from both Gr MS A and Moerbeke's translation.
- 53rW "illam" Moerbeke has correctly read εμείνω in Gr MS A as if it were ἐκεῖνο. See Gr 3, 274, 9var.
- 53rW "parallelogrammorum" Moerbeke has corrected του...  $\pi\alpha\varrho\alpha\lambda\lambda\eta\lambda$ ογραμμου in Gr MS A. See Gr 3, 274, 11var. I see no reason for Heiberg's report of Moerbeke's reading as του, since the latter utilized the plural of the noun, which implies that he had corrected the article to των.
- 53rX "undecimi" Thus in Gr MS A. Heiberg, following Torelli, would write  $\iota\gamma'$  (=13.). See Gr 3, 274, 13var.
- 53rX "Similiter... trigonis1" See the similar text in 18rM.
- 53rX "LE" Thus in Gr MS A. It should be "L in" (i.e. Λ ἐν), as Moerbeke would have realized had he consulted the text in 18rM. See Gr 2, 156, 16 and Gr 3, 274, 14var.
- 53rX "ZL" Moerbeke has corrected ZA in Gr MS A. See 53rXvar and Gr 3, 274, 15var.
- 53rY "tertium decimum" Thus in Gr MS A. Heiberg, following Torelli, would write  $\iota\epsilon'$  (=15.). See Gr 3, 274, 19var.
- 53rY "Si... devenient" Compare the same text in 18rS.
- 53rY "ZEH1" Moerbeke has corrected ZEN in Gr MS A. See Gr 3, 274, 20var. Perhaps Moerbeke was influenced by the correct reading in 18rS.
- 53rY "GD" Moerbeke has corrected B $\Delta$  in Gr MS A. See Gr 3, 274, 23var.
- 53rY "Est... DE" Apparently Gr MS A included quotation marks, which Moerbeke quite properly omitted. See Gr 3, 274, 24-26var.
- 53rY "autem" Thus in Gr MS A. Heiberg would write  $\gamma \acute{\alpha}\varrho$  (=enim). See Gr 3, 274, 24var. Note further that before "que BH" Gr MS A had  $\omega \varsigma$  (=ut), which Moerbeke did not translate (ibid.).
- 53rY "DH ad DE" Gr MS A had  $\Delta H \pi \varrho o \varsigma \Delta \Sigma$ . It should be "GH ad DH" (see Gr 3, 274, 25var and 26var). Moerbeke incorrectly changed DS to DE (see 53rYvar).
- 53rZ "Erit... BT" Compare the similar text in 18rT, where Moerbeke (following Gr MS B no doubt) incorrectly gave "itaque" after "quoniam" (see the comment to 18rT-U).

- 53rZ ''*BD*'' Gr MS A incorrectly had B $\Theta$ . See 53rZvar and Gr 3, 276, 2-3var.
- 53vA In this section Gr MS A apparently had superfluous quotation marks, which Moerbeke omitted. See Gr 3, 276, 10-11var.
- "basis" Moerbeke so read the abbreviation in Gr MS A. It should be "bases" (see Gr 3, 276, 11var).
- 53vA "itaque" Not in Gr MS A but added by Moerbeke. Heiberg added ouv on the basis of Moerbeke's reading, though in fact Moerbeke obviously thought of the addition as  $\delta \dot{\eta}$ . See Gr 3, 276, 13var and the Greco-Latin Glossary below.
- "explicit" Added by Moerbeke. See Gr 3, 276, 19var.
- "Supponantur... comparare" This adds the specified spaces AB and GD to the general statement found in the enunciation in 18vA. I have added the quotation signs missing from Moerbeke's translation but perhaps present in Gr MS A (see Gr 3, 278, 6-8var). In the earlier text παραδαλείν was more accurately translated as "apponere" than here in 53vD as "comparare" (see Gr 2, 164, 5 and Gr 3, 278, 8). In the latter case he first wrote "secus iacere" (see 53vDvar). In either case it means "to apply" the spaces. This is another example of the lack of consistency between Moerbeke's earlier and later translations of the same passages.
- 53vE "4" Thus in Gr MS A. Heiberg would write δεκάτου (=decimo), referring to the numbers he settled on for the propositions of Bk. I. See Gr 3, 278, 17var. This would be Prop. 8 in Moerbeke's system of numbers.
- 53vF "Hoc... ordinibus" Compare the same text in 18vH. I have added the quotation marks missing from Gr MS A and Moerbeke's translation. See Gr 3, 278, 22var.
- 53vG "vocabat" Moerbeke has properly read εμβαλει in Gr MS A as if it were ἐκάλει. See Gr 3, 280, 4var.
- "ab" Thus in Gr MS A, but it ought to be deleted. See Gr 3, 280, 6var. 53vG
- "AG" Moerbeke has corrected AB in Gr MS A. See Gr 3, 280, 8var.
- "EH, Z1" Moerbeke first wrote "EH, Z1 non" and then deleted the "non." See 53vHvar. Gr MS A had EH ουκ. Heiberg would write EHΘ, ZςK (=Z1K). See Gr 3, 280, 11var. The fact that Z1 has been designated as the diameter of segment BG implies that 1 is to be located on the intersection of lines ZK and BG. On the other hand, in 53vL it is given as on the line P23891S', and in Moerbeke's Fig. Ee. 5 it is also located on that line.
- 53vI "ADG" Moerbeke has corrected ABΓ in Gr MS A. See 53vIvar and Gr 3,
- 53vI "EHT" Moerbeke has corrected E $\Theta$ H in Gr MS A. See 53vIvar and Gr 3, 282, 1var.
- 53vJ "ad1" Not in Gr MS A but properly added by Moerbeke. See Gr 3, 282,
- 53vJ " $HA^2$ " Moerbeke has corrected A $\Delta$  in Gr MS A. See 53vJvar and Gr 3, 282, 2var.

- 53vK "O<sup>1</sup>" Moerbeke has corrected Θ in Gr MS A. See Gr 3, 282, 12var.
- 53vK "-%" Moerbeke has corrected -Λ in Gr MS A. See Gr 3, 282, 14var.
- 53vL "C4" Moerbeke has corrected TA in Gr MS A. See Gr 3, 282, 18var.
- 53vL After "4Q" Heiberg, following Torelli, would add  $\kappa\alpha$ i  $\hbar$  EA  $\tau\bar{\eta}$  AZ. In Moerbeke's style this would be "et que EL ipsi LZ" (see Gr 3, 282, 18var).
- 53vL ''BD'' Moerbeke has corrected BΓ in Gr MS A. See Gr 3, 282, 20var.
- 53vM "B4" "L8" and "8D" Moerbeke has corrected respectively BA, AA, A $\Delta$  and  $\Delta$  in Gr MS A. See Gr 3, 282, 21var and 22var.
- 53vM "AD1" Moerbeke has corrected  $\Theta\Delta$  in Gr MS A. See 53vMvar and Gr 3, 282, 24var.
- 53vM "[ad... EL]" Though it was missing from Gr MS A and Moerbeke's translation, I have added this as mathematically necessary. See Gr 3, 282, 27var. Moerbeke knew that something was wrong here, for he put a sign after  $AD^3$  both in the text and in the margin. See 53vMvar.
- 53vN "BL" Moerbeke has corrected  $B\Delta$  in Gr MS A. See 53vNvar and Gr 3, 282, 28var.
- 53vN "DL" Moerbeke has corrected B $\Lambda$  in Gr MS A. See 53vNvar and Gr 3, 282, 28var.
- 53vN After "qualium" Gr MS A had  $\alpha \varrho \alpha$  (=ergo), which Moerbeke quite properly did not translate. See Gr 3, 282, 30var.
- 53vN "E6" Moerbeke has corrected EZ in Gr MS A. See Gr 3, 284, 1var.
- 53vN " $^{6}L^{2}$ " and " $^{C}L^{2}$ " Moerbeke has corrected  $\Lambda$ Z and TA in Gr MS A. See Gr 3, 284,  $^{2}var$ .
- 53vO "C4" Moerbeke has corrected TA in Gr MS A. See Gr 3, 284, 3var.
- 53vO "B4"" "L4" "4B" and "B42" Moerbeke has corrected respectively BA, ΛA, AB and BA in Gr MS A. See Gr 3, 284, 4var and 5var.
- 53vO "[que autem 4L trium]" In Gr MS A but omitted by Moerbeke. I have added it, changing Gr MS A's  $A\Lambda$  to 4L. See Gr 3, 284, 5var.
- 53vP " $P8^{1,2}$ " "B8" " $8D^{1}$ " "B4" "4L" and " $8D^{2}$ " Moerbeke has corrected respectively  $\Pi\Delta$ ,  $B\Delta$ ,  $\Lambda\Delta$ , BA,  $A\Lambda$  and  $A\Delta$  in Gr MS A. See Gr 3, 284, 9var, 10var, 11var, 12var and 13var.
- 53vQ "L8" Moerbeke has corrected  $\Lambda\Delta$  in Gr MS A. See Gr 3, 284, 14var.
- 53vQ "numerorum" Moerbeke has correctly read αριθμους in Gr MS A as if it were ἀριθμῶν. See Gr 3, 284, 15var.
- 53vQ "[secantur]" Not in Gr MS A or Moerbeke's translation, but something like this is needed. See Gr 3, 284, 19var. Moerbeke apparently realized that something was wrong (see 53vQvar).
- 53vQ, R "'C4" and "P8" Moerbeke has corrected TA and  $\Pi\Delta$  in Gr MS A. See Gr 3, 284, 20var.
- 53rV "a CBQZS'G" This renders  $\alpha\pi\sigma$   $\Gamma BAZ\varsigma\Gamma$  in Gr MS A, Moerbeke having changed the first  $\Gamma$  into C and A into Q (see 53vRvar). It should be APECBQ-ZS'G. See Gr 3, 284, 23var.

- 53vS "Note" Moerbeke has properly read γνωριμον in Gr MS A as if it were γνωρίμως. See Gr 3, 286, 5var.
- 53vS "similiter" Moerbeke has properly read ouotov in Gr MS A as if it were δμοίως. See Gr 3, 286, 6var.
- 53vT "habeant" Moerbeke has read εχει in Gr MS A as if it were ἔχη. See Gr 3, 286, 7var.
- 53vT "Inscribatur...X" Compare the text in 18vP. There Gr MS B apparently supplied X (i.e.  $\Xi$ ) instead of K, and so here in 53vT Moerbeke has changed Gr MS A's K to X. See Gr 2, 174, 16 and Gr 3, 286, 13var. This is one of the few instances where Moerbeke made the translations of earlier and later versions of the text consistent.
- 53vU "secundo" Thus in Gr MS A. It should be "decimo" (see Gr 3, 286, 14var). It was obviously Prop. X.1 of the Elements that Eutocius intended.
- 53vU "Et... TZHI" See the similar text in 18vV. In the earlier text, where Gr MS B was being used, the parallelogram was marked EZML rather than TZHI. See Gr 2, 178, 8var and Gr 3, 286, 17.
- 53vV "partem" Moerbeke has properly read μερου in Gr MS A as if it were μέρος. See Gr 3, 286, 25var.
- 53vV-W "Erit... G" Compare the text in 19rC, where C (=Gr T) correctly appears instead of the G (i.e.  $\Gamma$ ) of Gr MS A in 53vW. Moerbeke has not attempted to coordinate the two texts. See Gr 2, 180, 18 and Gr 3, 288, 2var.
- 53vW After "Demonstratum" Gr MS A had usv (=quidem), which Moerbeke did not translate. See Gr 3, 288, 2var.
- "HT" Thus erroneously in Gr MS A. In reference to the figure in Gr 3, 289 the correct designation is NI. However, in reference to my Fig. Cg. 22 (based on Gr MS B) the proper designation would be MI. Note that Moerbeke did not repeat the figure here in 53vW-X.
- 53vW After "gravitatis" Heiberg, following Torelli, would add the Greek equivalent to "magnitudinis composite ex portionibus AKB, BLG est Q et [centrum gravitatis]" (see Gr 3, 288, 6-7var).
- "Quoniam1... etc." Compare the same text in 19rE. 53vX
- "AKB<sup>2</sup>" Gr MS A had ABK. See Gr 3, 288, 12var.
- "C" Moerbeke has corrected  $\Gamma$  in Gr MS A. The Greek should be T, which Moerbeke consistently represents by C. See Gr 3, 288, 13var.
- 53vX "Quoniam" Moerbeke has correctly read επι in Gr MS A as if it were ἐπεί. See Gr 3, 288, 16var.
- "AKB" Moerbeke has corrected KAB in Gr MS A. See Gr 3, 288, 17var.
- 54rC After "quanto" Gr MS A had  $\delta$ " (=autem), which Moerbeke did not translate. See Gr 3, 290, 4var.
- 54rC "autem minorem ipsa TE" Gr MS A had only της ΘΕ. Hence "autem minorem" should certainly be deleted. See Gr 3, 290, 9var.

- 54rD "Inscribatur... note" Compare the text in 19rM, where EZH was correctly given instead of the DEZ found here in 54rD. Obviously, once more Moerbeke has made no attempt to make the texts identical. See Gr 2, 186, 20-25 and Gr 3, 290, 12-14. Though the phrase "hoc... note" was included in the text in 19rM, Heiberg would delete it there and take it here as a comment of Eutocius.
- 54rD "hiis" Not in Gr MS A but properly added by Moerbeke. See Gr 3, 290, 15var.
- 54rE "DEZ" Gr MS A had EZ. Heiberg, following Torelli, would write EZH. See Gr 3, 290, 16var.
- 54rE "B, Z" Moerbeke has corrected B $\Delta$ Z in Gr MS A. See 54rEvar and Gr 3, 290, 19var.
- 54rF "Et quoniam... MZ" Compare the same text in 19rP.
- 54rF "Et<sup>2</sup>...  $\theta$ " Compare the text in 19rP-Q. In the earlier text Moerbeke was following Gr MS B, where the expression "ubi signum tale  $\theta$ " did not appear. See Gr 2, 188, 18var and Gr 3, 292, 1.
- 54rF "KL" Thus in Gr MS A. It ought to be KZ. See Gr 3, 290, 26var.
- 54rH "BT" Moerbeke has corrected BE in Gr MS A. See 54rHvar and Gr 3, 292, 9var.
- 54rH "EH1" Moerbeke has corrected EB in Gr MS A. See 54rHvar and Gr 3, 292, 10var.
- 54rH "quidem" Heiberg would delete this. See Gr 3, 292, 12var.
- 54rI "EHTZ" Gr MS A had EHZO. See Gr 3, 292, 14var.
- 54rI "Et quoniam... demonstratur" Compare the text in 19rR. In the earlier text, BC appeared instead of BS. It was thus in Gr MS B. But here in 54rI, Gr MS A incorrectly had BE, which Moerbeke followed. See Gr 2, 190, 3 and Gr 3, 292, 16var.
- 54rI After "enim" Gr MS A had τουτο (=hoc), as did the earlier text of 19rR. See Gr 3, 292, 17var.
- 54rI "quadrupla<sup>2</sup>" Moerbeke has corrected τοιπλασια in Gr MS A. He first wrote "dupla" after "BD<sup>3</sup>" and then deleted it. See 54rIvar and Gr 3, 292, 18var.
- 54rJ " $BC^{1-6}$ " Moerbeke has taken BC from the earlier text and Fig. Cg. 25. In all of these instances Gr MS A had B $\Sigma$ . See Gr 3, 292, 19, 22, 23, 24 and 22var. This is a clear case of Moerbeke's having kept his eye on the earlier text while translating Eutocius' Commentary.
- 54rJ "Que BX... ipsius BD" Compare the similar text in 19rR. Note that Moerbeke, on the basis of the earlier text's XB, has here in 54rJ written BX instead of the BZ of Gr MS A. See Gr 2, 190, 4 and Gr 3, 292, 21var.
- 54rK "Trigonum... portionum" Compare the same text in 19rS. Moerbeke has added the quotation marks missing from Gr MS A. See Gr 3, 292, 27var.

- 54rL "Et ipsius... demonstrare" Compare the similar text in 19rT, which Moerbeke should have corrected by the addition of "que DB" from the text here in 54rL.
- 54rM "enim" Gr MS A had  $\alpha o \alpha$  (=ergo) and I suggest that this was a mere slip on Moerbeke's part. See Gr 3, 294, 9var.
- 54rM "TE, DE" Thus in Gr MS A. Heiberg would write  $\Theta E \Delta$ . See Gr 3, 294, 11var.
- 54rM "sex1" Moerbeke has correctly read ΕΞ in Gr MS A as if it were ἕξ. See 54rMvar and Gr 3, 294, 11var.
- 54rM "ergo" Not in Gr MS A but properly added by Moerbeke. See Gr 3, 294, 11var.
- 54rN "Quoniam1... sunt" Moerbeke has added quotation marks to this sentence, though it is not a direct quotation from Archimedes' text. I have omitted them.
- 54rN "BD1" Gr MS A had  $\Delta B$ . See Gr 3, 294, 18var, where by mistake Heiberg has written  $\Delta E$ .
- "DE2" Heiberg has suggested that this be deleted. See Gr 3, 294, 20var.
- 54rO "AG3,4" Thus in Gr MS A. It should be AB. See Gr 3, 294, 25var and 26var.
- 54rP "BD2" Gr MS A had  $\Delta$ B. See Gr 3, 294, 30var.
- "GD" Thus in Gr MS A. It should be GB. See Gr 3, 296, 14var. 54rR
- 54rS "GD<sup>1</sup>" Thus in Gr MS A. It should be BD. See Gr 3, 296, 16var.
- 54rS "DE" Thus in Gr MS A. It should be DB. See Gr 3, 296, 17var.
- 54rS "GD2" Thus in Gr MS A. It should be GB. See Gr 3, 296, 21var.
- 54rT "sola" Moerbeke has correctly read movov in Gr MS A as if it were μόνης. See Gr 3, 296, 22var.
- "BG" Thus in Gr MS A. It should be BE. See Gr 3, 297, 35var.
- "AD" Moerbeke has corrected  $\Lambda\Delta$  in Gr MS A. See Gr 3, 298, 6var.
- 54rW "ter" Moerbeke has correctly read τριτον in Gr MS A as if it were τρίς. See Gr 3, 298, 11var.
- 54rX "[decupla]" Omitted from Gr MS A and Moerbeke's translation. It is mathematically necessary. See Gr 3, 298, 14var. With its addition, the succeeding correction to "simulutriusque" becomes necessary.
- 54rX "GD" Thus in Gr MS A. It should be GB. See Gr 3, 298, 15var.
- "[ut]" I have added this as more felicitous. See Gr 3, 298, 22var. 54vA
- 54vB "AD1" Thus in Gr MS A. It should be AB. See Gr 3, 298, 24var.
- 54vB "sexta" Moerbeke has erroneously translated  $\overline{\zeta}$  in Gr MS A. He ought to have written "sexcupla" (see Gr 3, 298, 25var).
- 54vB "BD2" Moerbeke has corrected BA in Gr MS A. See 54vBvar and Gr 3, 298, 27var.

- 54vC Before "compositam" Heiberg, following Torelli, would add ἡγούμενον, which no doubt Moerbeke would have translated "consequens, scilicet" (see Gr 3, 298, 31var).
- 54vC "[...]" I have added this after the example of Heiberg, who has added in his Latin translation "erit ex aequo, ut in primis magnitudinibus primum OA ad extremum H $\Theta$ , ita in secundis primum 5(AB + BE) + 10( $\Gamma$ B + B $\Delta$ ) ad extremum 2(AB + BE) + 4( $\Gamma$ B + B $\Delta$ )." See Gr 3, 299, 33 and 301, n. 1.
- 54vE "ut autem" This translates ως δε in Gr MS A. Heiberg, following Torelli, would write ωστε (=quare). See Gr 3, 300, 8var.
- 54vG "ordinatis" Moerbeke has correctly read τεταγμένην in Gr MS A as if it were τεταγμένων. See Gr 3, 300, 18var.
- 54vG "existente" Moerbeke has correctly read ης ουσης in Gr MS A as if it were οὕσης. See Gr 3, 300, 19var.
- 54vJ Before "OE" Heiberg would add  $\dot{\eta}$  (=que). See Gr 3, 302, 10var.
- 54vK "multiplicibus" Moerbeke has correctly read πολλαπλασιοι in Gr MS A as if it were πολλαπλασίοις. See Gr 3, 302, 18var.
- 54vL "[tripla]" Though it was missing from Gr MS A and Moerbeke's translation, I have added it as mathematically necessary. The succeeding "que" before "dupla" was in Gr MS A but ought to be deleted. See Gr 3, 302, 22var.
- 54vL "[EB]" Though it was missing from Gr MS A and Moerbeke's translation, I have added it as mathematically necessary. Moerbeke realized something was wrong here. See 54vLvar and Gr 3, 302, 24var.
- 54vM "[AB, BE... simulutriusque]" Following the Basel ed. and Heiberg, I have added this as mathematically necessary. See Gr 3, 302, 28-29var.
- 54vM "tripla" Gr MS A had  $\eta \overline{\gamma}$ . Heiberg claims that Moerbeke also had this reading (i.e. "que tripla") but this is not so. See Gr 3, 304, 1var.
- 54vM "octupla" Thus in Gr MS A. It should be "dupla" (see Gr 3, 304, 1var).
- 54vN ''BD'' Thus in Gr MS A. It should be GD. See Gr 3, 304, 4var.
- 54vN "que dupla" Thus in Gr MS A, but "que" should be deleted. See Gr 3, 304, 4var.
- 54vO "BED" Thus in Gr MS A. It should be ED. See Gr 3, 304, 8var.
- 54vO "GBD" Moerbeke has corrected ABΔ in Gr MS A. See Gr 3, 304, 9var. Heiberg reports an exclamation point in the margin of Moerbeke's text, but I cannot see it.
- 54vO "[AB, BE... simulutriusque]" Following the Basel ed. and Heiberg, I have added this as mathematically necessary. See Gr 3, 304, 13var.
- 54vP "DE" Thus in Gr MS A. It should be DB. See Gr 3, 304, 15var.
- 54vP "tertiam ipsam" This translates τριτον την in Gr MS A. It should be "triplam ipsius" (see Gr 3, 304, 17var).
- 54νP "ablata [ex]... triplam¹" Without the "[ex]," which I have added, this translates αφαιφεθεισα  $\underline{\eta}$   $\overline{\delta}$  της  $\Gamma B$  μιαν γαφ  $\overline{\gamma}$ . Heiberg would write ἀφαιφεθείσης ἀπὸ τῆς  $\overline{\delta}$  τῆς  $\Gamma B$  μιᾶς γίνεται  $\overline{\gamma}$ , which I could translate

- as indicated by the addition of "[ex]" and the alternative readings in parentheses. See Gr 3, 304, 17var and 18var. Note that for "enim" by which Moerbeke has rendered the abbreviation of yao in Gr MS A, Moerbeke has suggested the alternate reading of "generatur" in the margin. See 54vPvar.
- 54vP "quadrupla" Moerbeke has corrected  $\overline{\alpha}$  in Gr MS A. See 54vPvar and Gr 3, 304, 20var.
- 54vQ "DBG" This translates  $\Delta B\Gamma$  in Gr MS A. But Heiberg, following the Basel ed., would write  $\Delta B \overline{\gamma}$  (=DB tripla). See Gr 3, 304, 20var.
- 54vQ "quadruplam" This translates δ in Gr MS A. Heiberg, following Gr MS G, would write  $\delta \dot{\epsilon}$  (=autem). See Gr 3, 304, 20var. If the change is made to "autem" then the  $\tau \varepsilon$  should no longer be rendered by scilicet.
- 54vQ "que2" Thus in Gr MS A. It should be either deleted or changed to "ex" (see Gr 3, 304, 24var).
- 54vR "DI" Thus in Gr MS A. It should be DG, GA. In Gr MS A a quotation mark appeared, which Moerbeke properly omitted. See Gr 3, 304, 26var.
- 54vR "BD1" Moerbeke first wrote this and then deleted it, but I have retained it since the sense requires it, just as it does the "[BG]" that I have added. See 54vRvar and Gr 3, 304, 28var.
- Before "EA" Heiberg would add  $\dot{\eta}$  (=que). See Gr 3, 306, 4var.
- 54vS "DBI" Thus in Gr MS A. It should be DBG. See Gr 3, 306, 11var.
- "BDA" Thus in Gr MS A. It should be ABD. See Gr 3, 306, 12var. 54vS
- 54vS "AG" Thus in Gr MS A. It should be BG. See Gr 3, 306, 12var.
- 54vT "[dupla]" This was omitted from Gr MS A and Moerbeke's translation but is necessary. If it is added, "simulutraque" must be changed to "simulutriusque'' (see Gr 3, 306, 14var).
- 54vT "DGB" Thus in Gr MS A. It should be DBG. See Gr 3, 306, 14var.
- "ADB" It should be ABD, as in Gr MS A. See Gr 3, 306, 20var. 54vT
- "ABD" Thus in Gr MS A. It should be ABE. See Gr 3, 306, 28var.
- 54vV "[tres quintas]" Omitted from Gr MS A and Moerbeke's translation. I have added it as mathematically necessary. If it is added, "compositam" must be changed to "composite" (see Gr 3, 306, 28var).
- 54vV Before "duplam" Heiberg, following Torelli, would add ξπόμενον (=consequens, scilicet). See Gr 3, 308, 1var.
- 54vW "[quadruplam]" Omitted from Gr MS A and Moerbeke's translation. I have added it as mathematically necessary. See Gr 3, 308, 2var.
- 54vW "tres quintas ipsius" In Gr MS A, but it ought to be "ipsam" alone. See Gr 3, 308, 4var.
- 54vW "antecedens" Thus in Gr MS A. It should be "consequens" (see Gr 3,
- 54vW "DEG" Thus in Gr MS A. It should be DBG. See Gr 3, 308, 5var.
- 54vW "turbata" This translates τεταραγμένης in Gr MS A. Heiberg, following the Basel ed., would write τεταγμένης (=ordinata). See Gr 3, 308, 7var.

- 54vX "EB" Thus in Gr MS A. It should be OB. See Gr 3, 308, 8var.
- 54vX "GDB" Thus in Gr MS A. It should be ABD. See Gr 3, 308, 12var.
- 54vX After "habet" Heiberg would add the equivalent of "quam tria ad duo, ad autem tres quintas eiusdem proportionem habet" (see Gr 3, 308, 14-15var).
- 54vX After "duo" Heiberg follows Torelli in indicating a lacuna, though none is present in MS O. See Gr 3, 308, 16var. In his translation Heiberg adds: "nam triplum eiusdem dimidia parte maius est duplo."
- 55rA "autem2" Thus in Gr MS A. Heiberg would write  $\gamma \acute{\alpha} \varrho$  (=enim). See Gr 3, 308, 18var.
- 55rA "autem3" Gr MS A appears to have had  $\alpha \rho \alpha$  (=ergo). See Gr 3, 308, 20.
- 55rA "eadem... decuplum" Moerbeke recognized that this was puzzling (see 55rAvar). Gr MS A had εκατον and εκατεφος, which Moerbeke rendered as "eadem" and "utraque," but Heiberg, following the Basel ed., wrote έκάτεφον and έκατέφον. See Gr 3, 308, 21var. The meaning is "for 45=3 × 15 and 30= 2 × 15."
- 55rA Before "est tres" Heiberg, following the Basel ed., would add  $\kappa\alpha i$  (=et). See Gr 3, 308, 22var. Note that Moerbeke has placed an exclamation point in the margin (see 55rAvar).
- 55rB "decem et octo" Moerbeke has correctly read δε και οκτω in Gr MS A as if it were δεκαοκτώ. See Gr 3, 308, 23var.
- 55rC "Manifestum... ZH" Compare the same text in 20rS. Notice that in the earlier passage τόμου was mistranslated by "sectoris" while here in 55rC Moerbeke settled for "tomi" (see Gr 2, 204, 14 and Gr 3, 310, 2). Cf. above, Part I, Chap. 1, Sect. III, List G, item (6). Notice also that here in 55rC Gr MS A had δη (=itaque), while earlier in 20rS both Gr MSS A and B had δε (=autem).
- 55rC "contingenti" Moerbeke has correctly read εφαπτομενοι in Gr MS A as if it were ἐφαπτομένη. See Gr 3, 310, 6var.
- 55rD "BZH" Thus in Gr MS A. It should be BZ. See Gr 3, 310, 9var.
- 55rD "Sed... *DEB*" Compare the same text in 20rW, where *AZ* appears correctly instead of the erroneous *ZB* of 55rD. See Gr 2, 206, 19 and Gr 3, 310, 11var.
- 55rD "ABG" Gr MS A erroneously had  $\alpha\pi\sigma$  AB $\Gamma$ , which Moerbeke has corrected. See Gr 3, 310, 12var.
- 55rE "DEB4" Moerbeke has corrected AEB in Gr MS A. See Gr 3, 310, 17var. Heiberg has indicated that Moerbeke added a sign in the margin, but I cannot see it.
- 55rF "Quare" Heiberg would delete this. See Gr 3, 310, 20var.
- 55rF ''parallelogrammata'' Moerbeke has erroneously joined παφαλλελογομμα to the succeeding τα in Gr MS A to create this impossible form. See Gr 3, 310, 21.
- 55rF "DH1" Moerbeke has corrected ΛH in Gr MS A. See Gr 3, 310, 23var.

- 55rF, G "enim" Thus in Gr MS A. Heiberg, following Torelli, would write δέ (=autem). See Gr 3, 310, 25var and 28var.
- 55rH-I "Et... ZA" Compare the same text in 20rX-Y. The only important change from the earlier text is the substitution of the false DB for DH. Note that Moerbeke placed an exclamation point in the margin in reference to the erroneous DB. See 55rIvar and Gr 3, 312, 10var. Note further that I have added the quotation marks missing from Gr MS A and Moerbeke's translation (see ibid., 7var).
- 55rJ "MN1" Moerbeke has corrected AN in Gr MS A. See 55rJvar and Gr 3, 312, 18var.
- 55rJ Before "quatuor" Heiberg, following Torelli, would add αί γὰο MN, NΞ, NO, NT, which we can render in Moerbeke's style by "que enim MN, NX, NO, NC" (see Gr 3, 312, 19var).
- 55rJ-K "Ut... DH3" Compare the similar text in 20rY-Z, where instead of the "dupla ipsius AZ" of 55rK we find "linea AZ" (see Gr 2, 208, 15var and Gr 3, 312, 27). Again Moerbeke made no effort to correct the earlier text by means of that found in Eutocius' Commentary. I have added the quotation marks missing from Gr MS A and Moerbeke's translation (see ibid., 23var).
- 55rK "ita1...DH3" For the diversity of readings in the Gr MSS, see Gr 3, 312, 26-27var.
- 55rM "DH2" Moerbeke has corrected AH in Gr MS A. See 55rMvar and Gr 3, 314, 10var.
- 55rO "duplam compositam ex" Not in Gr MS A but added by Moerbeke. The word "duplam" ought to be deleted. See Gr 3, 314, 25var.
- 55rO "KI" Moerbeke has corrected K $\Gamma$  in Gr MS A. See 55rOvar and Gr 3, 314, 27var.
- 55rO "XNO" Moerbeke has corrected ZNO in Gr MS A. See Gr 3, 314, 28var.
- 55rP "antecedentium \_\_\_ (lac.)" See above, Part I, Chap. 1, Sect. III, List A,
- 55rP "dupla1" Thus in Gr MS A. It should be "quincupla" (see Gr 3, 316, 2var).
- 55rP "ZK ad ZH, ita" This translates ZK προς ZH ουτως in Gr MS A. Heiberg, following Torelli, would write ZH πρὸς ZK οὖσαν. See Gr 3, 316, 4var.
- 55rP "quoniam" Moerbeke has read επει δε in Gr MS A as if it were ἐπειδή or ἐπεί. See Gr 3, 316, 6var and the Greco-Latin Glossary below, where it will be seen that Moerbeke has rendered both words by "quoniam" on different occasions.
- 55rR "[quincupla... ex]" Following the Basel ed. and Heiberg, I have added this as necessary. See Gr 3, 316, 18-19var. With this addition accepted, we should change Moerbeke's succeeding corrected reading "ad duplam" to its original reading ("et ex dupla"). See 55rRvar and Gr 3, 316, 20var.

- 55rR "ONC" Thus in Gr MS A. It should be MNC. See Gr 3, 316, 20var.
- 55rS " $[NX]^1$ " I have added this. See 55rSvar and Gr 3, 316, 22var.
- 55rS "MN, XO, NC" Thus in Gr MS A and Moerbeke was puzzled by it (see 55rSvar). I have added "[NX]2" and noted the error of XO, which ought to be NO. See Gr 3, 316, 24var.
- 55rT "MO" Moerbeke has corrected M $\Theta$  in Gr MS A. See 55rTvar and Gr 3, 316, 27var.
- 55rT "quinque" Thus in Gr MS A. It should be "tres" (see Gr 3, 318, 1var).
- 55rT "DBE" Moerbeke has corrected ABE in Gr MS A. See Gr 3, 318, 3var.
- 55rU "BH" Moerbeke has corrected XH in Gr MS A. See 55rUvar and Gr 3, 318, 4var.
- 55rU "Et factum est" This translates γεγονεν in Gr MS A. Heiberg, following Torelli, would write γέγονεν οὖν. See Gr 3, 318, 4var.
- 55rU "QR" Moerbeke has corrected XEP in Gr MS A. See 55rUvar and Gr 3, 318, 8var.
- 55rU, V "sector" This translates τομευς in Gr MS A. See Gr 3, 318, 9, 12. Though uncorrected by Heiberg, this should rather be τομός. See above, Part I, Chap. 1, Sect. III, List G, item (6). The succeeding "Sectoris" translates τόμου in Gr MS A. See Gr 3, 318, 14.
- 55rV "[CN]" I have added this; there was a lacuna in Gr MS A and Moerbeke's translation. See 55rVvar and Gr 3, 318, 10var.
- 55rV "hoc est, que IT" Thus in Gr MS A. Heiberg deleted this, and the Basel ed. changed IΘ to ZΘ. See Gr 3, 318, 11var.
- 55rV "[...]" I have added this on the suggestion of Heiberg. See Gr 3, 318, 13. The proper addition, in Moerbeke's style, would be something like "ergo sector (i.e. tomos) et portio lineis ductis ab I et Q ad" (cf. Heiberg's translation). Thus the meaning of the full clause and succeeding sentence would be "and therefore the frustum-like fragment [ADEG] and segment [DBE] are inversely proportional to the lines drawn from I and Q to R, the center of gravity of the whole segment. Hence I is the center of gravity of the fragment."
- 55rW "explicit.... 1269" Added by Moerbeke. See Gr 3, 318, end of variants.

# Commentary on the Liber Archimedis de insidentibus aque (55vA-60rA)

In connection with this commentary the reader should consult Vol. 3 below, Part III, Chap. 4, Sect. III, where Commandino's reconstruction of Moerbeke's translation is published along with the English translation that goes under the name of Thomas Salusbury. I discuss there the kinds of changes that Commandino made

- in Moerbeke's translation and consequently the significant deficiencies in the Dominican's work. I must remind the reader once more that I have here concentrated on Moerbeke's treatment of Gr MS B, only rarely reporting the manifold divergencies from that manuscript found in Gr MS C. The latter have been given by Heiberg in the apparatus to his text in Archimedis opera omnia, Vol. 2, 2nd ed. (Leipzig, 1913), pp. 317-413.
- 55vA After "si" Gr MS C (and the Arabic text by implication) has μή. See Gr 2, 318. 7var. The succeeding "descendens" translates καθιέμενον in Gr MS B, but on the basis of the Arabic text we can deduce that the Greek word should have been καθειργμένον. The meaning of the whole clause, then, is "if the fluid is not shut up in anything" (see E. J. Dijksterhuis, Archimedes [Copenhagen, 1956], p. 373 and M. Clagett, The Science of Mechanics in the Middle Ages, 2nd print. [Madison, Wisc., 1961], p. 54).
- 55vB "[1]" This and the succeeding proposition numbers through the eighth were added by Coner (see 55vBvar). I have added the numbers of the rest of the propositions. It is evident that Gr MS B contained no proposition numbers for this work.
- 55vB "semper" If I have read this correctly, it translated ἀεί, as in Gr MS C. See Gr 2, 318, 11. But both here and in the second instance of it in 55vB the Latin abbreviation looks more like that for "super" and it was so read by the scribe of MS Ba (see 55vBvar). If that was what was intended by Moerbeke, then perhaps Gr MS B had ἐπί.
- 55vF, G "quarundam" and "occurentium" All instances. See above, Part I, Chap. 1, Sect. III, List G, item (38), and 55vFvar and Gvar.
- 55vG "HK" Coner added -Z, thus intending HKZ (see 55vGvar). Heiberg would correct to ZK. See Gr 2, 320, 3var. In reporting the addition of -Z, Heiberg has not reported that the addition is in the hand of  $B^2$  (=m. 3), i.e. Coner's hand. Nor have any other of Coner's corrections in Book I been designated by Heiberg as in the hand of B<sup>2</sup>.
- "[et]" I have followed Heiberg in this addition. See Gr 2, 320, 7var.
- 55vH "que2" Coner has corrected this to "quod" (see 55vHvar) and Heiberg simply reports this as "quod" without noting that it is a correction. See Gr 2, 320, 9.
- 55vH "non1" Apparently thus in Gr MS B, but it was properly missing from Gr MS C and ought to be deleted, as Coner realized. See 55vHvar and Gr 2, 320, 16*var*.
- 55vI "autem2" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 320, 21var.
- 55vI "quomodocunque aliter" Added by Coner. Heiberg reports the addition as "modocunque aliter" (see 55vIvar and Gr 2, 320, 21var). It could be that "quo-" is in Moerbeke's hand but I doubt this since it is not in MS M, copied from MS O before Coner's corrections were added to O.

- 55vJ "centrum". This was added in the margin by Coner (see 55vJvar). It is also given in Gr MS C. See Gr 2, 320, 29var.
- 55vJ "per2... plano" See above, Part I, Chap. 1, Sect. III, List C, item (43).
- 55vJ "equalis<sup>1</sup>... ponderis" Apparently thus in Gr MS B. Gr MS C has only ἰσοδαρέοντα. See Gr 2, 320, 32var.
- 55vK "[et]" Not in Gr MS B, but Gr MS C has it and so I have added it. See Gr 2, 322, 1.
- 55vK "Demittatur" Coner has written this in an erasure. From the reading found in MS M we can deduce that Moerbeke probably had written "Demo[n]stratur" (see 55vKvar).
- 55vK Before "magnitudo" Gr MS C has στερέον, which is certainly correct in view of the phrase "Solidarum magnitudinum" in the enunciation. See Gr 2, 322, 3var.
- 55vK "autem<sup>2</sup>" Gr MS B apparently has δέ. Gr MS C has δή (=itaque). See Gr 2, 322, 6var.
- 55vL ''insidentis'' In the margin Moerbeke has written οχημα. Gr MS C has σχᾶμα (=figura). See 55vLvar and Gr 2, 322, 10var.
- 55vL "autem4" See the comment to 55vK ("autem2") and Gr 2, 322, 11var.
- 55vL "et³" Apparently thus in Gr MS B. Gr MS C has  $\delta \dot{\eta}$  (=itaque). See Gr 2, 322, 13var.
- 55vM "secundum XOP" This was added by Coner in the margin. See 55vMvar and Gr 2, 322, 20var. Note that Heiberg has reported the preceding "hec" as "hoc" (see *ibid*.).
- 55vN "BHEG" Apparently thus in Gr MS B. Gr MS C has B, H,  $\Theta$ ,  $\Gamma$ . See Gr 2, 322, 25—324, 1.
- 55vN "autem3" Apparently thus in Gr MS B. Gr MS C has  $\delta \dot{\eta}$  (=itaque). See Gr 2, 324, 1var.
- 55vO "non" and "Non" The deletion of the first and the addition of the second were made by Coner. See 55vOvar and Gr 2, 324, 5var.
- 55vP "inequale" Thus in Gr MSS B and C. It should be "equale" (see Gr 2, 324, 16var).
- 55vS "etiam" Heiberg has misread this as "autem" (see Gr 2, 326, 7var). Hence he distinguished it from Gr MS C's δή. However, with "etiam" accepted, it is clear that Gr MS B could also have had δή, since at times Moerbeke translated δή by "etiam" (see below, The Index of Latin Terms, "etiam").
- 55vS "ABGD" Apparently thus in Gr MS B, but the diagram has no letter D. Gr MS C has ABΓ. See Gr 2, 326, 10var. Possibly the scribe of Gr MS B or Moerbeke mistakenly consulted Fig. Ia. 3, where the letter D appears.
- 55vV, 56rA, C "superficiebus" Each should be "superficie" (see Gr 2, 326, 26var and 27var; 328, 12var and 27var). Cf. above, Part I, Chap. 1, Sect. III, List G, item (39).

- 56rA After "humido \_\_\_ (lac.)" Moerbeke added τασ δε in the margin. See 56rAvar. Gr MS C has τὰ δέ. See Gr 2, 328, 10var. Coner added the succeeding "autem" (again see 56rAvar).
- 56rF "autem<sup>2</sup>" Apparently thus in Gr MS B. Gr MS C has  $\delta \dot{\eta}$  (=itaque). See Gr 2, 330, 22var.
- 56rG "Dimittatur" I suspect that this translates ἀφεθὲν... ἔστω in Gr MS B, for it was thus in Gr MS C. But it would be better if ἔστω were deleted so that "Dimissa" would remain as a participle modifying "magnitudo" (see Gr 2, 332, 2var).
- 56rH "autem" Thus in Gr MSS B and C. It ought to be  $\delta \dot{\eta}$  (=itaque). See Gr 2, 332, 6var.
- 56rI For the lacuna and the Greek text added in the margin by Moerbeke, see 56rIvar and Gr 2, 332, 12-13var. Heiberg suggests in his translation the following addition: "si enim aliter demergitur magnitudo, ab iis, quae antea demonstravimus, discrepat." See Gr 2, 333.
- 56rK "donec descendant" I read Moerbeke's marginal addition as εσταν κατ'δαντι (see 56rKvar), while Heiberg reports it as εστου κατ'δαντι (see Gr 2, 334, 4var).
- 56rP After "producitur" Moerbeke has added in the margin what appears to be οροσ, though the preceding statement is clearly a supposition rather than a definition. See 56rPvar. I have recovered this reading by the use of ultraviolet light.
- 56rQ After "restituatur" Moerbeke has noted in the margin that the proof of this theorem was missing from the Greek exemplar (i.e. Gr MS B). See 56rQvar. The reader should consult Commandino's reconstruction of this proof below in Vol. 3, Part III, Chap. 4, Sect. III, Text A. It is remarkably like that found later in Gr MS C (see Gr 3, 338-40).
- 56vA "[9]" From this point on I have added the proposition numbers. The implication—from the fact that Coner added no further proposition numbers after Prop. 8 and from the further fact that there is no evidence of any correction of the text by Coner from this point on—is that Coner terminated his examination and reconstruction of the text of *On Floating Bodies* at the bottom of 56r.
- 56vB "autem4" This apparently translates δέ in Gr MS B. Gr MS C had δή (=itaque), which Heiberg prefers. See Gr 2, 342, 10var.
- 56vC "usque" Gr MS C has ἐπί (=super or in). See Gr 2, 342, 10var.
- 56vC "et sit...  $K^1$ " Apparently thus in Gr MS B. Gr MS C has only καὶ ἔστω τὸ K. See Gr 2, 342, 12var. It seems that Gr MS B specified the center of the sphere for each of the three cases: T for the case of the hemisphere, P for that of the segment less than the hemisphere and K for that of the segment greater than the hemisphere (see Fig. Ia. 9), while Gr MS C specified it only for the case of the segment greater than the hemisphere, which case in fact is the only one

- proved. Incidentally, I would suppose that Gr MS B had  $\xi \sigma \tau \epsilon \pi \sigma \tau \ell$ , which Moerbeke rendered as "usque ad" and which perhaps ought to have been  $\xi \pi \ell \ell = in$ .
- 56vC "autem3" Apparently thus in Gr MS B. Omitted from Gr MS C. Heiberg would write  $\delta \hat{\eta}$  (=itaque). See Gr 2, 342, 13var.
- 56vD "enim" Thus in Gr MSS B and C. Heiberg would delete it. See Gr 2, 342, 17var.
- 56vD "absumpta \_\_\_ (lac.)" Gr MS C has τινός where Moerbeke has left the lacuna. Something like "quedam recta" is required to complete the sense of the clause. See Gr 2, 342, 21var.
- 56vE "perpendiculari \_\_\_ (lac.)" The lacuna ought to contain in some fashion the specification of the perpendicular OL. Cf. Commandino's text and Gr 2, 342, 25var.
- 56vE "RA" Moerbeke has written this in the margin as a correction of RO in the text. See 56vEvar. It should in fact be RL, as is evident from Gr MS C. See Gr 2, 344, 2var.
- 56vI "..." A word of two or three letters has vanished. In addition the following "est" is by no means clear. The whole clause should read something like "et quoniam quod secundum A humidum I est" (or as in MS M "et... est I"). In fact, the whole passage "et quoniam... enim" in 56vI-K as taken from Gr MS B varies greatly from the text found in Gr MS C. See Gr 2, 346, 20 348, 8. See also Commandino's cogent reconstruction of the passage.
- 56vK "enim" Apparently translates γάρ in Gr MS B. Missing from Gr MS C. Heiberg would write ἄρα (=ergo). According to Heiberg, Gr MS C adds τὸ προτεθέν (=quod propositum). See Gr 2, 348, 8var.
- 56vK "[non]" Missing from Gr MS B but correctly given in Gr MS C. See Gr 2, 348, 11var. I discuss below in Vol. 3, Part III, Chap. 4, Sect. III the significance of Moerbeke's acceptance of this error here (and again in 57rA) as an indication of Moerbeke's inability to understand the mathematics involved in this and the succeeding proposition.
- 56vN "IS<sup>1,2</sup>" Moerbeke has apparently corrected K in Gr MS B. See 56vNvar. Both times he wrote K in the text and then added a dot of deletion underneath it. In the first case he added the correct IS in the margin and in the second he added it to the end of the preceding line, i.e. just before the deleted K.
- 56vN ''NO<sup>2</sup>'' Moerbeke has corrected NΘ in Gr MS B. See 56vNvar. It is also NΘ in Gr MS C. See Gr 2, 350, 5var.
- 56vN After " $K\Omega$ " there should be written something like "equedistanter ipsi IS" (see the similar rendering in 57rC and Gr 2, 350, 5var).
- 56vN "..." According to Moerbeke, the rest of the proof of Prop. 2 was missing from the Greek exemplar (i.e. Gr MS B). See 56vNvar. The reader is urged to consult Commandino's reconstruction of the missing proof, which compares remarkably well with the text of it later found in Gr MS C. See Gr 2, 350, 7 352, 19.

- 57rA "[non]" See the comment to 56vK ("[non]") and Gr 2, 352, 22var.
- 57rB After "autem" Gr MS C has αὐτοῦ (=ipsa, to agree with Secta), which was apparently omitted from Gr MS B. See Gr 2, 354, 2var. Cf. "Secta autem ipsa" in 57rG.
- 57rC "autem" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 354, 9var.
- 57rD Heiberg mistakenly reports that Moerbeke wrote "autem" between "Similiter" and "demonstrabitur" (see Gr 2, 354, 13var). There is no such addition. Gr MS C has  $\delta \dot{\eta}$  (=itaque).
- 57rD " $R\Omega K$ " Apparently thus in Gr MS B. It should be RO, OK (or, in the syncopated form, ROK). See Gr 2, 354, 14var.
- 57rD "KO" Apparently thus in Gr MS B.  $K\Omega$  is to be preferred. See Gr 2, 354, 15var.
- 57rD "RT" See 57rDvar and Gr 2, 354, 16var.
- 57rD "autem2" Thus in Gr MSS B and C. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 2, 354, 16var.
- 57rD "equedistanter" Moerbeke has thus rendered Gr MS B. It ought to be "equedistantes" (see Gr 2, 354, 17var).
- 57rF "ad tetragonum... axe" This was not in Gr MS B but was added by Moerbeke. See 57rFvar. Its equivalent is in Gr MS C. See Gr 2, 356, 5var. Note that Heiberg has given a reading of Moerbeke's marginal comment that differs from mine.
- 57rH "[sectionis]" I have added this, following Commandino and Heiberg. See Gr 2, 356, 15var.
- 57rH-O Concerning the lettering in Fig. Ia. 13 and in the text of this proposition, we should note that the letters taken by Moerbeke from Gr MS B are often contradictory, some readings reflecting the positions of H and M in the diagram given by Ver Eecke and some reflecting the positions of those letters in the diagram given by Commandino. I have added in parentheses in the text two sets of readings, those adopted by Heiberg (and relatable to Ver Eecke's diagram) and those adopted by Commandino (and hence relatable to his diagram). In thirteen readings where a choice between the two sets of readings is necessary, Commandino's reconstruction allows him to adopt eight of Moerbeke's readings, while Heiberg's permits him to adopt only five. Furthermore the relative positions of M and H on line NO accepted by Commandino are in agreement with Moerbeke's version of the figure, all of which gives some preference to Commandino's readings. I should add that Heiberg mistakenly placed H and M on line RT in his figure on Gr 2, 357 and that in his footnotes on the same page he has everywhere mistakenly written P instead of R.
- 57rI "TR" Commandino quite properly changed this to BR. See Gr 2, 356, 23var. Needless to say, it should be BR in both sets of corrected lettering.
- 57rJ "\_\_\_ (lac.) ipsi" Heiberg would prefer "ipso" and would ignore the lacuna. See Gr 2, 357, 7var.

- 57rJ "\_\_\_ (lac.)2" Heiberg would write "igitur" for the preceding "est" and the lacuna. See Gr 2, 357, 7var.
- 57rL I have added after "quod" in Moerbeke's lacuna "[a PF ad tetragonum quod]" from Commandino (see Gr 2, 358, 8var) and "ab NO" from the margin (see 57rLvar).
- 57rR-vA Concerning the lettering of Fig. Ia. 14, the same observation made in the comment to 57rH-O can be made. Here, however, of the eight readings of Moerbeke that require us to choose between Heiberg's set of letters and that of Commandino, we note that four have been retained by Heiberg and four by Commandino, thus leaving no advantage to either assumption concerning the positions of M and H. But again note that Commandino has followed the diagram in MS O by placing H above M on line ON. Once more notice that the diagram given by Heiberg in Gr 2, 359 is in error, since M is erroneously placed on line RT extended instead of on line ON. Hence I have included Ver Eecke's diagram instead of Heiberg's.
- 57rR "[portionis]" I have followed Commandino in this addition. See Gr 2, 359, 20var.
- 57rV "proportione" This makes sense, but Heiberg prefers "portionem" (see Gr 2, 360, 13var). Heiberg misrepresents Moerbeke's reading as "proportionem" (see *ibid*.).
- 57rW "equedistans" Apparently thus in Gr MS B. Following Commandino, we should correct it to "ad rectos angulos" (see Gr 2, 360, 21var).
- 57vB "in motu" Heiberg has misread this as "i motum" (see Gr 2, 361, 7var), but it is clearly as I have written it.
- 57vE " $\Omega K$ " Moerbeke has corrected N $\Omega$  in Gr MS B. See 57vEvar.
- 57vG " $\Omega H$ " Moerbeke has thus attempted wrongly to make sense out of Nc $^{\odot}$  (see 57vGvar). It should be  $\Omega N$ . See Gr 2, 362, 12var.
- 57vG "IH" Apparently thus in Gr MS B. Following Commandino and Heiberg, we ought to correct it to PI or IP. See Gr 2, 362, 13var.
- 57vI "TR" and "FB2" Apparently thus in Gr MS B. Perhaps Moerbeke's "FR" and "FR" in the margin were intended as corrections (see 57vIvar and Gr 2, 362, 24var and 363, 3var).
- 57vJ "solida" A mistake on Moerbeke's part. It should be "secunda" (see Gr 2, 363, 18var).
- 57vL "[quam]" Ordinarily Moerbeke translated η ωστε as quam ut and so I have made this addition. See Gr 2, 364, 5var. Notice that Moerbeke has specified "quam2" as a relative pronoun (see 57vLvar).
- 57vN "SA" Apparently thus in Gr MS B. It should be SL. See Gr 2, 364, 21var.
- 57vN "[sectionis]" Following Commandino, I have added this. See the comment to 58rD ("[portionis]") below.
- 57vN " $P\Omega$ " Apparently thus in Gr MS B. It should be PF. See Gr 2, 364, 24var.

- 57vN, O, P "autem<sup>5,2,1</sup>" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 366, 1var, 6var and 7-8var.
- 57vP "OT" "TN" and "RF1,2" Apparently thus in Gr MS B (though perhaps the first RF was Moerbeke's unsound correction of P $\Theta$  in Gr MS B [see 57vPvar]). They should be respectively OI, IN and RT. See Gr 2, 366, 7-8var, 10var and 12. Note that Heiberg has misread "ipsius" after OT as "ipsi" (ibid., 7-8var).
- "A" Thus in Gr MSS B and C. It should be L. See Gr 2, 366, 20var.
- 57vR "[quam]" See the comment to 57vL and Gr 2, 368, 3var.
- "GD" Apparently thus in Gr MS B. It should be CB (i.e. TB in the Greek 58rA text). See Gr 2, 368, 23var.
- 58rB, C, D "autem<sup>1,1,2</sup>" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 370, 2var, 12var and 16var.
- 58rB "KR,  $\Psi[B]$ " I have added -[B]. Note that Heiberg has misread Moerbeke's  $\Psi$  as X. See Gr 2, 370, 3var.
- 58rC "recto" This was not in Gr MS B but was added by Moerbeke. See 58rCvar. It is also missing in Gr MS C. See Gr 2, 370, 13var.
- 58rD "[portionis]" and "portionis (! sectionis)" Heiberg would simply delete the second "portionis" (see Gr 2, 370, 16). However, with my addition and correction, this represents the conventional phrase that four times appears in full: "axis autem portionis et diameter sectionis" (see 56vN, 57rB, 59rN, 59vO). Cf. 57rG-H, R, 57vD-E, N, 58vC, M, 59rH, where the phrase appears in part, and 59vE, where "portionis" and "sectionis" are incorrectly transposed.
- 58rD " $\Omega$ " Moerbeke has corrected B $\Omega$  in Gr MS B (see 58rDvar). But it should be OΩ. Indeed Heiberg would write the whole clause as καὶ τα BP ἔστω ἴσα ἁ  $O\Omega$ , i.e. 'et ipsi BR sit equalis que  $O\Omega$ '' (see Gr 2, 370, 19var).
- 58rD "que autem RK ipsi  $T\Omega$ " Thus in Gr MSS B and C. Heiberg would write  $\tau \tilde{\alpha} \delta \tilde{\epsilon} PK \delta \Omega \Theta$ , i.e. "ipsi autem RK que  $\Omega T$ " (see Gr 2, 370, 19var).
- 58rE "angulo2" Apparently thus in Gr MS B. It should be "trianguli" (see Gr 2, 370, 22-23var).
- 58rE "PIN" Moerbeke has apparently corrected IIIM in Gr MS B (see 58rEvar). It should be PIY. See Gr 2, 370, 22.
- 58rE-F Everywhere that I have added "[Y]" there is a lacuna in the text and Moerbeke has given a symbol resembling Y in the margin (see 58rE-Fvar).
- 58rF "CD" Apparently thus in Gr MS B. Gr MS C correctly has ΨB. See Gr 2, 372, 10var.
- 58rF-G "propter... Apollonii" This is obviously a post-Archimedean intrusion and thus ought to be deleted from the text of Archimedes.
- 58rH "MH" Apparently thus in Gr MS B. It should be MP. See Gr 2, 372, 22var.

- 58rI, J "autem<sup>3,1,3</sup>" Thus in Gr MS B. Gr MS C has δή (=itaque) in the first two cases. Heiberg has corrected the third. See Gr 2, 372, 27var and 374, 1var, 6var.
- 58rK "enim" Apparently thus in Gr MS B. Gr MS C has δέ (=autem). See Gr 2, 374, 9var.
- 58rK "[quarum]" Following Gr MS C, I have added this. See Gr 2, 374, 9var. Hence "perpendiculares" should be changed to the genitive case.
- 58rK "GL" Moerbeke has corrected  $\Gamma\Delta$  in Gr MS B (see 58rKvar). But it should be GZ. See Gr 2, 374, 10var.
- 58rK "[L]" Following Heiberg, I have added this. Gr MS C had  $\Gamma$  here and so did not have Moerbeke's "et secundum G," which ought to be deleted (see Gr 2, 374, 11var). Cf. 58rKvar.
- 58rK "ZG" Apparently thus in Gr MS B. It should be A. See Gr 2, 374, 12var.
- 58rL "inutile" This should be "utile" (see 58rLvar and Gr 2, 374, 16var).
- 58rM " $\Omega^{1,2}$ " " $\Omega^{I}$ " " $\Omega^{I}$ " Apparently thus in Gr MS B. They should be respectively IY, YI and  $\Omega^{I}$ O. See Gr 2, 374, 20var, 22var, 23-24var and 24var.
- 58rM " $E\Psi$ " Heiberg has mistakenly read Moerbeke's open  $\Psi$  as X. See Gr 2, 374, 21var.
- 58rM "ergo que  $\Omega I$  minor  $[\Psi R]$ " Commandino deleted this and ignored Moerbeke's succeeding lacuna. See Gr 2, 374, 24var. Gr MS C does not have the succeeding "ipsius autem  $OI \dots \Psi R$ " (see ibid.).
- 58rM "[maior]" I have added this from Commandino. With this addition the succeeding "ipsius" becomes "ipsa."
- 58rM "[ $\Omega I$ ]" I have added this from Commandino.
- 58rN "autem3" Thus in Gr MSS B and C. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See Gr 2, 376, 5var.
- 58rO "HT" Moerbeke has apparently corrected NO in Gr MS B. See 58rOvar and Gr 2, 376, 9var.
- 58rP " $\Omega I$ " Moerbeke seems to have corrected P $\Omega$  in Gr MS B. See 58rPvar and Gr 2, 376, 17var.
- 58rP "MH" Apparently thus in Gr MS B. It should be MP. See Gr 2, 376, 18var.
- 58rP "HM" Moerbeke has apparently corrected H $\Omega$  in Gr MS B. See 58rPvar and Gr 2, 376, 18var.
- 58rP "[H]" Following Gr MS C, I have added this in Moerbeke's lacuna. See 58rPvar and Gr 2, 378, 1var.
- 58rQ "[quam]" See the comment to 57vL ("[quam]") and Gr 2, 378, 8var.
- 58rS "[Fig. Ia. 20]" Heiberg has wrongly noted that C (i.e. C') is omitted from the figure in MS O. See Gr 2, 381, end of variants.
- 58rT "[quam... excessus]" I have followed Commandino in adding this. See Gr 2, 380, 1-4var.
- 58vB "quidem" Heiberg would delete this. See Gr 2, 380, 16var.

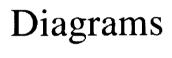
- 58vC "portionis" Heiberg would delete this. See Gr 2, 380, 22var. But see my comment to 58rD ("[portionis]").
- 58vC "[sectionis]" I have added this. See the comment to 58rD ("[portionis]"). Heiberg incorrectly states that Moerbeke has added this "sectionis" (see Gr 2, 380, 22var).
- 58vE "si" Apparently thus in Gr MS B. Gr MS C has ἐπεί (=quoniam). See Gr 2, 382, 12var.
- 58vG "PM2" Apparently thus in Gr MS B. It should be PH. See Gr 2, 382, 28var.
- 58vH "autem2" and "TN" Apparently δέ and ΘH in Gr MS B, the latter of which Moerbeke wrongly thought might be TN (see 58vHvar). Heiberg would write  $\delta \acute{\eta}$  (=itaque) and  $\Theta H$ . See Gr 2, 384, 3 and 5.
- 58vI "[deorsum... A]" Following Commandino, I have added this. See Gr 2, 384, 12-13var.
- 58vI "proportionalia" That is, "corresponding to" (or "similar to") the things said in the preceding proposition.
- 58vM "[portionis]" I have added this. See the comment to 58rD ("[portionis]'').
- 58vM "BD3" Apparently thus in Gr MS B. It should be BK. See Gr 2, 386, 13var.
- 58vN "[sit... axem]" I have added this. See the text of Commandino and Gr 2, 386, 16var.
- 58vN "ipsius autem KR... (lac.)" Apparently thus in Gr MS B. Following Commandino, I would write DS in the lacuna. Gr MS C has for the whole clause  $\tau \tilde{\alpha} \zeta \delta \tilde{\epsilon}$  BP  $\tilde{\eta} \mu i \sigma \epsilon i \alpha \tilde{\epsilon} \sigma \tau \omega \tilde{\alpha}$  PS, i.e. "ipsius autem BR medietas sit que RS'' (see Gr 2, 386, 17var).
- 58vN "autem2" Apparently thus in Gr MSS B and C. Heiberg would write δή (=itaque). See Gr 2, 386, 17var.
- 58vO "AE[I]" and "AT[D]" I have followed Commandino and Gr MS C in correcting Moerbeke's AE and AT. See Gr 2, 386, 22var.
- 58vO "ATH" Apparently thus in Gr MS B. It should be ATD. See Gr 2, 386, 23var. Notice also that "ABL" was Moerbeke's correction of ABI. See 58vOvar.
- 58vO "autem" Apparently thus in Gr MS B. Gr MS C has  $\delta \acute{\eta}$  (=itaque). See Gr 2, 388, 1var.
- 58vO "AOD" Apparently thus in Gr MS B. It should be ATD. See Gr 2, 388, 5var.
- 58vP "X, F" and "O, P" Thus in Gr MSS B and C. But the order of the letters in each pair should be reversed. See Gr 2, 388, 6var and 7var.
- 58rP "Os" See 58vPvar.
- 58vP " (lac.)1" Perhaps something like "se se" should be added in the lacuna. See Commandino's version.

- 58vP "NX, [NG,] PNO (! NO)" Following Heiberg I have added [NG] and suggested that PNO should be corrected to NO. See Gr 2, 388, 12var. On the other hand, Commandino would reconstruct this set of letters as follows: "NXGO et a Q ipsa QFYP."
- 58vS "[Pars I]" I have added the subtitle of this and the succeeding specifications of the parts of Prop. 10. Note that Part I is immediately evident and that the demonstrations of the succeeding parts are given from 59rC onward.
- 58vT "si" Apparently thus in Gr MSS B and C. Heiberg would delete it. See Gr 2, 390, 14var.
- 58vU "XT" Apparently thus in Gr MS B. It should be XO. See Gr 2, 390, 24var.
- 58vU "[ipsius non]" I have added this from Commandino and Gr MS C. See Gr 2, 390, 26var.
- 58vV "M" Apparently thus in Gr MS B. It should be  $\varsigma$  (see Fig. Ia. 21 and Gr 2, 390, 30var).
- 58vW "ampliorem... humido" Apparently thus in Gr MS B. My suggestions in parentheses are based on the readings in Gr MS C and Commandino's version. See Gr 2, 392, 5-6.
- 58vW "[et... \(\mathbf{G}\)]" Not in Gr MS B. I have added it from Gr MS C and Commandino. See Gr 2, 392, 6-7.
- 59rA "[Pars IV.... humido]" This was not in Moerbeke's translation. I have reconstructed it in Moerbeke's style from the beginning of the demonstration of Part IV in 59vA-C. The position of that demonstration explains why I have inserted the enunciation of Part IV here, though in Gr MS C it appears in 58vW before "Si" (see Gr 2, 392, 8-15). The position I have adopted is that found in Commandino's version.
- 59rC "[Demonstratio secunde partis]" I have added this from Commandino. Then follows the proof of the specification of Part II of Prop. 10 given above in 58vU-V.
- 59rD "autem" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 394, 9var.
- 59rD "XP" Apparently thus in Gr MS B. It should be XO if referring to Fig. Ia. 21 and XM in reference to Fig. Ia. 22. Heiberg mistakenly reports Moerbeke's reading as XO. See Gr 2, 394, 9var.
- 59rE "" "[O m dupla]" " m N" I have added the second reading in the lacuna in MS O, while the first and the third appear in the margin. See 59rEvar. In the same passage "RS" ought to be RS and "PS" ought to be MS. See Gr 2, 394, 16var, 17var and 22var. Heiberg has reported the last of Moerbeke's readings as PS rather than PS.
- 59rE "[linea... Q]" I have added this from Commandino.
- 59rG "[humidum... et]" I have added this from Heiberg. See Gr 2, 395, 9 396, 1. Cf. Commandino's version.

- 59rG "excessu" Apparently thus in Gr MS B. It should be angulo 5. See Gr 2, 396, 2var.
- 59rH "sectionis (! portionis)" and "[sectionis]" See the comment to 58rD ("[portionis]").
- 59rJ "ABLK" and "TA" Apparently thus in Gr MS B. They should be AMQL and OA. See Gr 2, 396, 27var and 28var.
- 59rK "Y" "YB" "OS" "SKN" "O SS" "S N" Apparently thus in Gr MS B. They should be respectively S, SB, OB', B'N, OB' and B'N. See Gr 2, 396, 30var; 397, 1var, 2var and 3var. I have read some of the letters in Moerbeke's translation in a way different from that of Heiberg, as the reader will notice.
- 59rM "Y" This should be 5. See Gr 2, 397, 15var.
- 59rM "[Demonstratio tertie partis]" I have added this from Commandino. Then follows the proof of the specification of Part III of Prop. 10 given above in 58vV-59rA.
- 59rP "OY" This should be O5. See Gr 2, 398, 12var.
- 59rQ "XA" Apparently thus in Gr MS B. It should be XO. See Gr 2, 398, 16var.
- 59rR "Y" and "H" These should be 5 and N. See Gr 2, 398, 30var; 399, 1var. Following Commandino and Heiberg, I have added "[quam]" (ibid.).
- 59rS "que  $OY^1 \dots \gg T$ " With the corrections that I have suggested in parentheses accepted, the argument becomes "Hence  $OS < P \gg$  and  $SX > \gg T$ . And since OS = 2SX, therefore  $P \gg > 2 \gg T$ ." Note that Heiberg would correct "OY" to O instead of to my suggested OS. I do not know how to make sense of the series of Greek letters after "PN" but I have suggested the substitution of "(et SX)" and Heiberg would add "et SX" (see Gr 2, 399, 2var and 3var). Incidentally, with Heiberg, I would convert "dupla" into 3var. My reconstruction in this passage follows the line of Commandino's text, with his g and z equivalent to my S and  $\infty$ .
- 59rU "[portiones]" Following Commandino and Heiberg, I would add this. See Gr 2, 400, 10var. Cf. 59vF, I and R.
- 59rV "Y" This should be S. See Gr 2, 400, 16var. Heiberg reports Moerbeke's marginal  $\mu$  as applying to this letter. I think it applies rather to the preceding N. See 59rVvar.
- 59rV "[sit... ipsius]" Following Heiberg, I have added this. See Gr 2, 400, 17-18var.
- 59rW "autem" and "et magnitudo et" While Heiberg adopts Moerbeke's reading of "Manebit... tanget" he properly changes  $\delta \hat{\epsilon}$  (i.e. autem) to  $\delta \hat{\eta}$  (=itaque) and deletes "magnitudo et" (see Gr 2, 401, 7-8var and 8-9var).
- 59rX "Similiter... F" In Gr MS C this appears at the end of what I have called the demonstration of Part V of Prop. 10. See Gr 2, 406, 16-22.
- 59rX "[quod]" I have added this as grammatically necessary. See Gr 2, 406, 16*var*.

- 59vA "[Demonstratio quarte partis]" I have taken this from Commandino. Then follows the demonstration of the specification of Part IV of Prop. 10 given above in 59rA. As I said earlier, the position of the demonstration here in 59vA-K is a guarantee that had the lost specification of Part IV appeared in Gr MS B it would have occupied the position I have given it in 59rA. In Gr MS C this becomes the last demonstration (see Gr 2, 406, 23 - 412, 14).
- 59vA "autem" Apparently thus in Gr MS B. Gr MS C has  $\delta \dot{\eta}$  (=itaque). See Gr 2, 406, 23var.
- 59vB "autem<sup>2,4</sup>" Apparently thus in Gr MS B. It should be  $\delta \dot{\eta}$  (=itaque). See Gr 2, 408, 2var and 5var.
- 59vB "A[X]D" I have added "-[X]-" in Moerbeke's lacuna on the authority of Gr MS C. See Gr 2, 408, 3var.
- 59vB "T \_\_\_ (lac.)" and "ipsi XY" Gr MS C has the equivalents of "OG" and "ipsius XG." See Gr 2, 408, 6var and 7var. My reading of Moerbeke's marginal reference differs from that of Heiberg. See 59vBvar.
- 59vC "autem2" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 408, 8.
- 59vC "humidum2" Gr MS C has the equivalent of "superficiem humidi" (see Gr 2, 408, 11-12 and 11var).
- 59vD "humectetur" Gr MS C has τέμνεσθαι (=secetur). See Gr 2, 408, 13var.
- 59vE "sectionis" and "portionis" These should be interchanged. See the comment to 58rD ("[portionis]").
- 59vG "HLE" This agrees with the reading of Moerbeke's version of Fig. Ia. 28. But it should be HLS, since Gr MS B (i.e. Moerbeke's translation of it) three times had S instead of E' (see "HS" in 59vE and "BS" and "SR" in 59vG). See also Gr 2, 410, 13var.
- 59vG "[L]" I have added this from Gr MS C. See Gr 2, 410, 13var.
- 59vG "[trigoni  $FC\Omega$ ]" See above, Part I, Chap. 1, Sect. III, List A, item (14).
- 59vH "— (lac.)" Gr MS C has  $\alpha \alpha (=ergo)$ . See Gr 2, 410, 16.
- 59vH "autem" Apparently thus in Gr MS B. It should be δή (=itaque). See Gr 2, 410, 19-20var. Cf. "autem<sup>1,2</sup>" in 59vI. See also Gr 2, 410, 23var and 25*var*.
- 59vI "TM" Thus in both Gr MSS B and C. It should be TH. See Gr 2, 410, 25var.
- 59vJ "H ≥" and "MI" Heiberg reports the first one in Moerbeke's text as  $M \gg$  and the second one as MI. See Gr 2, 412, 7var. However the first one seems to me to be  $H \gg$ , with perhaps the H written over an M. The second one is indeed MI in Moerbeke's text but ought to be HI. There is an exclamation point in the margin (see 59vJvar). Note that "H  $\gg$  3" ought to be HL.
- 59vK "[Demonstratio quinte partis]" I have taken this from Commandino. Then follows the demonstration of the specification of Part V of Prop. 10 given above in 59rB.

- 59vL "[ad... BD]" I have added this from Commandino and Heiberg. See Gr 2, 401, 19var.
- 59vM "XR" Thus in Moerbeke's text. It ought to be  $\varsigma R$  in the reconstructed Fig. Ia. 30.
- 59vM "autem3" Apparently thus in Gr MS B. It should be  $\delta \dot{\eta}$  (=itaque). See Gr 2, 402, 3var.
- 59vM "GH" Apparently thus in Gr MS B. It should be GX if it refers to Fig. Ia. 21 and the accompanying proof. If it refers to Fig. Ia. 30, it would be GM. See Gr 2, 402, 4var.
- 59vN "autem<sup>2</sup>" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 402, 9var.
- 59vO "AMZ" and "AKHLK" Apparently thus in Gr MS B. They should be AHZ and AHZL. See Gr 2, 404, 13var and 15var. Heiberg misrepresents the second reading of Moerbeke as AKHL.
- 59vR After "erunt" Heiberg would add "igitur" (see Gr 2, 405, 1var).
- 59vR "H >> , PH" Heiberg has read Moerbeke's text as HN, YH. See Gr 2, 405, 3var. However, I believe that Moerbeke has correctly written it as I have given it.
- "NY" Apparently thus in Gr MS B. It should be HY. See Gr 2, 405, 5var. 59vS
- 59vS "YKT" This seems to end in -T but perhaps it is -C, as indeed it should be.
- 59vU "autem" Apparently thus in Gr MS B. It should be  $\delta \dot{\eta}$  (=itaque). See Gr 2, 406, 3var.
- 59vU "TM" and "IH" Apparently thus in Gr MS B. They should be TH and IP. See Gr 2, 406, 3var.
- 59vU "HL" Apparently thus in Gr MS B. It should be "angulus L" (see Gr 2, 406, 4). Presumably ή Λ was mistakenly copied by the scribe of Gr MS B as HA. I have added the succeeding "[non]" from Gr MS C.
- 59vU "[que SB (Fig. Ia. 32) quam SB (Fig. Ia. 30)]" I have added this. Moerbeke has in the margin "HSBIHCCB" (see 59vUvar), presumably because the scribe of Gr MS B had mistakenly copied ή ζB τῆς ΣB, making them all capital letters and also writing terminal sigma for the first sigma, and I for T, and using the form C for the last two sigmas. Cf. Gr 2, 406, 5var.
- 59vU-V The comparison of the magnitudes throughout this section is between corresponding magnitudes in Figs. Ia. 32 and 30. I have suggested in parentheses corrections of the magnitudes to bring Moerbeke's corrupt text into line with my reconstructed figures. My suggested corrections do not in every case agree with those suggested by Heiberg.
- 59vV "autem3" Apparently thus in Gr MS B. Gr MS C has δή (=itaque). See Gr 2, 406, 10var. Cf. "autem4" as in both Gr MSS B and C. Heiberg would write  $\delta \dot{\eta}$  (=itaque). See ibid., 12var.



Figures 1.2.1 - Sp. 5, pp. 24-88

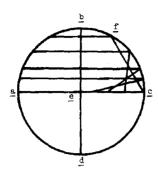
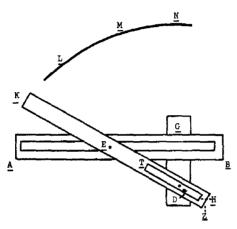


Fig. 1.2.1



The figure is that given in William of Moerbeke's translation (see Fig. Es. 32 below). The conchoid is incorrectly drawn.

Fig. 1.2.2

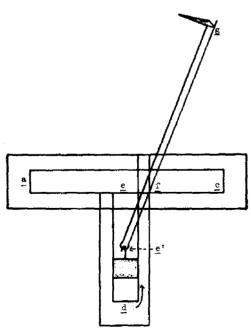


Fig. 1.2.3

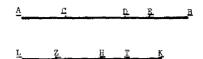


Figure redrawn by m. 3, apparently similar to that of m. 1, which can also be seen in erasure.

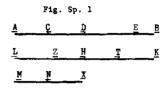


Figure is drawn in the erasure of m. 3.

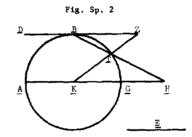


Figure drawn in m. 3 similar to the erased figure of m. l (erased below in c. 1).

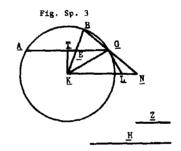


Figure renewed in m. 3. In MS R, Z is made longer than H. Z and H are given as vertical lines here and in the next three diagrams.

Fig. Sp. 4

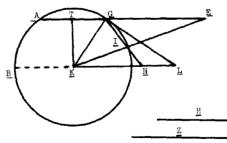
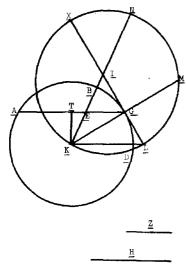


Figure drawn in m. 3. I have added the broken line from MS R. It was originally in the figure as drawn by m. 1, erased but visible by ultraviolet light. The letter K is missing in MS R.

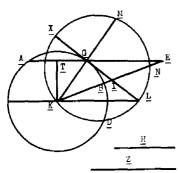
Fig. Sp. 5

#### Figures Sp. 6 - Sp. 11, pp. 88-95



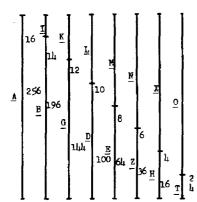
Drawn in m. 3. Correctly redrawn in m. 3 on folio 12v; on folio 12r the figure lacks line KN and the extension GM; also missing are letters E, I, N, and M. MS R has the figure correctly drawn.

Fig. Sp. 6



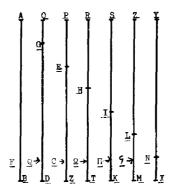
Also redrawn in  $\it{m}$ . 3 (erased figures below); correctly drawn in MS  $\it{R}$ .

Fig. Sp. 7



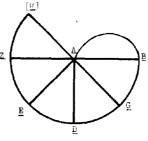
Some of the letters are in m. 3. numbers, see the scholia of Gr MS A in Gr 3, p. 323.

Fig. Sp. 8

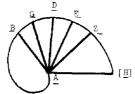


I have altered the positions of the letters somewhat in accordance with the text. The letter  $\Pi$  in the manuscript represents % in the Greek text (see Gr 1, p. 40).

Fig. Sp. 9



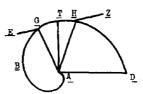
As in MS O.



Reconstructed

Note that the beginning of the spiral is drawn free hand, and the rest of it is simply an arc of a circle. This seems to be the case also in MS R. Notice that [H] was apparently included in the diagram in the Greek manuscript. However, it is not mentioned in the text itself.

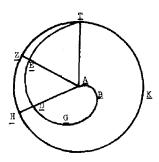
Fig. Sp. 10



This represents MS  $\mathcal{O}^{\, \text{!`}} s$  figure accurately, but the latter was very crudely drawn without any instruments.

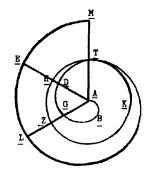
Fig. Sp. 11

### Figures Sp. 12 - Sp. 16, pp. 95-98



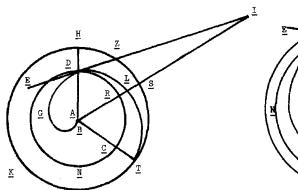
The spiral in MS  $\theta$  was drawn without instruments. It was much more carefully drawn in MS R.

Fig. Sp. 12



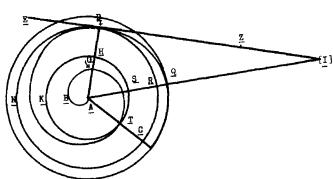
Spirals in MS  $\theta$  were drawn without instrument. This is true of the remaining drawings and will not be commented on again.

Fig. Sp. 13



I have changed orientation about 90° (as in MS  $\it R$  where the drawing is clearer); otherwise as in MS  $\it O.$ 

Fig. Sp. 14



Orientation slightly changed: the letter [I] is not in MS  $\mathcal{O}^1$ s drawing since the intersection itself is not shown. It is in MS  $R^1$ s more careful drawing.

Fig. Sp. 15

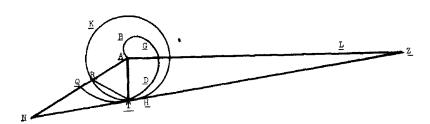
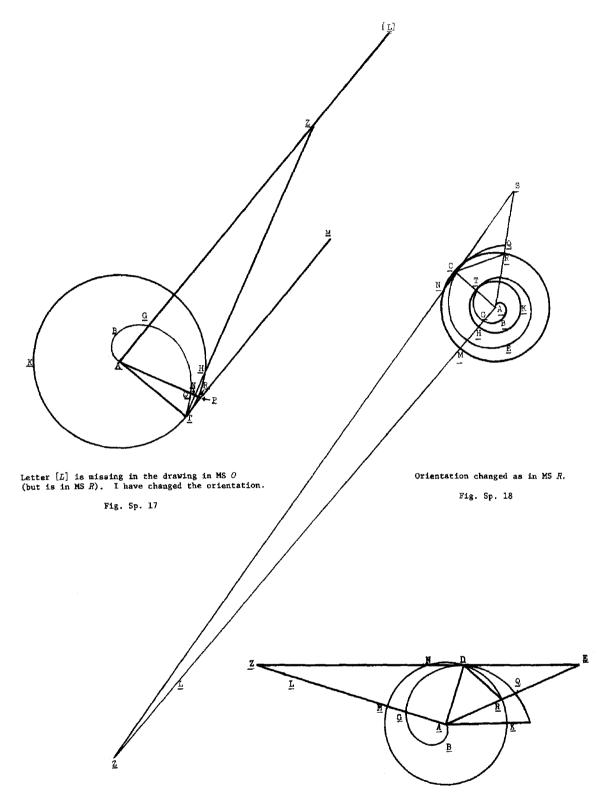


Fig. Sp. 16

Figures Sp. 17 - Sp. 19, pp. 99-101



Appears to be renewed in  $m.\ \mathcal{I}_{\mathcal{I}}$  as usual, it is excellently drawn in MS R.

Fig. Sp. 19

Figures Sp. 20 - Sp. 24, pp. 102-106

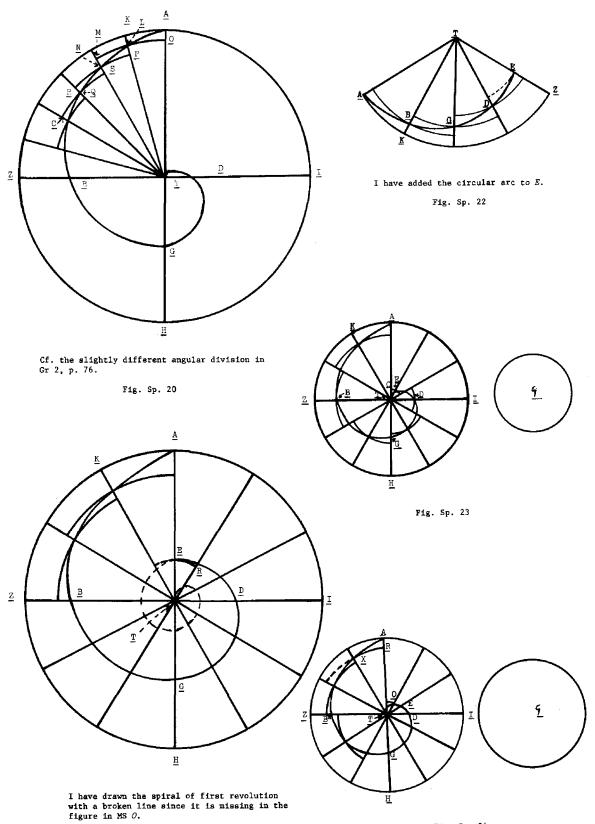


Fig. Sp. 21

Fig. Sp. 24

### Figures Sp. 25 - Sp. 30, pp. 107-113

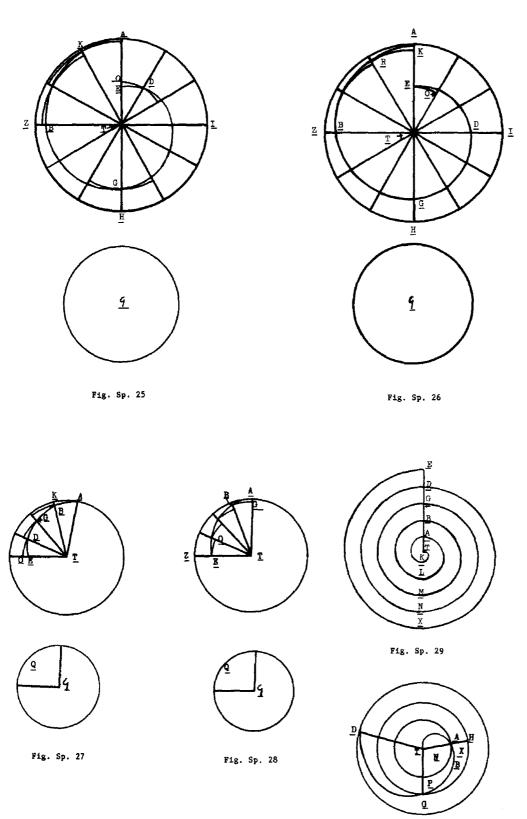
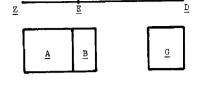


Fig. Sp. 30

## Figures Cg. 1 - Cg. 10, pp. 117-121



Fig. Cg. 1



The ratio of  $D\!E$  to  $Z\!E$  has been altered somewhat from that found in MS O to agree with sizes of A + B and G.

Fig. Cg. 6

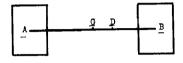


Fig. Cg. 2

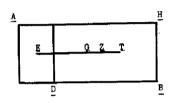


Fig. Cg. 7

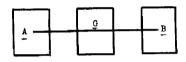
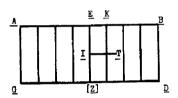


Fig. Cg. 3



I have added letter [Z].

Fig. Cg. 8

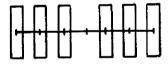


Fig. Cg. 4

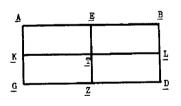
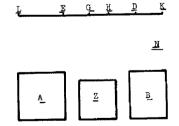


Fig. Cg. 9



N is drawn as a very long line in MS  $\mathcal{O}_{\bullet}$ 

 $\begin{array}{c|c} \underline{A} & \underline{E} & \underline{B} \\ \underline{D} & \underline{C} & \underline{C} \end{array}$ 

Fig. Cg. 10

#### Fig. Cg. 5

## Figures Cg. 11 - Cg. 18, pp. 122-127

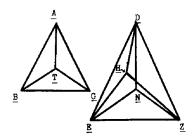


Fig. Cg. 11

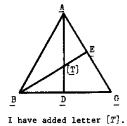


Fig. Cg. 15

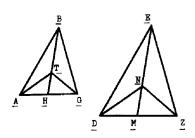


Fig. Cg. 12

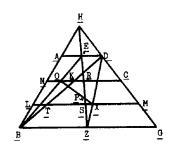
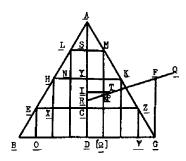


Fig. Cg. 16



I have added letter  $[\mathfrak{Q}]$  from Gr 2, p. 152, but it does not appear in the text.

N E T M

Figure is as in MS  $\mathcal O$  (cf. Gr 2, pp. 164-5). Note that the figures ought to be parabolas and not semicircles as drawn in MS  $\mathcal O$  and reproduced here.

Fig. Cg. 17



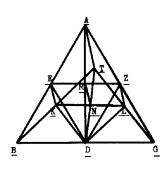
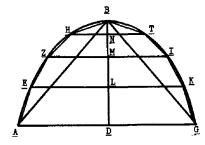


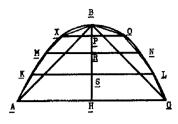
Fig. Cg. 14

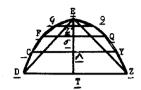


Cf. Gr 2, p. 170, where the figure is oblique. As is usual, MS  $\theta$  has a semicircle instead of a parabola.

Fig. Cg. 18

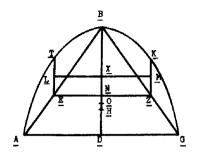
### Figures Cg. 19 - Cg. 23, pp. 127-130





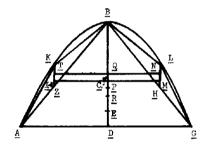
Lettering is quite different in the tradition of Greek MS A, as is evident in Gr 2, p. 172. See variant, Gr 2, p. 173. In the top figure, the extreme left part has vanished and with it letters A and K. I have added the prime sign to Z'.

Fig. Cg. 19



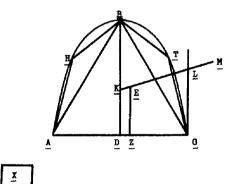
Compare the different letters in  $\operatorname{Gr}$  2, p. 178.

Fig. Cg. 21



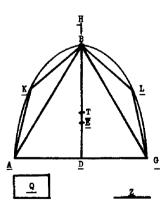
The proportions of the lines are as in MS O. Actually Z and H ought to be at the centers of lines AB and BG. Compare Gr 2, p. 180 for the slightly different lettering of Gr MS A.

Fig. Cg. 22



In the tradition of Gr MS A a few of the letters are different (see Gr 2, p. 175). I have shifted L from the upper terminus of line GL to its position of intersection with line KM, as the text demands. Otherwise the figure is as in MS O, with the exception, of course, that there the parabola was drawn as a semicircle.

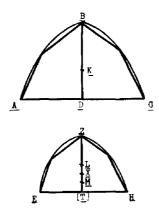
Fig. Cg. 20



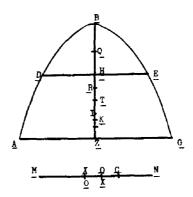
In MS O, BH is extended up into the text; thus we find H repeated in the margin and the statement: "lines DB extenditur usque H."

Fig. Cg. 23

#### Figures Cg. 24 - Q. 3, pp. 130-143

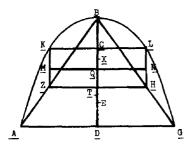


I have added [T], missing in MS  $\mathcal{O}$ . Fig. Cg. 24



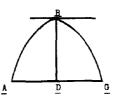
In MS  $\mathcal O$  below line MN (f. 20r) we read: "diversimode figuratur in diversis." Thus X and  $\mathcal O$  were reversed in the two Greek traditions, the arrangement M, X,  $\mathcal O$  appearing in MS A; hence M,  $\mathcal O$ , X was the arrangement in the other Greek MS.

Fig. Cg. 28



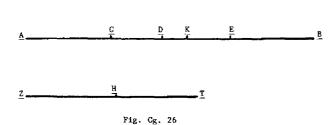
In MS  $\mathcal O$  the letter X is mislocated on line MN and letter  $\mathcal Q$  on line 2H.

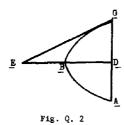
Fig. Cg. 25

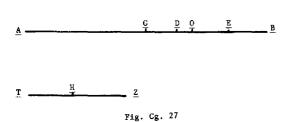


As in the preceding tract the parabolas are drawn in MS  ${\cal O}$  as semicircles. I shall not mention this again.

Fig. Q. 1







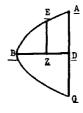
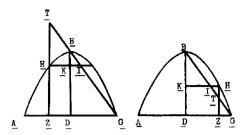


Fig. Q. 3

### Figures Q. 4 - Q. 11, pp. 143-147



The proof refers to figure on left. In MS  $\mathcal O$  we read: "in utroque (in ras.) exemplari erant due figurationes."

Fig. Q. 4

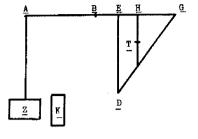


Fig. Q. 8

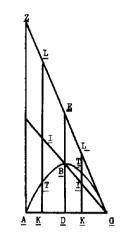


Fig. Q. 5

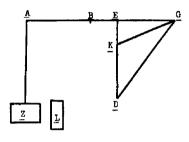


Fig. Q. 9

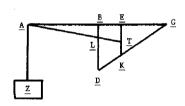
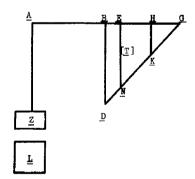


Fig. Q. 6



I have added [T], missing in MS  $\mathcal{O}_{\bullet}$ 

Fig. Q. 10

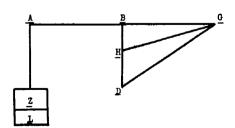


Fig. Q. 7

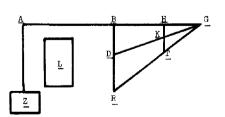


Fig. Q. 11

### Figures Q. 12 - Q. 17, pp. 147-152

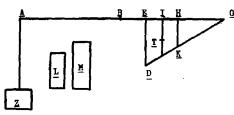


Fig. Q. 12

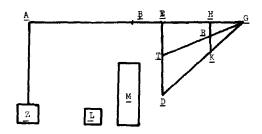
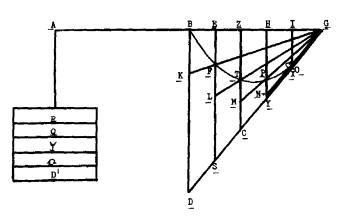
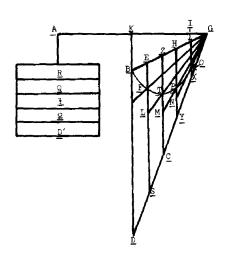


Fig. Q. 13



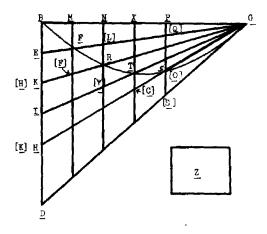
I have added the prime sign to  $D^\prime$ ; in MS  $\mathcal O$ , this is capital  $\mathcal D$ , while the other one is a minuscule d.

Fig. Q. 14



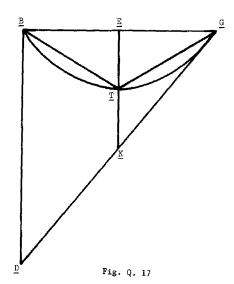
As before, I have added the prime sign to  $\mathcal{D}'$ ; it is capital  $\mathcal{D}$  in MS  $\mathcal{O}$  to distinguish it from the other, a minuscule d.

Fig. Q. 15



See the different lettering in Gr 2, p. 295, which I have included here in brackets because it is obvious that some of Moerbeke's readings refer to those letters and not to his own. To the right of the figure in MS O we read in m. 1 "ponende sunt alique littere que male erant in exemplari."

Fig. Q. 16



jih was 4 Lin

Fig. Cd. 1

### Figures Q. 18 - Cd. 2, pp. 152-158

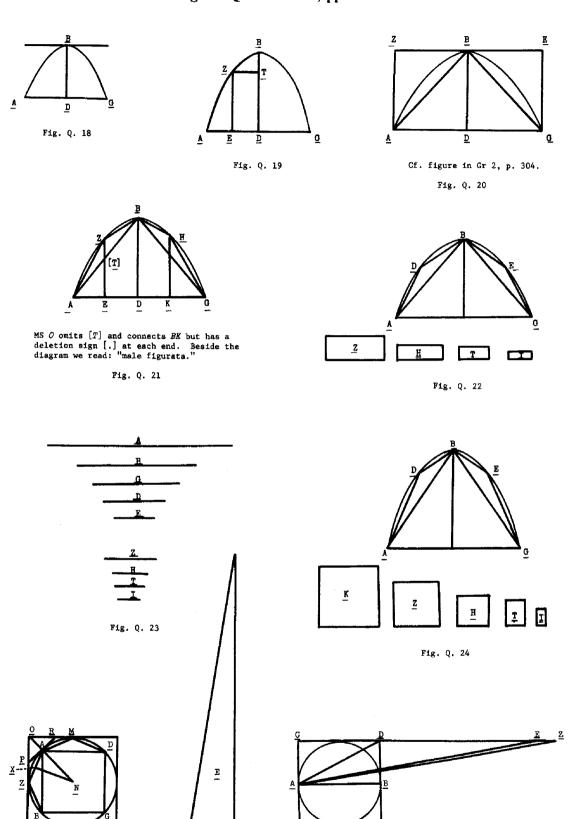
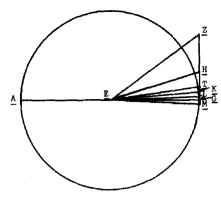


Fig. Cd. 2

# Figures Cd. 3a - Sc. 4, pp. 159-166



Redrawn in m. 3. The erased figure of m.  $\ell$  is visible in an erasure. The latter bears the comment: "eadem figura", visible by ultraviolet light.

Fig. Cd. 3a

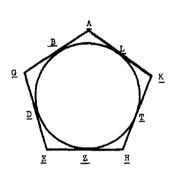
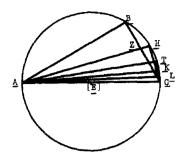


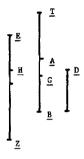
Fig. Sc. 1





Redrawn in m. 3. The figure of m. l can be seen in an erasure. The latter bears the comment "eadem figura", visible by ultraviolet light.

Fig. Cd. 3b



Some letters are corrected in  $m.\ 3$ , which has interchanged letters A and B (see Gr 1, p. 13).

Fig. Sc. 2

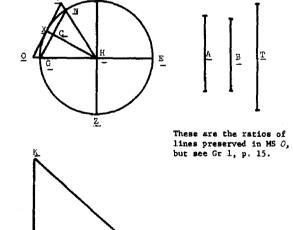
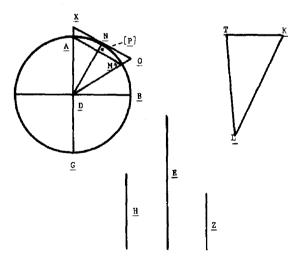


Fig. Sc. 3



Greek adds P where AM intersects DN. In MS O lines H, E, Z are drawn as of equal length; see Gr 1, p. 17.

Fig. Sc. 4

Figures Sc. 5 - Sc. 8, pp. 166-168

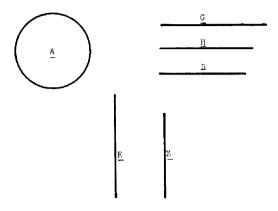
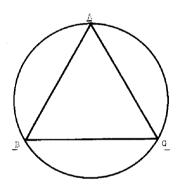
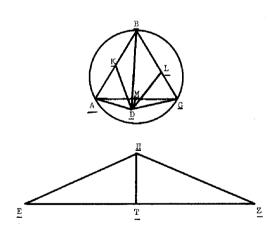


Fig. Sc. 5



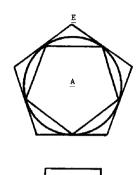
Redrawn by  $m.\ 3$ . The older figure of  $m.\ 1$  can be seen in an erasure.

Fig. Sc. 7a



Top figure was redrawn by  $m.\ 3$ . The letter Z in the bottom figure is in  $m.\ 3$ . Cf. figure in Gr 1, p. 23 for its different orientation and proportions. The figures of  $m.\ l$  can be seen in an erasure.

Fig. Sc. 7b



As in MS  $\mathcal{O}$ . It would have been better if the polygons had been similarly oriented, as in Gr 1, p. 22.

Fig. Sc. 6

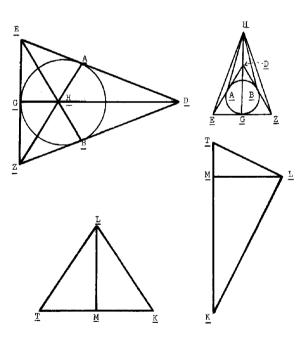
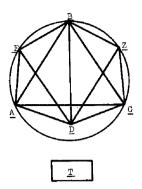


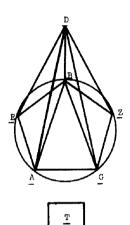
Fig. Sc. 8

As in MS O.

As reconstructed

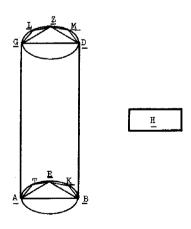


As in MS O



As reconstructed

Fig. Sc. 9



Cf. Gr 2, p. 43, fig. Fig. Sc. 11

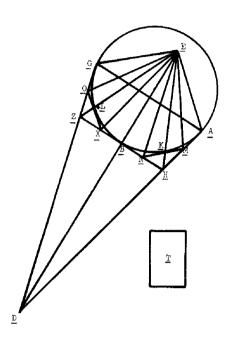


Fig. Sc. 10

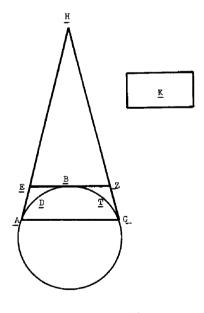
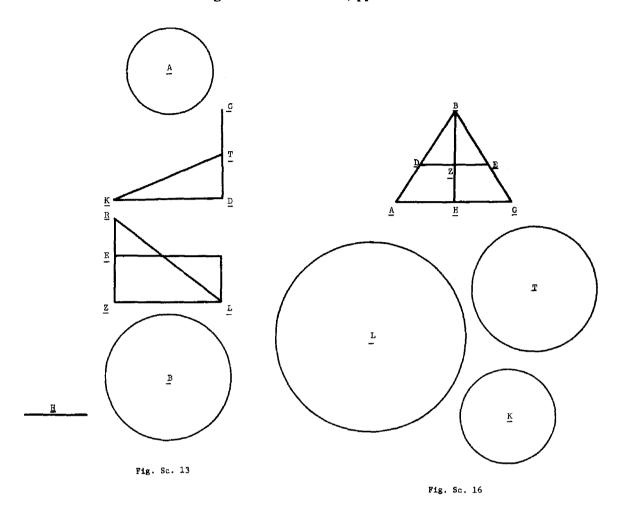


Fig. Sc. 12

Figures Sc. 13 - Sc. 17, pp. 175-180



A G B D E G D E Fig. Sc. 14

Figures Sc. 18 - Sc. 22, pp. 181-184

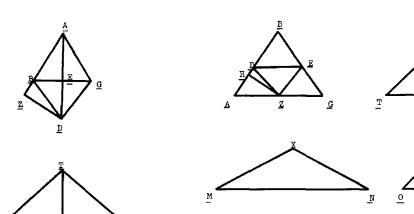


Fig. Sc. 19

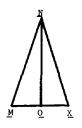
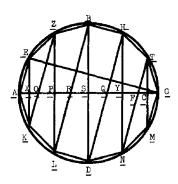
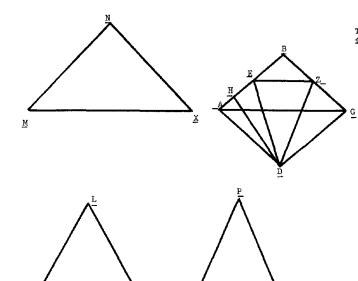


Fig. Sc. 18



The Greek letters equivalent to  $\mathcal C$  and  $\mathcal Q$  are interchanged in Gr 1, p. 89, fig.

Fig. Sc. 21



See the different positioning of the letters in Gr 1, p. 85, fig.  $\,$ 

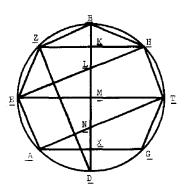


Fig. Sc. 22

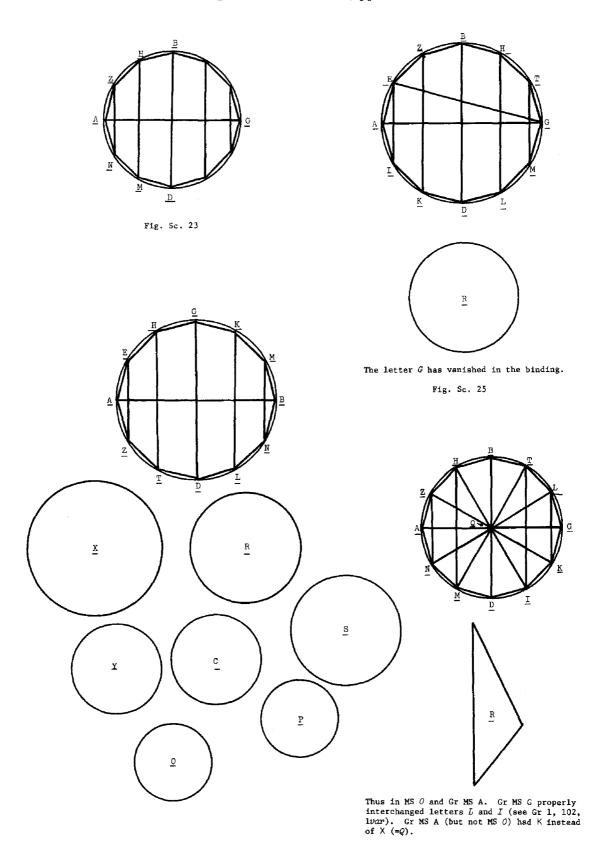


Fig. Sc. 24

Fig. Sc. 26

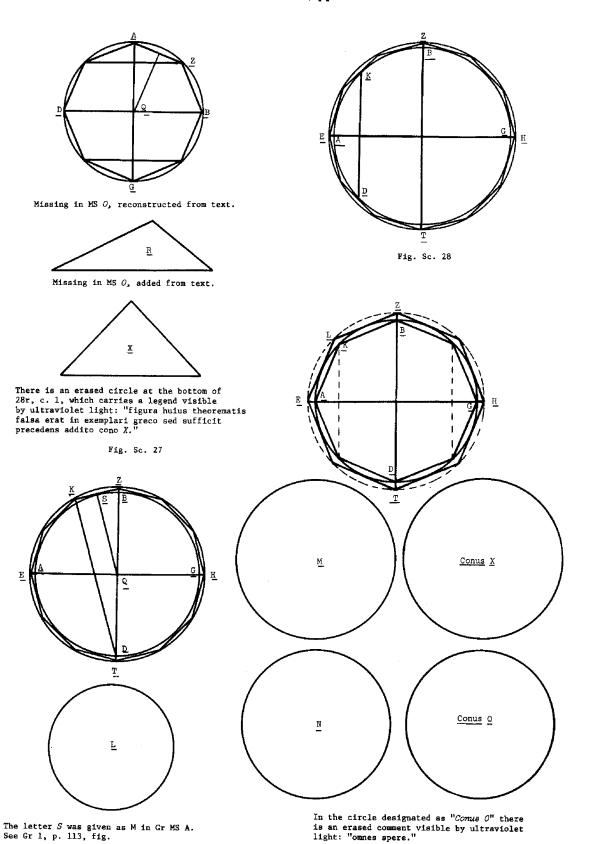
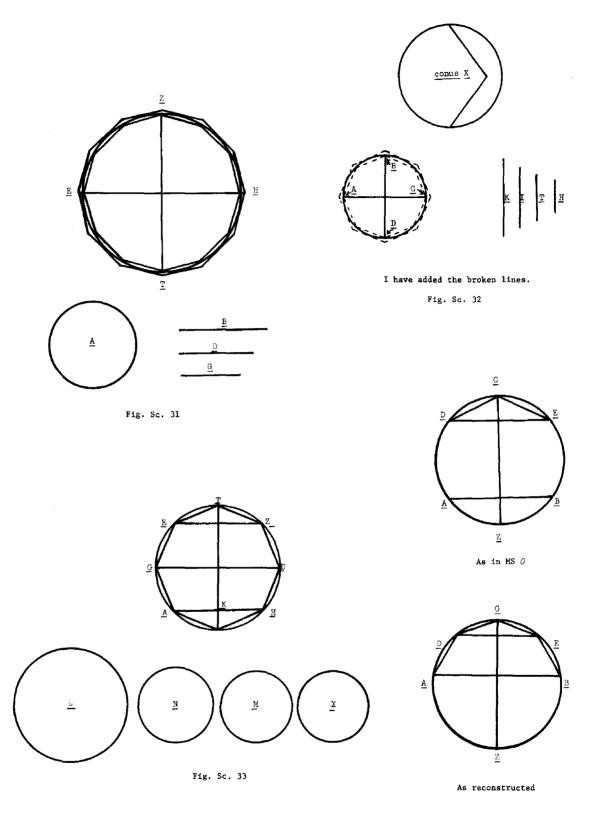
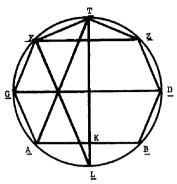


Fig. Sc. 30

Figures Sc. 31 - Sc. 34, pp. 192-196



An earlier attempt by  $m.\ \mathcal{I}$  can be seen in an erasure.



In Gr 1, p. 139, the segment AGPTZDB is drawn less than a semicircle.

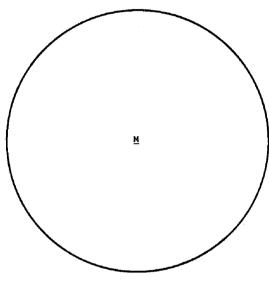
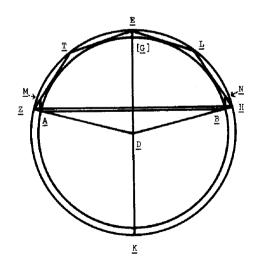


Fig. Sc. 35



The letter [G] is missing from the figure in MS O. Fig. Sc. 37

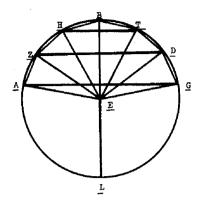
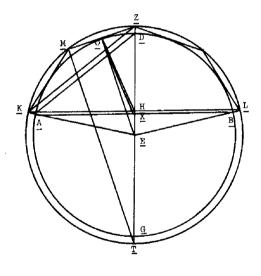




Fig. Sc. 36



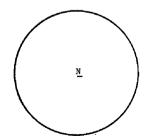


Fig. Sc. 38

Figures Sc. 39 - Sc. 42, pp. 200-202

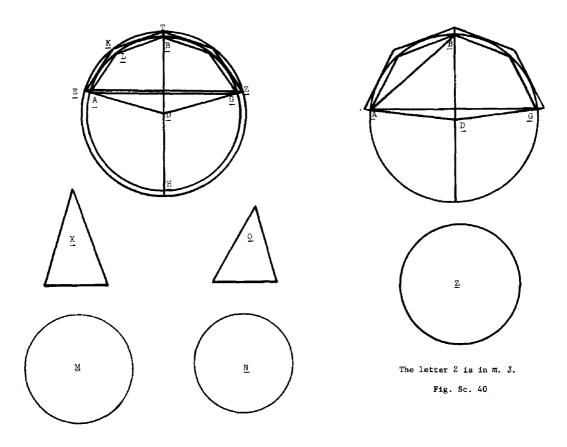


Fig. Sc. 39

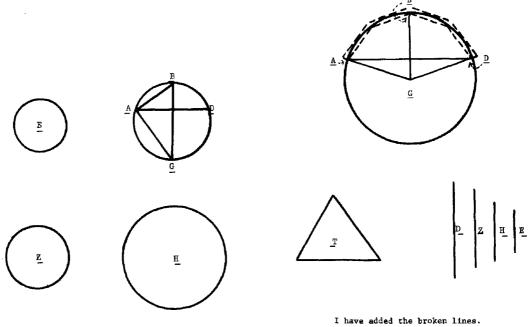
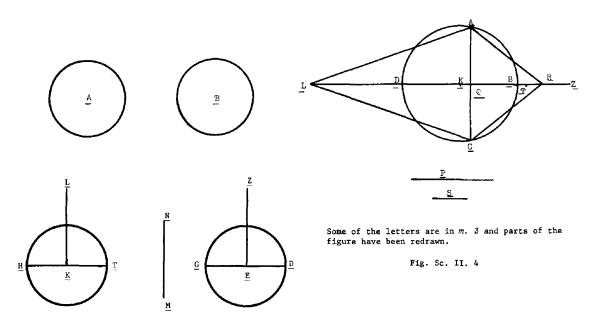


Fig. Sc. 41

Fig. Sc. 42

### Figures Sc. II.1 - Sc. II.4, pp. 204-209



Circle  $\ensuremath{\mathcal{B}}$  was redrawn larger than it was originally drawn. Fig. Sc. II.1 M N N

Notice the differences in the drawings in Gr 1, p. 187. The lettering is in m. 3 and the circles have been redrawn.

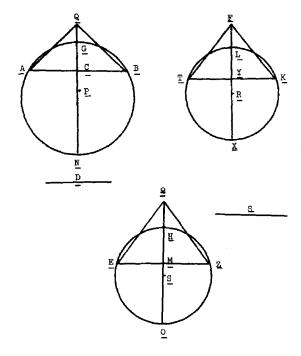
Fig. Sc. II.3

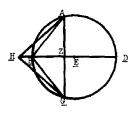
An older diagram has been erased. It bears a legend visible by ultraviolet light: "et erat appenditum de spera, puto male." The cone of base N also has a legend visible by ultraviolet light: "conus." Some of the letters are in m. 3.

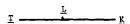
Fig. Sc. II.2

#### 614 ARCHIMEDES IN THE MIDDLE AGES

# Figures Sc II.5 - Sc. II.8b, pp. 211-217







Partially redrawn in m. 3. At the bottom of the proof in an erased figure there is a comment visible by ultraviolet light: "repete figuram precedentem."

Fig. Sc. II.7

Figures are redrawn in erasures of m. 3.

Fig. Sc. II.5

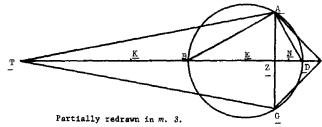
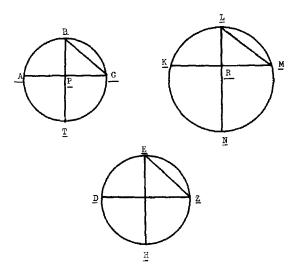
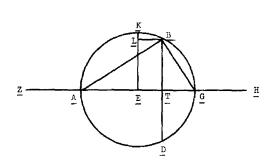


Fig. Sc. 11.8a





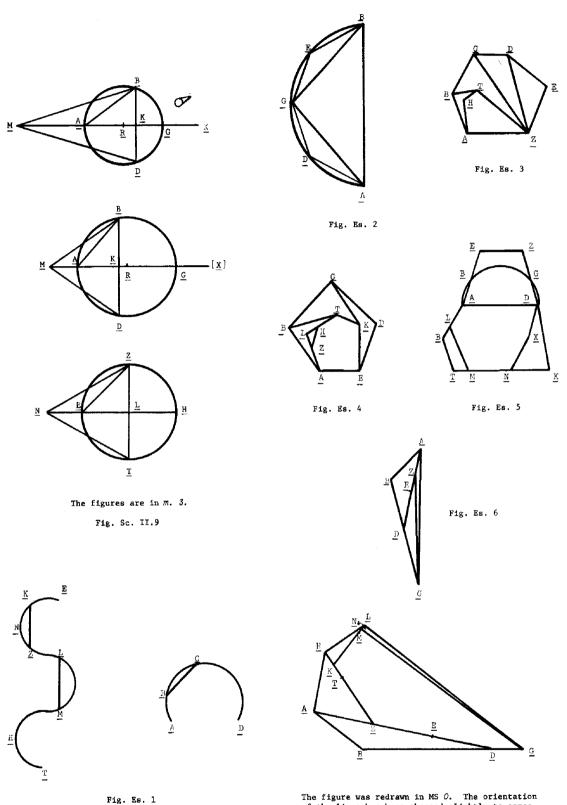
Bottom figure is partially redrawn in m. 3.

Fig. Sc. II.6

Some letters are in m. 3.

Fig. Sc. II.8b

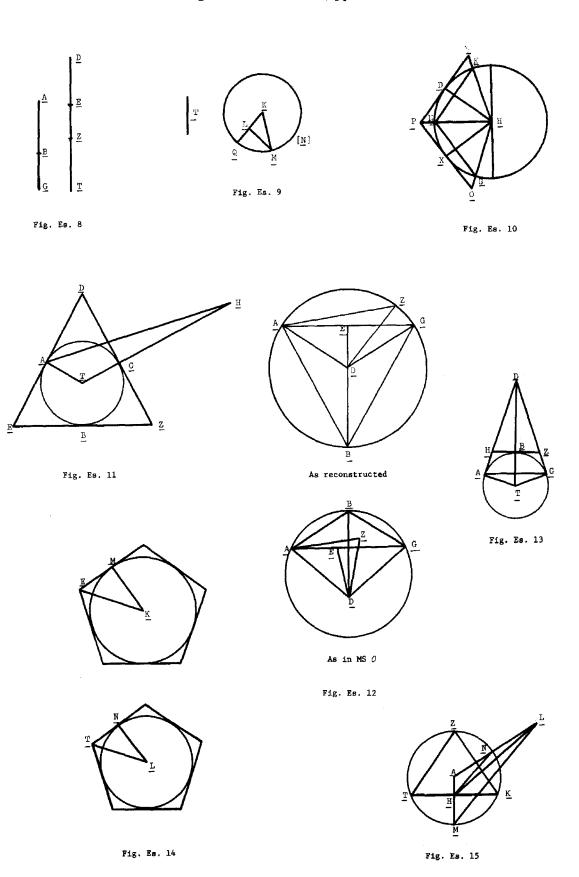
# Figures Sc. II.9 - Es. 7, pp. 218-225



The figure was redrawn in MS  $\mathcal{O}_{\bullet}$ . The orientation of the lines has been changed slightly to agree with the conditions set in the proof.

Fig. Es. 7

# Figures Es. 8 - Es. 15, pp. 226-231



#### Figures Es. 16 - Es. 20, pp. 233-238

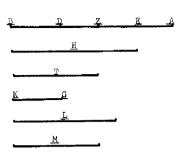
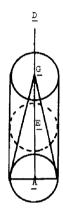
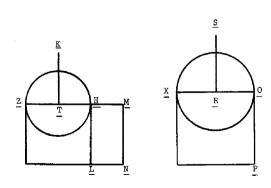


Fig. Es. 16



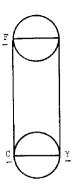
I have added the circle about E. In an older erased figure there is a comment in m.  $\mathcal I$  visible by ultraviolet light: "non [in] greco exemplari."

Fig. Es. 17

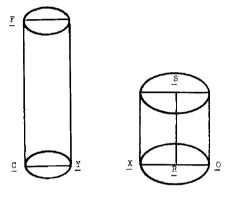


The figure on the right was redrawn by m. 3. The earlier figure can be seen in an erasure.

Fig. Es. 18



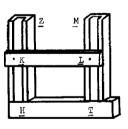
As in MS O



Reconstructed

The diagram on the right was missing from MS  ${\cal O}$  and Gr MS A. See Gr 3, p. 55, end of variant readings.

Fig. Es. 19

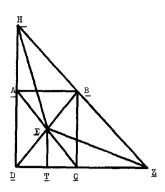




Redrawn in m. 3.

Fig. Es. 20

# Figures Es. 21 - Es. 26, pp. 238-242



Cf. Gr 3, p. 58, fig., where AB is greater than BG and a line EI perpendicular to HD has been included though absent from the text.

Fig. Es. 21

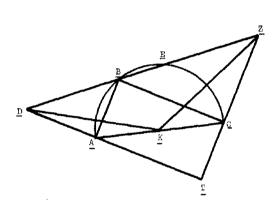
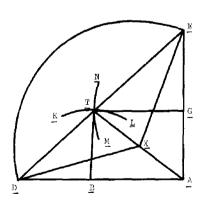


Fig. Es. 22



In Gr 3, p. 64, fig., lines XD and XE are not drawn though such lines are mentioned in the text (36vW): "que ab X ad D, E equales fiant." Notice also that in the figure in Gr MS A, E was incorrectly given as  $\P$ . See Gr 3, p. 65, end of variants.

Fig. Es. 23

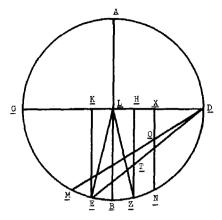
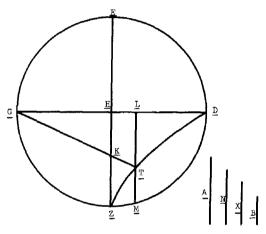
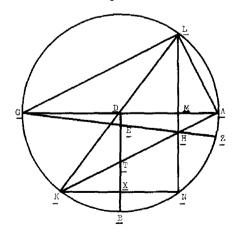


Fig. Es. 24



Partially redrawn in m. 3 and some of the letters are in m. 3. By ultraviolet light we read a comment of m. l: "in exemplari linea ZTD erat curva sed ex superiori lectura videtur quod debet esse recta."

Fig. Es. 25



Some of the letters are in m. 3. The whole drawing is repeated on folio 37v. In Gr MS A line  $\mathcal{DB}$  was extended to the circumference. See Gr 3, p. 70, end of variants.

Fig. Es. 26

#### Figures Es. 27 - Es. 31, pp. 243-247

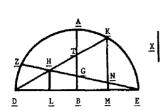


Fig. Es. 27

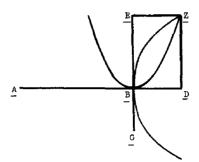
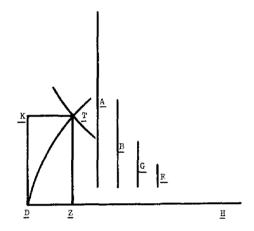


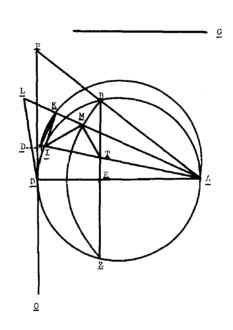
Figure redone in m. 3 with parts of the original drawing faintly evident. The only lettering left of m. 1 is 2 and D and there is another G in m. 1 to the left of that in m. 3. However, all of m. 1's drawing and lettering is visible under ultraviolet light.

Fig. Es. 29



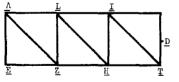
The figure has been partially redrawn by Coner, who, having read D as A, accordingly changed line A to D here and in all places in the text. Other letters are in m. 3. Parts of the drawing in m.  $\mathcal I$  are clearly visible.

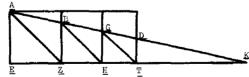
Fig. Es. 28



Line G (or at least letter G) is in m. 3.

Fig. Es. 30

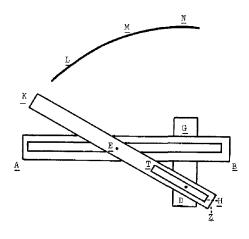




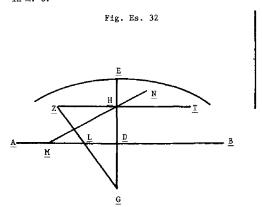
Some letters on the right-hand figure are in  $m.\ 3$ . That figure is repeated on folio 38v, where all of the letters are in  $m.\ 3$ .

Fig. Es. 31

#### Figures Es. 32 - Es. 37, pp. 249-252

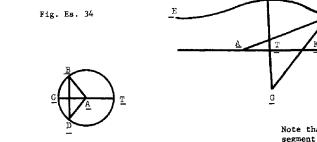


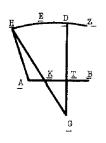
The figure is much erased; redrawn and relettered in  $m.\ 3$ .



Partly redrawn in m. 3. By means of ultraviolet light we read in m. 1: "linea ZETH non circularis (?) est (?); non circularis (?) scilicet per exemplum (?) quod precedit." Some of the letters on this figure represent corrections of those found in the figure in Gr MS A. See Gr 3, p. 101, end of variants.

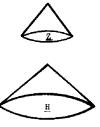
Fig. Es. 33





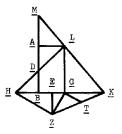
Note that in MS  $\mathcal O$  line  $\mathit{EDH}$  is merely a segment of a circle.

Fig. Es. 35



The figures are in  $m.\ 3$ . There is much erasing, with the figures of  $m.\ \mathcal{I}$  visible by ultraviolet light.

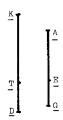
Fig. Es. 37



Partly redrawn in m. 3. I have changed the proportions of lines slightly to make the diagram agree with the text.

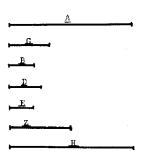
Fig. Es. 36

#### Figures Es. 38 - Es. 43, pp. 253-261



Some letters are in  $m.\ 3$ . See the different proportions of the lines in Gr 3, p. 114, fig.

Fig. Es. 38



Hand of the rubricator (=m. 3) adds numbers to the lines - A:12, G:4, B:2, D:3, E:2, Z:6, H:12. The letters are also in m. 3.

Fig. Es. 39



As in MS  $\theta$ . In Gr 3, p. 127, fig., line B is shorter than D. It makes no difference since the text concerns the compounding of ratios where any two means are inserted between any

Fig. Es. 40

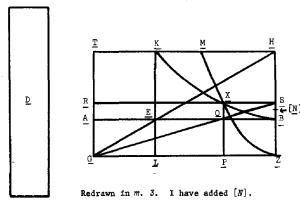
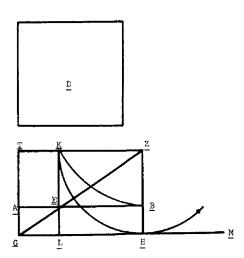


Fig. Es. 42



As in MS  $\mathcal{O}$ . Cf. Gr 3, p. 135, fig.  $\mathit{KB}$  is a hyperbola with asymptotes  $\mathit{TG}$  and  $\mathit{GH}$  and  $\mathit{KH}$  is a parabola with parameter  $\mathit{HM}$ . Both  $\mathit{KB}$  and  $\mathit{KH}$  are drawn as arcs of circles in MS  $\mathcal{O}$ . The figure  $\mathit{D}$  has been redrawn by  $\mathit{m}$ .  $\mathit{3}$ , with  $\mathit{m}$ .  $\mathit{l}$ 's drawing visible by ultraviolet light.

Fig. Es. 41

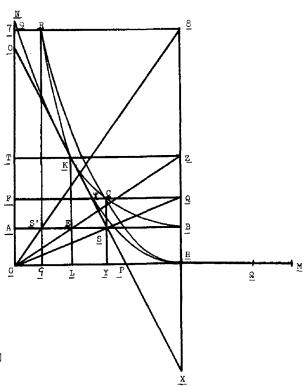
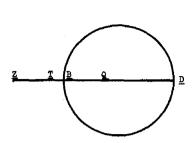


Figure redrawn in m. 3. Note that I have changed .S to S', since I have already capitalized s. The figure as given here and in Gr MS A combines the two figures of Gr 3, pp. 143 and 147. See Gr 3, p. 142, end of the variants.

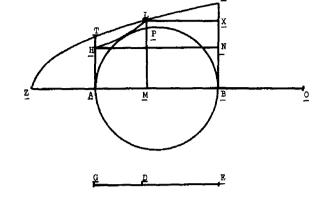
Fig. Es. 43

### Figures Es. 44 - Es. 48, pp. 263-270



The figure has been redrawn in m. 3. The original drawing can be seen to the right,

Fig. Es. 44



The figure has been redrawn in m. 3. The original drawing can be seen in erasure. The letter N was missing from Gr MS A. See Gr 3, p. 154, end of variants.

Fig. Es. 45

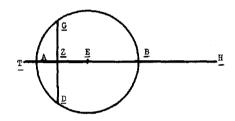
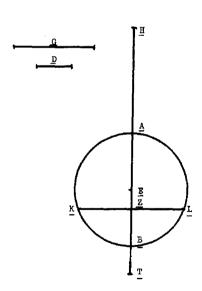
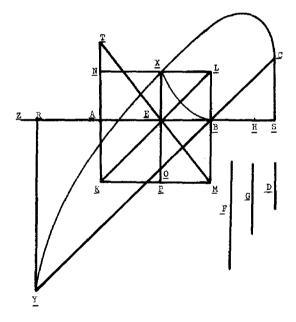


Fig. Es. 46



Partially redrawn in m. 3. All of the letters are in m. 3. The lines G and D were missing from Gr MS A. See Gr 3, p. 175, end of variants.

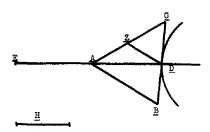
Fig. Es. 48



This figure was completely redrawn in m, 3. The erased lines of the original figure can easily be seen. Line YXC, though drawn as I have indicated, is an ellipse. By ultraviolet light the following erased legend can be seen: "lines XO, puto, debet esse curva sed in exemplari greco recta (?) erat (?)." For the errors in lettering in Gr MS A, see Gr 3, p. 165, end of variants.

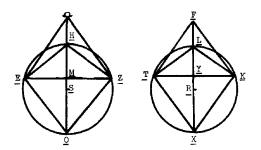
Fig. Es. 47

#### Figures Es. 49 - Cs. 1, pp. 270-292



The hyperbola has been redrawn in m. 3 but still as an arc of a circle. The asymptotes AG and AB are not properly drawn. Line H, added in m. 3, was omitted from Gr MS A. See Gr 3, p. 177, end of variants.

Fig. Es. 49



Redrawn in m. 3. Letters M and F represent Greek letters  $\Phi$  and  $\Psi$ . Y is missing from the figure in Gr MS A. See Gr 3, p. 181, end of variants.

Fig. Es. 50

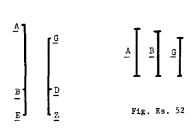
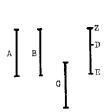


Fig. Es. 51



As in MS  $\theta$ ; cf. the proportions of the lines in Gr 3, p. 194, fig.

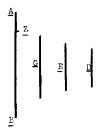
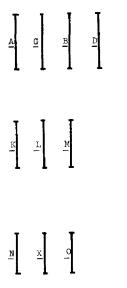


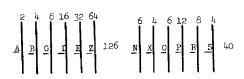
Fig. Es. 54

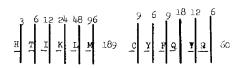
Fig. Es. 53



In Gr MS A and MS  $\theta$  the lines within each set are equal. See Gr 3, p. 199, end of variants and figure on the same page.

Fig. Es. 55

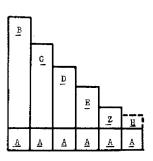




The lines are so drawn in MS  $\mathcal{O}_{\tau}$  but, of course, ought to have been drawn with proportional lengths. See Gr 1, pp. 264-65. The numbers on the lines were added by Moerbeke from a scholium in Gr MS A (cf. Gr 3, p. 322).

Fig. Cs. 1

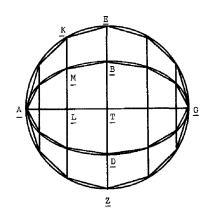
Figures Cs. 2 - Cs. 5, pp. 293-297

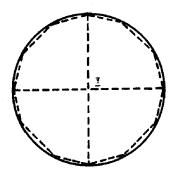


F	ᄓ	ыı	ᆈ	FI	Ľ
<u>K</u>	ĸ	<u>K</u>	<u>K</u>	K -	ĸ
I	I	I	I	I	Ï
Т	Ţ	Н	Τ	T	T

Concerning this figure,  $m.\ l$  says: "spatium TIKL in greco non erat sic divisum sed per equalia, quod mihi videbatur esse falsum." Cf. Gr 1, p. 268, end of variants, and the figures on pp. 267 and 269. I have added the broken line about H.

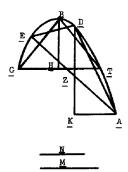
fig. Ca. 2





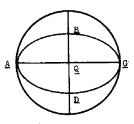
Additional letters are found on the figure in Gr 1, p. 277 (cf. p. 276, end of variants). But the additional letters are not mentioned in the text and so need not have been added. Moerbeke made his ellipse by joining two segments of a circle. I have added the broken lines.

Fig. Cs. 4



In reference to this figure, m. l writes: "in exemplari linea DK non secabat (del.: pm) in duo equa lineam AE, sed (del.: erat) secabat eam prope A, et linea AK brevis et perpendicularis super eam, et (or scilicet) equedistans linea CI." Note that drawing in MS O has a semicircle rather than a parabola. This is the usual practice. Furthermore, in MS O, DK was drawn so that it was not parallel to BH. Finally, in MS O, lines N and M were drawn as equal lines.

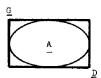
Fig. Cs. 3



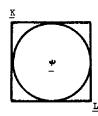


The translator again has made his ellipse by using two segments of a circle.

Fig. Cs. 5

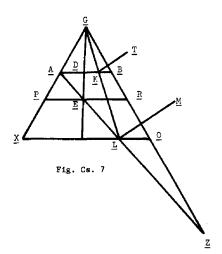


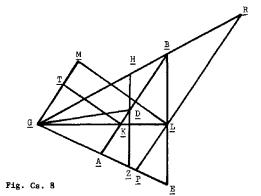


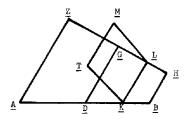


Again the translator fails to draw true ellipses.

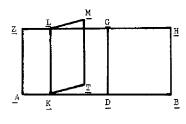
Fig. Cs. 6





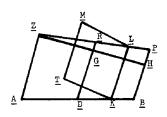


As reconstructed. See Gr 1, p. 297.

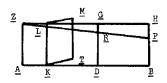


As in MS O

Fig. Cs. 9



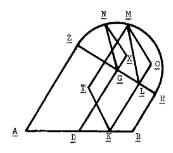
As reconstructed. See Gr 1, p. 301 and the comment at the end of variants, p. 300.



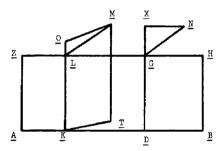
As in MS O, but see Gr 1, p. 301.

Fig. Cs. 10

#### Figures Cs. 11 - Cs. 17, pp. 302-310

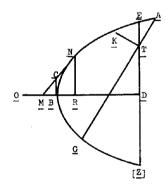


As reconstructed. See Gr 1, p. 305 and the comment at the end of the variants, p. 304.



As in MS O.

Fig. Cs. 11



As in MS  $\mathcal{O}$ . BC should be parallel to NR. Concerning the figure in Gr MS A, see Gr 1, p. 314, end of variants.

Fig. Cs. 13

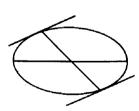
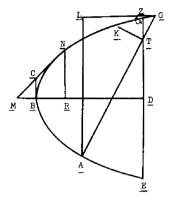
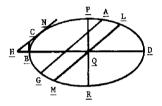


Fig. Cs. 16



 ${\rm MS}\ \mathcal O$  forms a parabola by joining two circular arcs here and in other figures in this text.

Fig. Cs. 12



The letters A and G are interchanged in the figure in Gr 1, p. 316.

Fig. Cs. 14

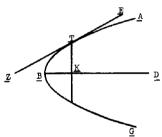
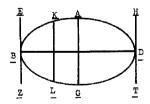


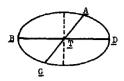
Fig. Cs. 15

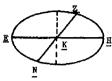


The letters A and G are interchanged in the figure in Gr 1, p. 331.

Fig. Cs. 17

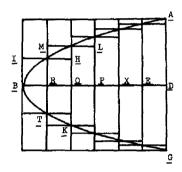
#### Figures Cs. 18 - Cs. 22, pp. 310-316





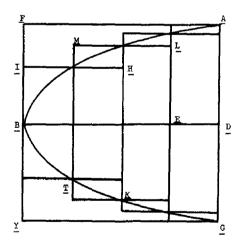
I have added the broken lines.

Fig. Cs. 18



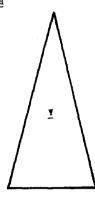
See the comment in Gr 1, p. 339, end of variants, to the effect that the number of parts of line BD ought to be divisible by four.

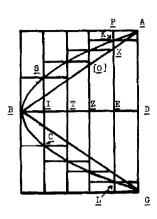
Fig. Cs. 19



In Gr 1, p. 343, fig., the letter R appears at the intersection of MT and BD though it is not mentioned in the text. See the comment in Gr 1, p. 342, end of variants.

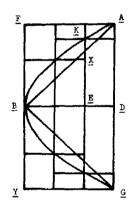
Fig. Cs. 20

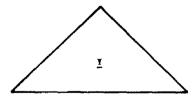




Cf. Gr 1, p. 349, fig. for additional letters not mentioned in the text. I have added [O], missing from Latin MS O and Gr MS A.

Fig. Cs. 21

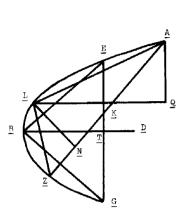




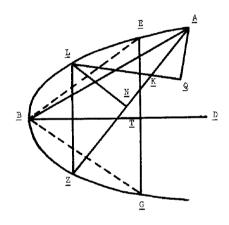
Cf. Gr 1, p. 357, fig., where the axis is divided into six parts and additional letters not mentioned in the text are given. The paraboloid should be oblique but it was not so drawn in Gr MS A or MS  $\mathcal O$ . See Gr 1, p. 356, end of variants. Cone  $\mathbb Y$  is missing from MS  $\mathcal O$ .

Fig. Cs. 22

# Figures Cs. 23 - Cs. 26, pp. 317-323



Reconstructed to achieve the proportions of lines indicated in the text.



As in MS O, with the broken lines added.

Fig. Cs. 23

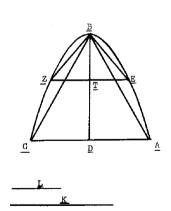
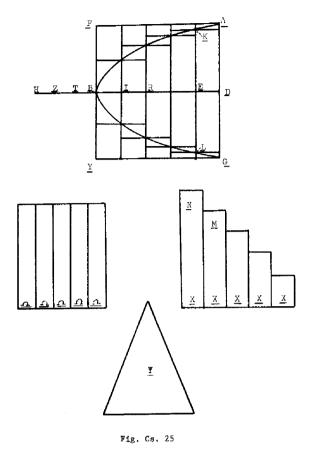
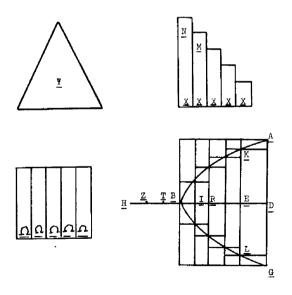


Fig. Cs. 24



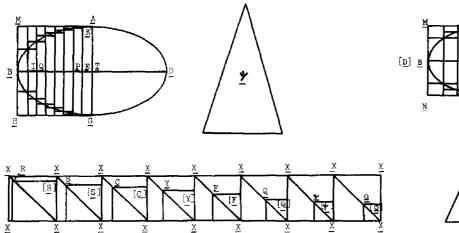


The paraboloid should have been oblique but was not so drawn in Gr MS A or in MS  $\it O$ . See Gr 1, p. 387, fig. and end of variants.

Fig. Cs. 26

 $\underline{\mathbf{D}}$  [ $\underline{\mathbf{B}}$ ]

#### Figures Cs. 27 - Cs. 30, pp. 325-333



The ellipsoid should be oblique but was not so drawn in Gr MS A or in MS  $\theta$ . Furthermore, to agree with the statement in the text that KL and MN are tangent at B and D respectively, these letters should have been interchanged. See Gr 1,

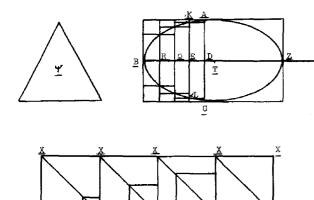
G

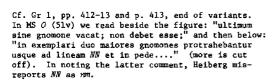
Fig. Cs. 28

p. 409, end of variants.

Concerning the series of gnomons writes m. 1: "ista figura in exemplari habebat omnes gnomones equales. Preterea puto quod mensura latitudinis gnomonum deberet esse non super diametrum tetragoni, sed super latera; tamen in exemplari erat super diametrum." In accordance with this observation the letters RSCTFQTQ should be placed as I have indicated by bracketed letters. Cf. Gr 1, p. 396, end of variants, and p. 397, fig.

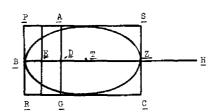
Fig. Cs. 27





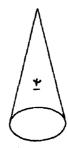
0

Fig. Cs. 29



H

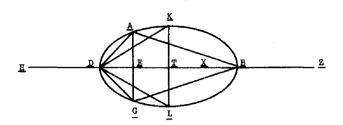
[0]



The ellipsoid should be oblique but it was not so drawn in Gr MS A or in MS  $\theta$ . See Gr 1, p. 346, end of variants.

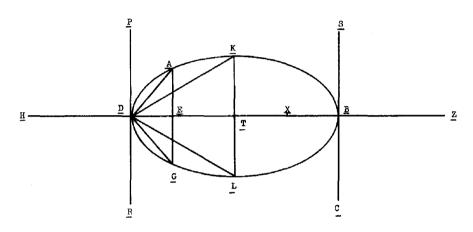
Fig. Cs. 30

### Figures Cs. 31 - Ee. 2, pp. 334-340



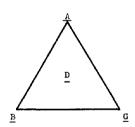
Compare the figure in Gr 1, p. 433, where  $K\!L$  is the major axis and  $D\!B$  the minor.

Fig. Cs. 31



The ellipsoid should be oblique but was not so drawn in Gr MS A or in MS  $\it{O}$ . See Gr 1, p. 440, end of variants.

Fig. Cs. 32



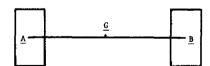
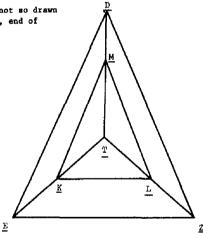


Fig. Ee. 1



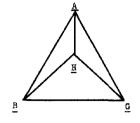
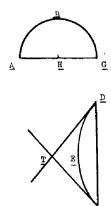


Fig. Ee. 2

# Figures Ee. 3 - Ia. 4, pp. 341-360



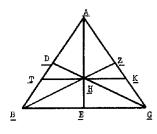


Fig. Ee. 4

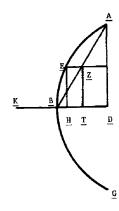
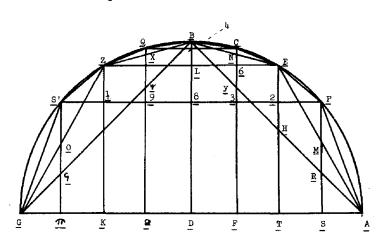


Fig. Ee. 6

For lower figure, compare Gr 3, p. 268.

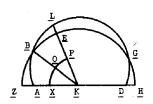
Fig. Ee. 3



The figure ABG, drawn in MS O as a semicircle, ought to be a parabola. Concerning the replacement of the letters of Gr MS A by numbers and the state of the letters in Gr MS A, see Gr 3, p. 281, and of variants.

<u>K</u> <u>B</u>

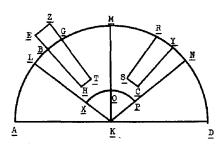
Fig. Ia. 1



Some letters are in m. 3.

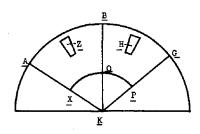
Fig. Ia. 2

Fig. Ee. 5



Some letters are in m. 3. I have added the base line.

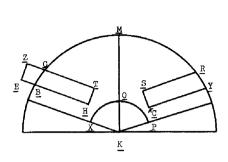
Fig. Ia. 3



Some letters are in m. 3. I have added the base line.

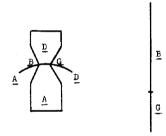
Fig. Ia. 4

# Figures Ia. 5 - Ia. 8, pp. 361-363



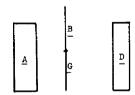
Some letters are in m. 3. In the figure, m. 3 has written, "figura quintae". I have added the base line. The figure in Gr 2, p. 331 contains additional letters not mentioned in the text.

Fig. Ia. 5



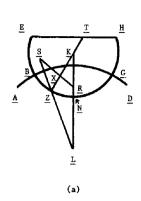
At least the letter D is in  $m.\ 3$  Above the left-hand figure  $m.\ 3$  has added "sextae" for "figura sextae."

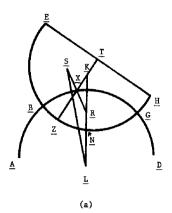
Fig. Ia. 6

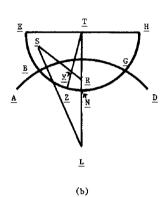


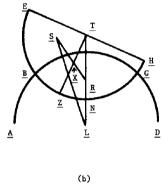
The letter B is in m. 3.

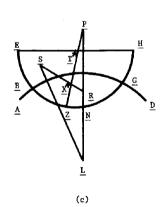
Fig. Ia. 7

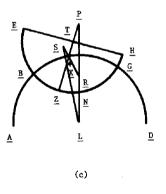








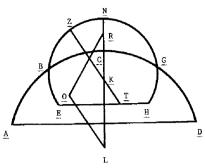




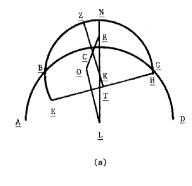
As in MS O

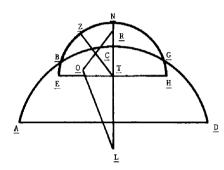
Reconstructed following Commandino

Fig. Ia. 8

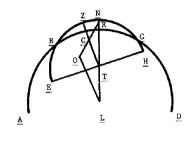


(a) maior emisperio

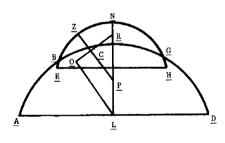




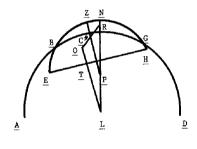
(b) emisperium



(b)



(c) minor emisperio



(c)

As in MS 0

Reconstructed following Commandino

Fig. Ia. 9

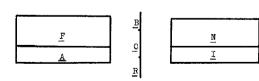
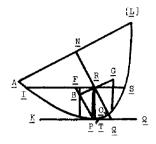


Fig. Ia. 10

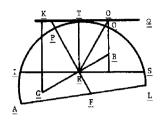
#### 634 ARCHIMEDES IN THE MIDDLE AGES

### Figures Ia. 11 - Ia. 14, pp. 365-367

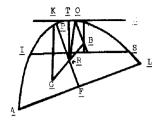


MS  $\mathcal O$  has APO[L] as a semicircle; [L] is omitted;  $\mathcal Q$  is added twice as shown.

Fig. Ia. 11

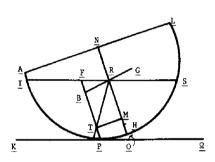


As in MS O

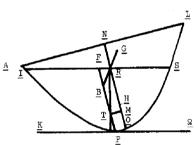


As reconstructed

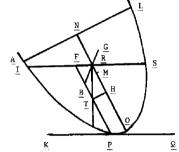
Fig. Ia. 12



As in MS O

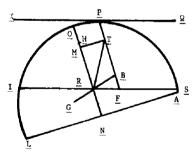


Reconstructed following the textual changes of Heiberg and the diagram of Ver Eecke.

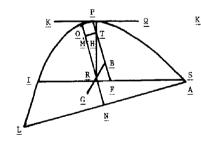


Reconstructed following Commandino

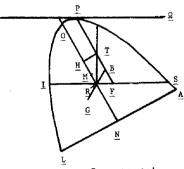
Fig. Ia. 13



As in MS O



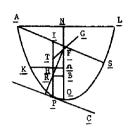
Reconstructed following the textual changes of Heiberg and the diagram of Ver Eecke.



Reconstructed following Commandino

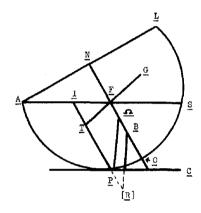
Fig. Ia. 14

# Figures Ia. 15 - Ia. 18, pp. 369-371

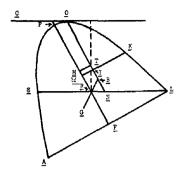


In MS  $\mathcal O$  parabola APOL is, as usual, drawn as a semicircle. This will not be noted henceforth.

Fig. Ia. 15

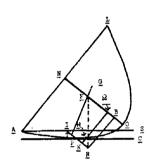


As in MS  $\theta$  with the following comment: "linea BR debet protrami usque ad TP eductam." Moerbeke could not do this because the figure was drawn too near the bottom of the page.



I have added the broken line TR. MS O omits line RT. It also omits the second figure necessary for Proposition Seven, later supplied by Commandino (see Volume 3, Fig. III.4.3B.31). This latter figure was the only figure in Greek MS C. See Gr 2, p. 367, end of variant readings.

Fig. Ia. 17



Reconstructed following Commandino. I have added the broken line FR.

Fig. Ia. 16

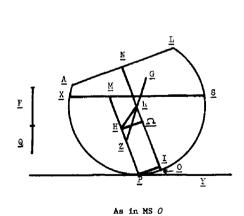
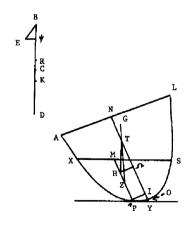


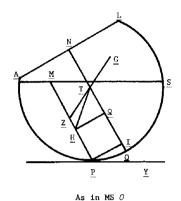
Fig. Ia. 18

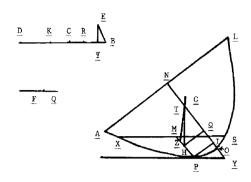


Reconstructed

F

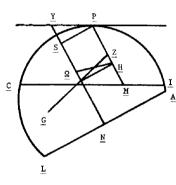
# Figures Ia. 19 - Ia. 21, pp. 373-376





Reconstructed following Commandino

Fig. Ia. 19



As in MS O

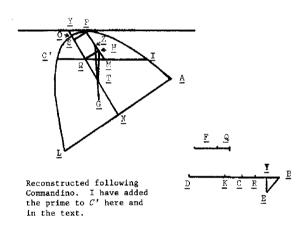
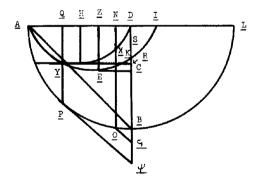
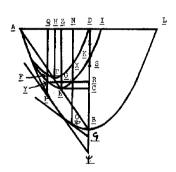


Fig. Ia. 20



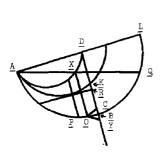
As in MS O



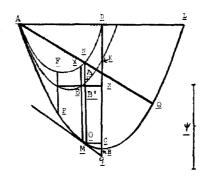
Reconstructed

In MS O m.  $\mathcal I$  adds: "puto quod plures deberent hic esse figure; in exemplari multum erat corrupta, et EI et DX usque ad medietatem..." [the rest is illegible because the page was cut].

Fig. Ia. 21

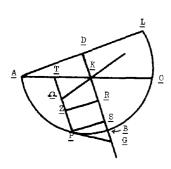


As in MS O

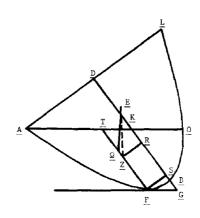


Reconstructed following Commandino

Fig. la. 22

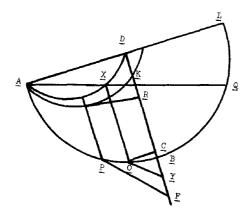


As in MS O

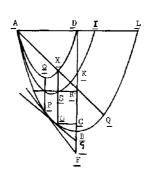


Reconstructed

Fig. Ia. 23



As in MS O

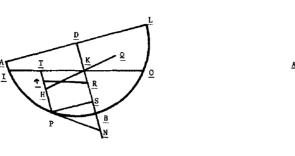


Reconstructed

The figure is labeled as "prima" in MS  $\mathcal{O}_2$  i.e. the first of the three figures Ia. 24-26 used for the demonstration of Part III of Prop. 10.

Fig. Ia. 24

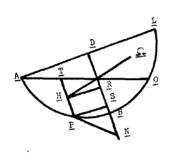
#### Figures Ia. 25 - Ia. 27, pp. 379-381



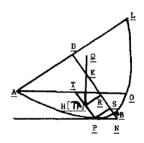
As in MS O Reconstructed

The figure is labeled "secunda" in MS O.

Fig. Ia. 25



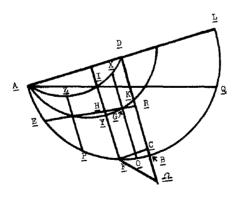
As in MS O



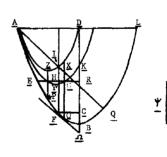
Reconstructed

The figure is labeled as "tertia" in MS O.

Fig. Ia. 26



As in MS O

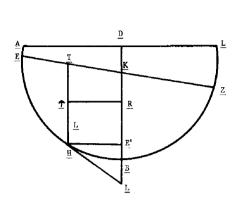


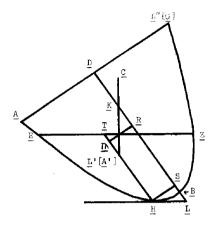
 ${\tt Reconstructed}$ 

Note: Figs. Ia. 27-29 appear on folio 60r and thus after Figs. Ia. 30-32 which are on folio 59v. Fig. Ia. 27 is designated as "prima", i.e. the "first" of the three figures Ia. 27-29 used for the demonstration of Part IV of Prop. 10.

Fig. Ia. 27

### Figures Ia. 28 - Ia. 29, pp. 381-382



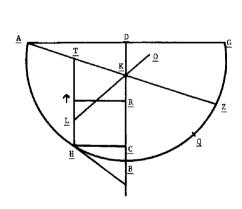


As in MS O

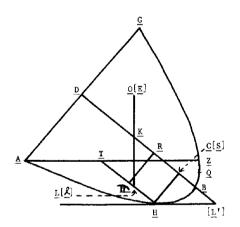
Reconstructed

The figure is labeled "secunda" in MS  $\mathcal{O}$ . I have added the prime signs to  $L^1$  and  $L^{1,1}$  in the reconstructed figure. The bracketed letters are those found in Gr MS C (see Gr 2, p. 411, fig.). In the reconstructed figure I have written  $\mathfrak{P}_0$  instead of since the latter is merely Moerbeke's form of the sampi. Notice that I have changed  $E^1$  to S in the reconstructed figure since it appears as S three times in the text and only once as  $E^1$ . See my comment to 59vG ("HLE").

Fig. Ia. 28





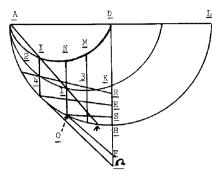


Reconstructed

The letters in brackets are introduced from the diagram in Gr 2, p. 413. In MS  $\mathcal O$  the figure is labeled as "tertia". Next to the drawing, we find the following comment: "Omnes iste figure sunt false, sed sic erant in greco." The reference is to this and the two preceding figures.

Fig. Ia. 29

### Figures Ia. 30 - Ia. 32, pp. 382-383



 $\frac{\underline{A}}{\underline{D}} \qquad \underline{\underline{L}}$   $\underline{\underline{A}} \qquad \underline{\underline{D}} \qquad \underline{\underline{L}}$   $\underline{\underline{L}} \qquad \underline{\underline{L}}$   $\underline{\underline{C}} \qquad \underline{\underline{L}}$   $\underline{\underline{C}} \qquad \underline{\underline{C}}$   $\underline{\underline{C}} \qquad \underline{\underline{C}}$   $\underline{\underline{C}} \qquad \underline{\underline{C}}$ 

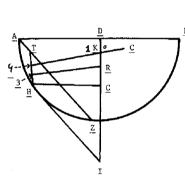
4

As in MS O

Reconstructed

The bracketed letters are referred to in the text. The figure is designated as "prima" in MS  $\mathcal{O}_3$  i.e., the first of the three figures Ia. 30-32 used in the demonstration of Part V of Prop. 10. Note that Figs. Ia. 30-32 are on the bottom margin of folio 59v and thus appear earlier than Figs. Ia. 27-29, which are drawn on folio 60r.

Fig. Ia. 30



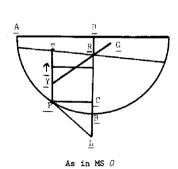
 $\begin{array}{c|c}
\underline{D} & \underline{C} \\
\underline{K} & \underline{R} & \underline{C}[\underline{S}] \\
\underline{T} & \underline{V} & \underline{Z} \\
\underline{3}[\underline{T}] & \underline{H}
\end{array}$ 

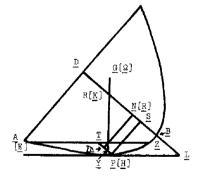
As in MS O

Reconstructed

The figure is designated "secunda." Between this figure and Ia. 30 is the comment: "false omnes," a reference to Ia. 30-32. The bracketed letters are used in the text.

Fig. Ia. 31

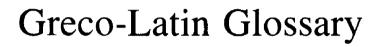




Reconstructed

The figure is designated as "tertia" in MS  $\mathcal{O}_{\star}$ . The bracketed letters are used in the text.

Fig. Ia. 32



### Introduction to the Greco-Latin Glossary

This glossary has been correlated with the Greek indexes of J. L. Heiberg in Volume 3 of his Archimedis opera omnia, 2nd ed. (Leipzig, 1915). In the cases where several Latin words are used to render a given Greek word, I have given the Latin words in alphabetical order. To obtain some idea as to the frequency of William of Moerbeke's use of the various Latin terms, consult the Index of Latin Terms. I have given the Doric forms, sometimes in parentheses, but often, when they were used frequently, as separate entries. These are forms appearing in one or more of the following texts: On Spiral Lines, On the Equilibrium of Planes, On the Quadrature of the Parabola, On Conoids and Spheroids, and On Floating Bodies. 1

Generally all forms of verbs are subsumed under the first person, present indicative; nouns under the nominative singular; adjectives under the positive masculine nominative singular. Exceptions occur when only a single form is found throughout the text. In such cases that form is specified, usually under the model form (e.g. "σπουδαίως: σπουδαιότερον - studiosius" indicates that only the form σπουδαιότερον is employed in the text and that Moerbeke renders it as studiosius). Occasionally, to the model verb form I have added the participle when that participle is translated into Latin by a word that is another part of speech. For example, under "καταλείπω - derelinquo; . . . relinquo" I have given "καταλειπόμενος - reliquus; residuus." This means that in addition to any translations of that participle by some verbal form of derelinquo or relinquo Moerbeke also, on occasion, translates this participle by reliquus and residuus.

<sup>&</sup>lt;sup>1</sup>Cf. J. L. Heiberg, Archimedis opera omnia, Vol. 2, 2nd ed. (Leipzig, 1913), pp. X-XVIII, and his "Philologische Studien zu griechischen Mathematikern, IV," Jahrbücher für classische Philologie, 13. Supplementband, 1884, pp. 543-66.

## Greco-Latin Glossary

άγγεῖον - vasum άνακλίνω - revolvo άγνοέω - ignoro άναλέγω - lego ἄγω - duco; produco; protraho άναλογία - analogia; proportio ἄδηλος - incertus; obscurus ἀνάλογον - proportionaliter; proportioάδιαίρετος - indivisibilis nalis; κατά τὸ συνεχές άνάλογον άδιαρθρώτως - indearticulate secundum continuitatem proportionalis άδυνατέω - non possum ἀνάλυσις - resolutio άδύνατος - impossibilis άναλύω - resolvo άεί (=αἰεί) - semper άναμετρέω - mensuro αίσθάνομαι - percipio ἀνάπαλιν - econtrario; econverso αΐσθησις - sensus άναπληρόω - adimpleo; compleo ἀναστρέφω - studeo; versor; αίτέω - iaceo; peto άναστρέψαντι - convertenti αἴτημα - petitio αίτία - causa άνατίθημι - repono 'Ακαδημία - Academia άνατομή - recisio ἀκίνητος - immotus; non motus άναφέρω - elevo; refero; sursum fero ἄκλαστος - non fractus ἀνέλκω - retraho ἀνελλειπής - sine defectu ἀνεμιαῖος - ventalis ac frivolus άκλινής - sine inclinatione ἀκολουθέω - assequor; sequor ἀκολουθία - consequentia άνευ - sine ἀνήρ - vir ἀκόλουθος - assequens; consequens; άχολούθως - consequenter άνθρωπος - homo άκούω - audio; intelligo ἄνισος - inequalis άκριβής - diligens; sedulus ἀνισότης - inequalitas ἀνίστημι - erigo; exsurgo; sto; ἄχρος - extremus; as a subst. extremitas άνεστάκουσα - erecta stans άληθής - verus άνομοίως - dissimiliter; utique similiter (false reading as âv άλίκος (=ήλίκος) - quantus; άλίκω in quanto; quanto; quo όμο ίως) άντίγραφον - exemplar άλλά - sed; άλλὰ  $\delta$ ή - at vero; άλλὰ μήν - at vero άντιπαραβάλλω - comparo άντιπάσχω - contrapassus (as adj. with άλλήλους (=άλλάλοθς) - invicem; with ἀπό or ὑπό - ab invicem; with ἐπί, sum); contrapatior ποτί or πρός - ad invicem (rarely άντιπεπόνθησις - contrapassio ἐπ' ἄλλαλα - invicem, super invicem) άντιπεπονθότως - contrapassus ἄλλος - alius, alter; ἄλλως - aliter άντιπεριάγω - contracircumduco ăμα – simul άντιστροφή - conversio άμαρτάνω - pecco άντωθέω - contrapello άμβλυγώνιος - ambligonius; amblygonius ἄνω - superius; supra; sursum; έις τὸ άμβλύς - hebes; obtusus ανω - ad superius; ad sursum; έν τοῖς άμελετησία - negligentia ἄνω - in superioribus; ἀνωτέρω άμήχανος - impossibilis superius; supra; έν τοῖς ἀνωτέρω άμιόλιος, see ημιόλιος in superioribus ανωθεν - (transl. by adj.) superior άμισυς, see ήμισυς ἀνώτατος (false reading of ἀνάθημα) -'Αμμώνιος - Ammonius άμφότεροι - ambo; άμφότερος - uterque supremus ἄμφω - ambo ἄξιος - dignus; ἄξιος λόγου - insignis αν - si; utique άξιόω - dignifico; volo đưá - quam ad άξίωμα - axioma; dignitas άναγκαῖον - necessarium; necesse άξόνιον - axis ἄξων - axis ἀνάγκη - necesse άναγράφω - describo; rescribo; scribo άπάγω - abduco ἀνάγω - induco; protraho; sursum duco ἄπαξ - semel άπαρτάω - suspendo åνάθημα - \*oblatio (Moerb. did not so read it since he translated it as ἄπας - omnis supremus, no doubt for ἀνώτατος) ἄπειρος - infinitus

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ἀπεναντίον - econtra; ex opposito
                                              ἀσύμπτωτος - asymptota
ἀπέχω – disto
                                              ἄσχαστος - inconfusus
                                              άτονέω - non possum
\delta\pi\lambda\widetilde{\omega}\varsigma - simpliciter
ἀπό - a, ab; ex
                                              ἄτοπος - inconveniens
ἀπογράφω - scribo
                                              αὐξάνω – augeo
ἀποδείκνυμι – demonstro
                                              αὐτόθεν - de se; ex se; expresse;
ἀποδεικτικῶς - demonstrative
                                                per se
                                              αὐτός - hic; idem; ipse; αὐτοῦ etc. -
άπόδειξις - demonstratio
άποθωμολογηκότες (! ποθωμολογηκότες?) -
                                                sui etc.
  tanquam confitentes (see the
                                              ἀφαιρέω - aufero
  Commentary, llvD-E)
                                              ἀφανίζω – destruo
άποκαθίστημι - restituo
                                              ἀφετόω - dimitto or demitto
άπολαμβάνω - absumo; accipio; compre-
                                              άφή - contactus; tactus
  hendo; tango (?)
                                              άφίημι - dimitto or demitto
άπόλειμμα - residuum
                                              άφιχνέομαι - pertingo
ἀπολείπω - relinquo
                                              άφίστημι - desto; disto
ἄχαρις: οῦ χάριν ερρέσεως (false
'Απολλώνιος - Apollonius
ἀποπληρόω - adimpleo; impleo
                                                reading of ούκ ἄχαριν ευρέσεως) -
ἀπορέω - dubito
                                                cuius inventionis gratia
ἀπόρημα - dubitatio
                                              ἄχρι - donec; usque; ἄχρις ἄν - donec
ἀποστέλλω - mitto
                                                utique; quousque
ἀποσυλάω - colligo
ἀποσώζω - conservo; salvo
                                              βαδίζω - vado
άποτέμνω - abscindo; decindo; detrunco;
                                              βαίνω - protraho
  seco; ἀποτέμνοντα - descindentia
                                              βάρος - gravitas
ἀποτίθημι - repono; suppono
                                              βαρύτης - gravitas
ἀπότμημα (=ἀπότμαμα) - abscisio;
                                              βασιλεύς - rex
  apotmama
                                              βασιλειχος (<u>!</u> βασιλιχός) - regalis
                                              βάσις - basis
άπόφασις - enunciatio
                                              βεβαιόω - confirmo
ἄπτω – contingo; tango
                                              Βελοποιικά - artes sagittarum
άπώτερος - remotior
ἄρα – ergo; igitur (rarely); μὴ ἄρα –
                                              βία - vis
                                              βιάζω – imprimo; vi premo
  ne forte
                                              βιβλίον - liber
άριθμητικός - arismeticus; arithmeticus
άριθμός – numerus
                                              βίος - vita
'Αριστοτέλης - Aristoteles;
                                              βούλομαι - volo
                                              βραχύς - brevis; βραχύ - modicum; ἐπὶ
  Aristotiles (!)
'Αρχάδιος - Archadius
                                                βραχύ - in brevitate
άρχέω - sufficio
                                              βρέχω - humefio
ἀρμόζω – congruo
                                             Βυζάντιος - Bisanteus
άρτάω - suspendo
                                              βωμός - altar; altarium
ἄρτησις - suspensio
                                             γάρ - enim; etenim; nam
άρτιαχισάρτιος - pariter par
                                              γε - autem; tum
άρτιογώνιος - parium angulorum
άρτιόγωνος - parium angulorum άρτιόπλευρος - parium laterum
                                              γελάω: γελάσας - risisset (see the
                                                Commentary, 38rG)
αρτίος - par αρχαῖος - antiquus
                                              Γεμίνος - Geminus
                                             γενναῖος - generosus
άρχή - principium
                                             γεννάω – procreo
                                             γένος - genus
αρχηνη (! error in gr Ms for άρχικά) -
  principalis
                                             γεωμετρέω - geometrizo
'Αρχιμήδειος - Archimedalis
                                             γεωμέτρης - geometra or geometres
                                             γεωμετρία - geometria
'Αρχιμήδης – Archimedes; Archymedes;
                                             γεωμετρικός - geometricus
  Archymenides; Archimenides (?)
'Αρχύτας - Architas; Archytas
                                             γῆ (=γã) - terra
                                             γίγνομαι - existo; fio; procreo;
ἄρχω - incipio
ἀσάφεια - obscuritas
                                                produco; provenio; sum
ἀσαφής – obscurus
                                             γιγνώσκω - consueo (?); nosco
'Ασκαλωνίτης - Ascalonites
                                             Γλαῦχος - Glaucus
ἀσύμμετρος - incommensuratus
                                             γλῶσσα - lingua
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γνώμη - sententia
                                             διατρέχω - decurro; percurro
γνώμων - gnomon
                                             διαφερόντως - eminenter
γνώριμος - notus
                                             διαφέρω - differo
                                             διαφορά - excessus
γράμμα - scriptura
γραμμή (=γραμμά) - linea
                                             διάφορος - diversus
                                             διδάσκαλος - doctor
γραφεῖον - stilus
                                             δίδωμι - do
γραφή - scriptura
γράφω - conscribo; describo; inscribo;
                                             διίστημι - disto
  scribo
                                             διό - propter quod
γωνία - angulus
                                             Διοκλῆς - Diocles
                                              Διονυσόδωρος - Dionisodorus; Dionyso-
δέ - at vero; autem; porro; sed; vero;
                                             διόπερ - propter quod quidem
  δε...δε – vero...sed; μεν...δε...δε
  ...δε - quidem...autem...vero...et
                                             διορθόω - corrigo
δείχνυμι - demonstro; ostendo
                                             διορισμός - determinatio
δεῖ - oportet
                                             διότι - propterea quod; quia
δεῖξις - demonstratio
                                             διπλάζω - duplo
δέκα - decem
                                             διπλασιάζω - duplo
διπλασιασμός - duplatio
δεκαέξ - sexdecim
δεκαοκτώ - decem et octo
                                             διπλασιεπιτέταρτος - duplus epiquartus
δεχαπέντε - quindecim
                                             διπλάσιος - duplus
διπλασίων - duplus
δεκαπλάσιος - decuplus
δέκατος - decimus
                                             διπλοῦς - duplus
δεκτικός - susceptivus
                                             δίς - bis
δεόντως - oportune
                                             δισσός - duo
δεύτερος - secundus
                                             δίχα - in duo; in duo equa
δέω - indigeo; oportet; δέον -
                                             διχοτομέω - dikhotomizo; seco in duo
  oportunum
                                             διχοτομία - dikhotomia; equa sectio;
\delta \hat{\eta} - (?) autem; etiam; itaque; utique;
                                               equalis sectio; in duo equa sectio
 άλλὰ δή - at vero
δηλαδή - videlicet
                                             διχῶς - dupliciter
Δήλιοι - *Delii
                                             δοκέω - videor
δηλονότι - videlicet
                                             δοκιμάζω - probo
δηλος - manifestus; δηλον - palam
                                             δόξα - opinio
δηλόω - declaro; demonstro; manifesto
                                             Δοσίθεος - Dositheus
                                             δύναμαι - possum
διά - a; per; propter; propterea; διὰ
 τό - quia; propter; propterea quod
                                             δύναμις - potentia; δυνάμει - potentia
διαβήτης - diabeta
                                               (=squared); κατὰ δύναμιν - secundum
διάγω - perduco; pertraho; produco;
                                               posse
                                             δυνατός - possibilis; κατὰ τὸ δυνατόν -
 protraho
διαγώνιος - diagonalis
                                               secundum posse; secundum
διαίρεσις - divisio
                                               possibilitatem
διαιρέω - divido; διελόντι - dividenti
                                             δύο - duo
                                             δυσθεώρητος - difficilis; difficulter
  (for proportions)
διάλημμα (false reading of διὰ λημμα) -
                                               speculabilis
                                             δυσχολία - difficultas
 resecatum
διαμαρτάνω - pecco
                                             δυσπότολον (! δύσκολον?) ἔχειν -
διαμέμφομαι - querelo
                                               omnino difficultatem habere
διαμένω - permaneo
                                             δυσχερής - difficilis
διάμετρος - diameter
                                             δύω - demergo
διανοοῦμαι - cogito; facio ratiocina-
                                             δώδεκα – duodecim
  tionem
                                             Δωρίς - Doricus
διανύω - perambulo; permeo; pertranseo
διαπειράζω - probo
                                             ŧάν – si
διαπήγνυμι - configo
                                             ξαυτοῦ etc. - sui ipsius etc.; ξαυτούς
διαπορεύομαι - moveo; perambulo
                                               - pro se
διαπορέω - deficio
                                             ἐβδομηχοστόμονος - septuagesimus primus
                                             ἔβδομος - septimus
διασαφέω - explano
διάστημα - distantia
                                             έγγράφω - inscribo; intrascribo
διατηρέω - conservo
                                             έγγύς - propinquus
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ἔγκειμαι - iniaceo	έναντίος - contrarius; oppositus
έγχειρέω - conor	έναπολαμβάνω - intercipio
ŧγώ - ego	έναρμόζω - inapto
ἔδαφος - pavimentum	ένδέχομαι - contingo
εį – si; εἴ κα – si; εἰ καί – etsi	ένδιατρίβω - immoror
είδος - species	ένεκα - gratia
είκός - verisimilis	ἔνεστι(ν) - contingit; est; licet;
είχοστός - 20 <sup>us</sup>	potest
είκότως - merito	ένθάδε – hic
είμί - cado; existo; sum	ένίστε - quandoque
είπερ - quoniam; si	ἔννατος – nonus
είρημένος - dictus; predictus	έννέα - novem
	εννοια - conceptio; conceptus; intel-
είς (ές) - ad; in; intra; super; είς	lectus; intentio; sensum
έντός - intra	ένταῦθα - hic
είς - unus; οὐδὲ ποθ'ἔν - ad nullum;	
neque ad unum; ούδ' οφ' ενός - a	έντός - interius; intra; intus
nullo	έντυγχάνω - incido; intueor; occurro
είσάγω - introduco	έξ – ex
εἰσαγωγή - introductio	έξ - sex
είτα - deinde	εξάγωνον - exagonum
εἴτε - sive	ξξάχις - sexcies
έx – ex	έξαπλάσιος - sexcuplus
ἔκαστος - quilibet; singulus; unusquis-	έξεργασία - elaboratio
que; καθ' εν έκαστον - singulus	ἔξεστι(ν) - est; licet; ἐξέσται -
ἐκάτερος - uterlibet; uterque	licebit
έκατόμπεδος - centum pedum	έξευρίσκω - invenio
ἐκβάλλω - duco; educo; extraduco;	ἔξεσις (! ἕξις?) - expressio
induco; protraho	έξῆς - consequens; consequenter;
ἐκδίδωμι – expono; trado	deinceps; infra; τὰ ἑξῆς - reliqua;
ἕκδοσις - traditio	καὶ τὰ ἐξῆς – et cetera
ėxei – ibi	έξουσία - potestas
έχεῖνος - ille	έξω: έξωτέρω - extra
έχθεσις - expositio	εξωθεν - extrinsecus
έκκειμαι – expono	έξωθέω - expello
έκπίπτω - educo	εοικε (?) - assimilatur
έκτίθημι – expono	ἐπαγγέλλω - promitto; spondeo
έκτός – extra	έπάγγελμα - promissus; sponsio
έκτος - sextus	έπάγω - concludo; induco
	έπαγωγή - inductio
έκφέρω - profero	έπανάγω - redeo
έλασσόω - minoro	
έλάσσων - minor; paucior	επαναλαμβάνω - resumo
έλαττόω - minoro	έπαναφέρω - redeo
έλάχιστος - minimus	έπανδρθωσις - correctio
έλέγχω - arguo	έπάνω - supra; έν τοῖς ἐπάνω - in
έλεφάντινος - eburneus	superioribus; ές τὸ ἐπάνω - ad
ἕλιξ - elix; revolutio; volutio; adj	superius
elicus	έπαυξάνω – augeo
ἕλχω – traho	έπαύξω – adaugeo; superaugeo
έλλείπω - *deficio	έπαφή - contactus
ἕλλειψις - ellipsis	έπεγγελάω - impingo ( <u>!</u> )
έμβάλλω - iniicio	έπεί - quoniam
έμος – meus	έπειδάν - quando
έμπεριέχω - contineo	έπειδή - quoniam; quoniam itaque
έμπίπτω - incido	έπειδήπερ - quoniam; quoniam itaque;
εμποδών - impedimentum	quoniam quidem
έμπροσθεν - prioribus	ἐπείπερ - quoniam enim; quoniam quidem
έμφανής - manifestus	επειτα - deinde
έμφανίζω - insinuo; manifesto	έπεκβάλλω - educo
έν - in; inter	έπεξέρχομαι - supervenio
έναλλάξ - permutatim; et permutatim	έπήν - si
armorarim' er hermargrim	OKLIN BI

έπί - ad; apud; de; ex; in; super; versus έπιβάλλω - incido; superiaceo έπιγίγνομαι - supervenio έπίγραμμα - inscriptio έπιγράφω - intitulo έπιδείχνυμι - demonstro; ostendo έπιδίδωμι – do έπιζεύγνυμι - affigo; coniungo; coniugo; connecto; copulo; protraho έπίκειμαι - adiaceo έπικλίνω - advolvo; inclino έπιχοινωνέω - communico έπιλαμβάνω - accipio έπιλογή - descriptio ἐπίλοιπος - reliquus; residuus ἐπιμελῶς: ἐπιμελέστερον - diligentius έπιμερής - superpartiens έπιμόριος - superparticularis έπινοέω - intelligo έπινόημα - inventio έπίπεδον - planum έπίπεδος - planus έπιπλατύς - epiplates; superlatus έπισχέπτομαι - considero έπίσταμαι - comperio; scio ἐπίστασις - meditatio έπιστέλλω - mitto έπιστημονιχός - scientificus έπισυνάπτω - adiungo έπισυντίθημι - superadiicio ἐπίταγμα - intentum; ordinatio; ordinatum; statutum ἐπιτάττω - do; iniungo; ordino; statuo; έπιτελεῖ (false reading of ἐπὶ τέλει) perficit έπιτίθημι - appono έπίτριτος - epitritus ἐπιτυγχάνω - occurro έπιφάνεια - superficies έπιχειρέω - conor έπιχείρημα - conatus έπιψαύω - contingo ἕπομαι - consequor; sequor έπωστός - impulsatus (?) 'Ερατοσθένης - Eratostenes έρμηνείω - explano έρρωμένως - vale ἔρρωσο − vale ερχομαι - cado; devenio; pervenio; protraho; transeo; venio ἔστε: ἔστ' ἄν - donec; ἔστε κα - donec; et; ἔστε ποτί - usque ad ἔσχατος - extremus; ultimus ἔτερος - alius; alter ἔτι - adhuc ἔχος - annus εύ - bene Εὔδημος - Eudemus Εύδοξος - Eudoxus

εὐεπίβολος - perspicax εύθεῖα - recta; ἐπ' εὐθείας - in directum εὕθετος: εὐθετώτερον - promptius εύθύγραμμος - rotus (!); rectilineus εύχατανόητος - facile intelligibilis Εὐχλείδης - Euclides εὐκόλως: εὐκολώτερον - facilius εύλόγως - rationaliter ευμάρεια - facilitas εύμέθοδος - facilis metodus εύπαραχώρητος - facile concessibilis εὕρεσις - inventio εύρημα - inventio εὕρησις - inventio εδρίσκω - adinvenio; invenio Εὐτόχιος - Euthochius; Eutokius εὕχρηστος: ου χρηστ' (! error in gr MS) - inutile ἐφάπτομαι - attingo; contingo; tango έφαρμόζω - adapto έφεξῆς - consequenter ἐφίστημι - attendo; constituo; noto ἔχω – consequor; existo; habeo; habitudino; se habeo; venio ἕως - donec; usque ad; ἕως ἄν - donec; donec utique; ἕως κα - ut; ἕως οὑ donec

ζάω - vivo ζητέω - quero ζήτησις - inquisitio ζύγιον - libra ζυγός - libra

ή – quam  $\Re$  - aut; vel ἡγέομαι - antecedo; estimo; precedo ήδη - iam ήχω - transeo ήλίκος, see άλίκος ήμεῖς - nos ημέτερος - noster ήμιχύχλιον - semicirculus ήμιχυλίνδριον - semicylindrus ήμικύλινδρος - semicylindrium (!) ήμιόλιος (=ἀμιόλιος) ~ emiolius ημίσεια - medietas ήμισυ - medietas ήμισυς - dimidium; dimidius ήμισφαίριον - emisperium ήν (=ἐάν) - si ήπερ - quam; quam quidem 'Ηρακλείδας - Eraclides "Ηρων - Eron ζΗρώνας - Eron (🛂) ήσσον - minus ήτοι - aut; vel; ήτοι...ή - aut...aut; yel...vel ήττον: ούδεν ήττον - nichilominus

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θάτερον: see έτερος
                                             καθόλου - universaliter
θαυμάζω – miror
                                             καθώς – sicut
θαυμαστός -mirabilis
                                             καί - et; etiam; -que; sed; καὶ γάρ -
θέλω - volo
                                               etenim
Θεοδόσιος - Theodosius
                                             καλέω - νοςο
θεός - deus
                                             καλός - bonus
θέσις - positio; situs
                                             καλῶς - bene
Θέων - Theon
                                             Καμαρικά - kamarica
                                             καμπύλος - curvus
θεωρέω - considero; speculo; theorizo
θεώρημα – theorema \thetaεωρία – speculatio; theoria
                                             κάν – et si
                                             κανόνιον - canonium; regula
θιγγάνω (?) - tango
                                             κανών - regula
θλίβω - pello; premo
                                             καρκίνος - regula (! ought to be
                                                circinus)
ἴδιος – suus
Ἐκανός – sufficiens
                                             κατά - apud; in; penes; per; secundum
                                             καταβαίνω - descendo
καταβάλλω - facio
ίνα - ita ut (rarely); ut
'|πποκράτης - [Hip]pocrates
                                             καταγιγνώσκω - despicio
                                             καταγραφή - descriptio
ίσάχις - quotiens (!); totiens
                                             καταγράφω - describo
'|σίδωρος - Isedorus or Isidorus
                                             κατάγω - perduco; protraho
ίσοβαρέω - τὰ ἰσοβαρέοντα (<u>?</u>) - que
                                             κατάδηλος - manifestus
  est equalis molis et equalis
                                             καταδύνω - demergo
  ponderis (Moerbeke may have been
 translating a different phrase in Greek MS B; see 55vJ)
                                             καταλαμβάνω - comprehendo
                                             καταλείπω - derelinquo; preaccipio
ίσοβαρής - equegravis
ἴσογχος - equalis molis; eque molis
                                                (! perhaps misread as καταλαμβάνω);
                                               relinquo; καταλειπόμενος - reliquus;
ίσογώνιος - equiangulus; equalis
                                               residuus
                                             κατανοέω - considero; deprehendo;
  anguli
                                                intelligo
ίσομεγέθης - equalis magnitudinis
                                             καταντάω - devenio
ίσόπλευρος - equilaterus
                                             καταπαλτικός - impulsivus
ίσοπληθής – equemultus
                                             κατασκευάζω - astruo; construo;
ίσορροπέω - equaliter inclino; equali-
                                               dispono
  ter repo; equerepo
                                             κατασκευή - descriptio; dispositio
ίσορροπής - equaliter repens
                                             κατάστασις - consistentia
ίσορροπία - equalis reptio
                                             καταστρέφω - converto
ίσορροπικός - equerepens
                                             κατάτρησις - attritio; *perforatio
ἴσος - equalis; equus; ἴσον - equaliter;
  δι' ἴοου - per equam; per equale; υπὸ
                                             καταφέρω - fero; deorsum fero
                                             κατεναντίον - ex opposito
  τῶν ἴσων - sub equalibus
                                             κατέχω - detineo
ίσοσκελής - equicrurius
                                             κάτω - deorsum; inferius; ές τὰ κάτω -
ίσοταχέως - equevelociter
                                               ad inferiora
ίσότης - equalitas
                                             κεῖμαι - iaceo; pono; sino; subiaceo;
ίσουψής – equalis altitudinis
ίστημι - consisto; sto
                                             κέντρον - centrum; ή έκ τοῦ κέντρου -
ίστορέω - narro
                                               que ex centro (=radius or semi-
κα (=ἄν): εἴ κα – si
                                               diameter)
                                             κινέω - moveo
καθά - quemadmodum; sicut; καθ'α
                                             κίνησις - motus
  τέμνοντι αύται - ubi secant ipse
                                             κλεινός - gloriosus
καθάπερ - sicut
καθαρμόζω - adapto
                                             κλίμα - dispositio
κάθετος - cathetus; kathetus;
                                             κλίνω - declino; inclino; revolvo;
  perpendicularis
καθιέμενον - descendens
                                             κλίσις - inclinatio
καθίημι - intendo
                                             Κνίδιος - Knidius
καθίστημι - consisto; constituo; con-
                                             χογχοειδής - conchoydalis; konchoydalis;
  sto; (?) converto; insideo; statuo;
                                               konkhovdealis
  sto
                                             κοῖλος - cavus; concavus; curvus (!)
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κοινός - communis
                                             μείζων - maior
κόλουρος - colurus (=frustum)
                                             μέλει (error in gr MS for μέλλει) -
κομίζω - defero; fero
                                               debeant (!)
Kόνων - Conon; Konon
                                             μέλλω - translated by gerundive of
κορυφή - vertex
                                               verb of which this is an auxiliary
κοῦφος: κουφότερος - levior
                                             μέλος - melodia
κουφότης - levitas
                                             μέν - quidem; μὲν...δὲ...δὲ -
πράτιστος - valentissimus
                                               quidem...autem...vero...et
κρεμάννυμι - suspendo
                                             Μέναιχμος - Menechmus
                                             μέντοι - tamen; vero
κρέμασις - appensio
κρεμαστός - appensus
                                             μένω - maneo
κρίσις - discretio; iudicium
                                             μερικώς: μερικώτερον - particulari[us]
χύβος - cubus
                                             μέρος - pars
                                             μέσος - medius; μέση - media propor-
κυκλικός - circularis
κύκλος - circulus
                                               tionalis; μέση ἀνάλογον - media
κυλινδρικός - cylindralis; cylindricus
                                               proportionalis; media proportion-
κυλίνδριον - cylindriculum
                                               aliter
κύλινδρος - chylindrus; cylindrus
                                            μετά - cum; post
χυρίως - proprie
                                             μετάγω - traduco
χυρτός - convexus
                                             μεταδίδωμι - trado
                                             μεταλλάττω - transigo
χῶλον - colus
χωνικός - conicus
                                             μεταξύ - inter; intermedie inter;
χωνοειδής - conoidalis; conoydalis;
                                               intermedius; medius inter
                                             μετασχηματίζω - transfiguro
  conoydealis
κῶνος - conus
                                             μεταφέρω - transfero
                                             μετέωρος - elevatus
λαμβάνω - accipio; assumo; sumo
                                             μετρέω - mensuro
                                             μέτρησις - [dimensio]
λέγω - dico
λείπω - accipio (!); deficio; excedo;
                                             μετρητής - mensura
  relinquo; sumo (!); λειπόμενος -
                                             μετρίως - mediocriter
                                             μέτρον - mensura; metrum
  reliquus; residuus
λέξις - *dictio; lectio; verba
λεπτός: λεπτότατος - subtilissimus
                                             μέχρι - ad (rarely); usque ad; usque
                                             μή - nec; non; μὴ ἄρα. - ne forte
λήγω - descisco; desino
                                            μηδέ - neque
λημμα - assumptio; fundamentum;
  *lemma; preacceptum; sumptio;
                                             μηδείς - nullus; μηδείς πω - nullus;
                                               μηδέν - nihil; μηδὲ(ν) καθ'έν -
  sumptum; διαλημμα (false reading of
  διὰ λῆμμα) - resecatum
                                              nichil
                                             μηδέτερος - neque alter; neuter
λῆψις - sumptio
                                            μηκέτι - non adhuc
λιθοβόλος - lapidum proiectivus
                                            μήκος (=μᾶκος) - longitudo
λογίζομαι - penso
λογιστικός - ratiocinativus
                                            μήν - etiam; άλλὰ μήν - at vero
λόγος - proportio; ratio; sermo;
                                            μήτε - neque
                                            μηχανικός - mecanicus; mechanicus
  verbum
λοιπός - alter; reliquus; residuus;
                                            μικρός - modicus; κατά μικρόν -
                                              paulative
  restans: λοιπόν - de cetero; iam;
                                            Μιλήσιος - Melesius; Milesius; Millesius
  λοιπον έστί - restat
                                            Mίνως - Minus
λυπέω - doleo
λύω - solvo
                                            μονάς - unitas
                                            μόνος - solus
                                            μόριον - pars
μάθημα - mathema
μᾶκος (=μῆκος) - longitudo
                                            μουσική - musica
μαχρῶς: μαχρότερον - prolixius
μᾶλλον - magis
                                            ναός - templum
μανθάνω - addisco; disco
                                             νεότης - iuventus
                                            νεῦρον - nervus
μάστευσις - doctrina
                                             νεύω - extendo; *nuo; tendo; vergo
μαστεύω - addisco
                                            Νικόμαχος - Nichomachus
μέγεθος - magnitudo
                                            Νιχομήδης - Nichomedes
μέγιστος - maximus
                                            νοέω - intelligo
μέδιμνος - medimnus
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νομίζω - puto
                                                adv. orthogonaliter; ὁρθὴ [γωνία] -
งซึง - nunc
                                                rectus angulus
                                              ὀρίζω - diffinio
                                              όρίζων - orizon
όρμάω - incipio
όρος - diffinitio; terminus
ξηρός - siccus
ξύλινος - ligneus
                                              ός - ille; qui; ᾱ - ut; ός κα
ός κα (=δς ἄν) - quicunque
ὁσάκις - quotiens; quotienscunque
o - hic; hic qui; ille; ipse; is; is
  qui; qui
ὄγκος - moles
                                              όσαπλάσιος - quotuplus
όσαπλασίων - quotuplus
ŏδε - hic
δδός - via
δθεν - unde
                                              ὄσος - quantus; quicunque; quotcunque;
οίδα - nosco; scio
                                                quotus
                                              ὄσπερ - qui (!); qui quidem; ὅπερ -
οίκεῖος - domesticus
οἴομαι - puto
                                                equidem (!); quod utique; ὅπερ ἄν -
οίος - qualis; οίος - puta; ut puta;
                                                quod utique
                                              ὄστις - qui
  velut; veluti; οίον ώς - ut puta
όχνέω - subterfugio; vereor
                                              δστισοῦν - quicunque
                                              όταν - cum; quando
όκταπλάσιος - octuplus
                                              ότε - quandoque
όλίγος - modicus; pauci
                                              ότι - quia; quod
ὄλος - omnis; totus; ὅλως - omnino
                                              οὖ - ubi
όμαλῶς – regulariter
όμοιος - similis
                                              ούδαμοῦ - nusquam
                                              οὐδέ - neque; non; οὐδὲ ποθ'ἕν - ad
όμοιότης - similitudo
                                                nullum; neque ad unum; οὐδ' ὑφ'
όμοιόω - assimilo
όμοίως - consimiliter; similiter
                                                ενός - a nullo
όμολογέω - confiteor
                                              οὐδείς - nullus
                                              οὐδέν - nichil; nihil; οὐδὲν ἦττον -
όμόλογος - conproportionalis; corres-
                                                nichilominus
  pondens; eiusdem proportionis;
  eiusdem rationis; omologus; propor-
                                              ούδέποτε - nunquam
                                              οὐδέτερος - neuter
  tionalis
                                              ούκ - non; ούκ...ούδέν - non aliquid
όμωνύμως - equivoce
όμως δέ - attamen
                                                or non aliquod; οὖ χάριν εδρέσεως
δνομα – nomen
                                                 (false reading of our axapıv
ονομάζω – nomino
                                                εδρέσεως) - cuius inventionis
όνομασία - nominatio
                                                gratia
όξυγώνιος: όξυγωνίου χώνου τομή -
                                              ούκέτι - non adhuc
                                              ούχοῦν οὐ - igitur non
  oxygonii coni sectio (=ellipse)
όξύς - acutus
όπή - foramen
                                              ούν - ergo (rarely); igitur; sic;
                                                utique
                                              ούπω - (?) non nunc
ούτε - neque
όποῖς τις - qualiscunque
ὁποιοσοῦν - qualiscunque; quicunque
                                              ούτος - hic; ipse; iste
δπόσος - quotcunque
                                              ούτω (? ούπω) – non nunc
δποσοσοῦν - quotcunque
οπόταν - quando
                                              ούτως - ita; sic
ὁπότερος - uter; utercunque; uter-
                                              ὀφείλω - debeo
                                              όχέω - insideo
ὁποτεροσοῦν - quicunque; utercunque
όπου άν - ubicunque
                                              παλαιός - antiquus
ὄπως - ita ut; qualiter; quomodo; ut;
                                              πάλιν - iterum; rursum
                                              πανταχοῦ - undique
  όπως ποτέ - qualitercunque
όπωσοῦν - qualitercunque
                                              πάντη - omnino; penitus
όργανικός - instrumentalis; organicus
                                              πάντως - penitus; semper; οὐδέ...
όργανικῶς - instrumentaliter
                                                πάντως - neque...nequaquam
ὀργάνιον - instrumentum
                                              πάνυ - omnino; valde
ὄργανον - instrumentum; organum
                                              Πάππος - Pappus
ὀρέγομαι - desidero
                                              παρά - apud; circa; ex; penes; preter;
ὄρθιος - erectus
                                                 secus; adverbially equidistanter
                                                 (and rarely equidistanter penes)
όρθογώνιος - rectangulus; orthogonius
                                              παραβάλλω - adiicio; appono;
δρθός - rectus; rarely translated as
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περίλειμμα - circumrelictum; circumcomparo (!) παράβλημα - accidens (!); adiectum; residuum περιλείπω - relinquo; περιλειπόμενος secusiectum; superiectum παραβολή - parabola circumrelictus; reliquus; residuus; παράγω - deduco; moveo περιλελειμμένος - circumacceptus (!) παραδίδωμι - trado περίλημμα or περίλιμμα - circumπαράθεσις - appositio acceptum παραιτέω - recuso περίμετρος - perimeter or perymeter περισσός - impar παράχειμαι - adiaceo; circumiaceo; περιττός - impar secuspono παραχολούθημα - consequentia περιφέρεια - periferia παραλαμβάνω - assumo περιφερής - periferialis παραλείπω - pretermitto περιφέρω - circumdefero; circumduco; παραλληλόγραμμον - paralellogrammum circumfero or parallelogrammum; equidistans περιφορά - circulatio Πέτρος - Petrus [figura] πηλικότης – quantitas πινακίσκος – pixidula; \*tabellula παραλληλόγραμμος - parallelogrammus παράλληλος - equedistans or equiπίναξ - pixis; \*tabellula πίπτω - cado; devenio distans; equidistanter; parallelus; παράλληλον - equidistanter πιστεύω - credo παραμήχης (=παραμάχης) - oblongus; πίστις - fides paramikea; paramales (!) πλάγιος - lateralis παραναγιγνώσκω - lego παραπίπτω - accido; evenio; secuscado Πλάτων - Plato παρατεταγμένως - equedistanter πλάτος - latitudo πλεῖστος - plurimus ordinate παραφράζω - dissero πλείων - amplior; plurimus; plus παρεμβάλλω - introduco πλευρά - costa; latus παρεμπίπτω - incido; intercido πλήθος - multitudo παρίστημι - propono; statuo πλήν - nisi; preterquam παροράω - negligo πλινθίον - laterculus παρώνυμος - denominativus ποθωμολογηκότες, see αποθωμολογηκότες ποιέω - adimpleo; facio; perficio πᾶς - omnis; totus ποῖος - qui πάχος - spissitudo; grossicies (false ποκά (ποτέ) indirectly translated by reading of τάχος) πείθω - suadeo aliqua at 17vJ, not translated at 18rE πειράζω - tempto πολλάκις - sepe πειράομαι - accepto; attempto; conor; πολλαπλασιάζω - multiplico πελεχινοειδής - dolabralis πολλαπλασιεπιμερής - multiplex superπεμπτημόριον (=πεμπταμόριον) - quinta partiens πολλαπλασιεπιμόριος - multiplex [pars] πέμπτος - quintus superparticularis πεντάγωνον - pentagonum πενταπλάσιος - quincuplus πολλαπλάσιος - multiplex πολλαπλασίων - multiplex πέντε - quinque πόλος - polus πολύγωνον - poligonium πεντεκαιδεκαπλάσιος - quinque et πολύπλευρος: πολυπλευρότερος decuplum πεπερασμένος - finitus plurium laterum πέρας - extremitas; terminus; ultimum; πολύς - multus; plurimus; πλείων τὸ πέρας ἔχον - continens amplior; plurimus; plus; πολλῷ, περί - cirća; de πολλῷ (or πολύ) μᾶλλον - multo magis περιάγω - circumduco (as used in the method of exhausπεριαγωγή - circumductio tion) περιβαίνω - circumfero πολυτρόπως - multis modis περιγραφή - circumscriptio πονέω - laboro περιγράφω - circumscribo πορεύομαι - perambulo; procedo; περιέχω - comprehendo; contineo progredior; transeo περίκειμαι - \*circumiaceo πορίζω - acquiro; negocior περιλαμβάνω - comprehendo πόρισμα - corolarium (=\*corollarium)

compleo

στήλη - columpna

σφαιροειδής - speroydalis στοιχεῖον - elementum στοιχείωσις - elementatio σφάλλω - fallo στρογγύλος - rotundus σχεδόν - fere σύ - tu σχημα - figura; scema; οχημα (false σύγγραμμα - liber; opus reading of  $\sigma\chi\tilde{\eta}\mu\alpha$ ) - insidentis συγγράφω - conscribo σχοῖνις or σχοῖνος (false reading of σύγχειμαι - compono χοινικίς) - funis σύγκρισις - comparatio σχόλιον - scolium συγχωρέω - concedo σώζω - salvo συζυγής - coniugus Σωκρατικός - Socraticus συλλαμβάνω - coassumo σωλήν - canalis; cavatura συλλογίζομαι - sillogizo σωληνίζω - canallo συμβαίνω - accido; evenio συμβάλλω - coapto; concido; concurro ταλικοῦτος, see τηλικοῦτος συμμετρία - commensuratio τάξις - ordo Ταραντίνος - Tarentinus σύμμετρος - commensurabilis; commenταράσω: τεταραγμένος - eversus; suratus σύμπας - omnis; simul omnis turbatus (for ratios) συμπίπτω - concido; concurro ταράττω, see ταράσσω τάσοω or τάττω - dispono (?); ordino; συμπληρόω - compleo συμπορεύομαι - simul progredior statuo σύμπτωμα - accidens; symptoma τάφος - sepulcrum σύμπτωσις – concidentia τάχος - citus; πάχος (false reading of συμφανής - evidens; manifestus τάχος) - grossicies τε - et; -que; scilicet; videlicet; συμφυής - coaptatus; coniunctus; copulatus τε καί - et συμφώνως - consone σύν - cum; in τελευταῖος - ultimus τελευτά - mors τελευτάω - morior συνάγω - adduco; concludo; conduco; τέλος - finis; ἐπιτελεῖ (false reading congrego of ἐπὶ τέλει) - perficit συναίρω - examino τέμνω - decindo; dispono ( $\underline{!}$ ); divido; συναμφότερος - ambo; simul ambo; simul uterque; simuluterque incido; scindo; seco; τέμνοντα descindentia συναποδείκνυμι - condemonstro συνάπτω - coapto; compono; coniungo; τεσσαράκοντα πέντε - quadraginta copulo quinque σύνδυο - cum duabus; simul duo τέσσαρες - quatuor τεταγμένως - ordinate συνεγγίζω - appropinquo συνεκδίδωμι - simul trado τεταραγμένος, see ταράσσω σύνεσις - consuetudo τεταρτημόριον - quarta pars συνέχεια - continuitas τέταρτος - quartus συνεχής - continuus; ἀνάλογον κατὰ τὸ τετραγωνίζω - quadro τετραγωνισμός - quadratura συνεχές - proportionales secundum τετράγωνος - tetragonalis [figura]; continuum; κατά τὸ συνεχὲς ἀνάλογον - secundum continuitatem proportetragonum τετράκις - quater tionales συνήθης – consuetus τετραπλάσιος - quadruplus σύνθεσις - compositio τετραπλασίων - quadruplus τετράπλευρον - quadrilatus (!) (i.e. σύνθετος - compositus τετραπλεύρων is rendered by quadriσυνίστημι - consisto; constituo σύνταγμα - liber lateribus) σύνταξις - compilatio; opus τετράς - quaternarius; quaternitas συντελέω - perficio τέτταρες, εσε τέσσαρες συντίθημι - compono; συνθέντι τηλικοῦτος (=ταλικοῦτος) - talis; componenti; ponenti συντόμως: συντομώτερον - brevius τῆνος - quis συνωθέω - compello τηρέω - servo τίθημι - pono Τίμαιος - Timeus Συρακόσιος - Syracusanus σφαῖρα - spera σφαιριχός - spericus τις - aliqui; aliquis; quidam; quis

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τίς - qui; διὰ τί ~ propter quid
                                               pono; suppono
τμῆμα (=τμᾶμα) - decisio; portio;
                                             bπολαμβάνω - puto
  sectio
                                             δπόμιμνήσκω - rememoro
τοίνυν - etiam; igitur
                                             bπόμνημα - commentum; expositio;
τοιόσδε - talis
                                               rememoracio or rememoratio; sub-
τοιοῦτος - hic; talis
                                               memoratio
                                             οπομνηματίζω - expono
τομεύς - sector
τομή (=τομά) - decisio; portio; sectio
                                             οπονοέω - existimo
τόμος - sector (!); tomos τόπος - locus
                                             δποπίπτω − occurro
                                             bπόστασις - subsistentia
τοσαυτάκις - totiens
                                             δποτείνω - subtendo; δποτείνουσα -
τοσαυταπλάσιος - totuplus
τοσαυταπλασίων - totuplus
                                               ypothenusa
                                             δποτίθημι - subpono; suppono
τοσοῦτος - tantus; tot; ὄσφ...τοσούτφ -
                                             ὕστερον - postea; posterior
                                             οφημιόλιος - subemiolius
  quanto...tanto
τότε - tunc
                                             ὕψος - altitudo
τουτέστι(ν) - hoc est
τραγφδοποιός - tragodicus
                                             φαίνω - appareo
τραπέζιον - trapezale; trapezalis
                                             φαίνομαι - videor
                                             φανερός - manifestus
  [figura]
                                             φαντασία - fantasia
τρεῖς - tres
                                             φάσκω - aio; dico
τριάχοντα - triginta
τρίγωνον - triangulus; trigonum
                                             φέρω - defero; fero; refero (?); ἄνω
τριπλάσιος - triplus
                                               φέρω - sursum fero
τριπλασίων - triplus
                                             φημί (=φαμί) - aio; dico
τριπλούς - triplus
                                             φθέγγομαι - garrio
                                             φιλία, έν - amicus
τρίς - ter
                                             φιλομαθής - amans addiscere
τριτημόριον - tertia pars
                                             φιλοπονία - laboris amor
τρίτος - tertius
                                             φιλοπόνως - laboriose
τρίχα - in tria equa
τρόπος - modus
                                             φίλος - amicus
                                             φιλοσοφία - philosophia
τύ - tu
                                             φιλόσοφος - philosophus
τυγχάνω - contingo; existo; sortio;
                                             φιλοτεχνέω - artificiose tracto
  τυχών - contingens; quicunque
                                             Φίλων - Filon
τυλάριον - firmaculum
                                             φορά - latio
τύλιον - firmaculum
τύλος - firmaculum
                                             φράζω - dissero
                                             φυσικός - naturalis
                                             φυσιχώς - naturaliter
bγρός - humidus
δμέτερος - tuus
                                             φύσις - natura
ὕπαρξις - existentia
bπάρχω - existo; insum
                                             χαίρω - gaudeo
                                             χαλκοῦς - ereus
δπεπίτριτος - subepitritus
                                             χαρακτηρίζω - characterizo
bπέρ - de; pro; (?) desuper supra
                                             χάρις - gratia; οὖ χάριν εδρέσεως (false reading of οὐκ ἄχαριν
δπεράνω − supra
bπερβάλλω - excedo
bπέρβλημα - superadiectum; superiectum
                                               εδρέσεως) - cuius inventionis gratia
δπερβολή – yperbola
                                             χειρουργέω - manu operor
ὑπερέχω - excedo; supergredior
                                             χελωνάριον - navicula (=shuttle);
οπερίσχω - excedo
                                               *chelonarium
                                             χελώνιον (gr MS A had εχελώνιον?) -
bπεροχή - excessus; supergressio
                                               navicula; *chelonium
bπó - ab; per; sub
οπογράφω - describo; subscribo
                                             Xΐoς - Chius
δπόδειγμα - exemplum
                                             χοινικίς: σχοΐνις οπ σχοΐνος (?)
                                               (false reading of xolvixis) -
δποδείκνυμι - ostendo
                                               funis
bπόθεσις - opus (!); suppositio;
                                             χολέδρα - canalis
 ypothesis
οποκάτω - sub; subtus
                                             χράομαι - utor
                                             χρεία - oportunitas; usus; χρείαν
bπόχειμαι - subiaceo; subiicio; sub-
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ἔχων - oportunus
χρή - oportet; also rendered by
  gerundive in Latin
χρησιμεύω: χρησιμεύων πρός - oportunus
  ad
χρήσιμος - oportunus; utile; et cf.
   εὔχρηστος
χρησιός - oraculum
χρήσις - usus
χρόνος - tempus
χωρέω - capio
χωρίζω - separo
χωρίον - spatium
 χωρίς - exceptus; preter; seorsum;
   sine
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ψαύω - contingo
ψεΰδος - falsus
ထ္တိ − ၀
ώδε - sic
\delta \varsigma - qualiter; quod; quomodo; sicut;
  tanquam; ut
δσαύτως - eodem modo
ώσπερ - velut
ώστε - ita ut; quare; ut
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# Index of Latin Terms

### Introduction to the Index of Latin Terms

This index includes all Latin words found in the translations of William Moerbeke published in this volume. It does not, however, contain citations to all instances of each word. Some words which are used repeatedly are indexed for the first few occurrences and for any succeeding occurrences that seemed significant. If the reader wishes to know the Greek term being translated in those instances not cited in the index, he can easily find the term by consulting Heiberg's edition of the Greek text, whose page numbers have been added to my edition of William of Moerbeke's translations. All references are to the pertinent folio number of MS O which is included at the top of each page of my text and to the section letter found in the right-hand margin of the page. Hence 11vO indicates that the word is found in section O of folio 11v. I have used the expression "no gr text" for the cases where the Greek text is missing (as in all of Moerbeke's readings from Greek manuscript B, which is not extant), where the Greek text has a lacuna but Moerbeke has supplied a reading, and where Moerbeke has made additions not in the Greek text (as for example when he composed a colophon indicating the date of the translation or when he added an explanatory phrase such as quos latini... vocant [see 11vP]). The expression "no gr equivalent" has been used when the Greek text is complete but in the translation from Greek to Latin Moerbeke has used a Latin word for which there is no corresponding Greek word. Occasionally words appear within brackets in the index. These are words that have been bracketed in the text and usually represent additions made by Andreas Coner after having erased Moerbeke's readings, or they represent my own editorial additions. In every case the source of the addition is indicated in the Variant Readings. The use of superscripts next to the capital letters indicates the order and thus the frequency of occurrence of the word in the section represented by the letter. For example,  $54vB^{1,2}$  means that the first two instances of the use of the word in section B of folio 54v represent the indicated translation. The location followed by var (e.g. 11vOvar) indicates that the word appears in the variant reading to the given location. I have used an exclamation point before a Greek term when it seems fairly certain that this is the Greek term that Moerbeke was rendering but the translation appears to be faulty. Note also that I have sometimes used a question mark before the citation of a given passage and sometimes after such a citation. In the first case, it suggests that I am not sure whether the Latin word translates the Greek equivalent noted before the citation or some other Greek form [e.g. "donec:... ἔστε κα... (?)56rG, (?)56vF"]. In the second case it suggests (1) that the latin word indexed may have been intended by Moerbeke though he wrote some other Latin word [e.g. "cavus: ... 23vJ(?), M(?), N(?), 29vL(?), 34rH(?)....'] or (2) that I am unsure of the reading of the Latin word in Moerbeke's translation [e.g. "uterlibet: . . . 23vL(?)]. In the case of a puzzling or questionable reading the reader should consult in turn Moerbeke's translation, the Variant Readings, Heiberg's Greek text and my Commentary.

I should remind the reader that, as in the Greco-Latin Glossary, all forms are ordinarily indexed under model forms (e.g. verbs under the first person, present indicative; nouns under the nominative singular; adjectives under the positive masculine nominative singular; etc.). But when a word is used in only one form throughout, I have indexed it under that form (see, e.g., studiosius). Similarly, I have on occasion, under the model verb form, indexed its participle separately when that participle has not translated an equivalent verb form in Greek (which has already been indexed under the model form) but has translated some other part of speech or some quite singular phrase. Thus see contineo where continens is indicated as the translation of τὸ πέρας ἔχων although other instances of the various forms of continens have been subsumed under the general indexing of contineo as the translation of περιέχω (e.g.  $14vJ^1$ , 15rA, 24rS, etc.).

## Index of Latin Terms

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a, ab: ἀπό 11vI, 12vK<sup>1,3-5,7,8</sup>, 34vN,
  35rD, 35vW, 38vR, 53rZ, et passim;
  διά 34rF; πρός 38vG; δπό 11vA,
  11vD, 12vA<sup>1-4</sup>, 34rP<sup>1</sup>, 53vD<sup>1,2</sup>, et
ab invicem: ἀπ' ἀλλάλων 17rY; ὑπ'
  άλλάλων 34vG, 58rQ
abduco: ἀπάγω 41vU
abscindo: ἀποτέμνω 23vP, 25rB C E F G,
  36vS, 45rE^{1-3} F^{1,2} G^{1,2} J^{1-3}
  L^{1,2} M^{1,2}, 45vA B E, 46rD E F J,
  48rZ<sup>1,2</sup>, 50rC, 53vS<sup>1-3</sup>, 57rM, et
  passim
abscisio: ἀπότμαμα 45rM V X, 45vD<sup>1,2</sup>,
  47\text{rU}^{1-3}, 49\text{rR W}^{1,2}, 49\text{vF}, 50\text{vE}^{1,2},
  51rN R<sup>1,2</sup>, 52rG<sup>1,2</sup>, 52vH<sup>1,2</sup>, et pas-
  sim; ἀπότμημα 35rL M
absumo: ἀπολαμβάνω 17vF<sup>1,2</sup> G P, 18rJ,
  18vS, 21rW, 24vL, 37rA E F<sup>1,2</sup> L, 37vL
  39\text{rM}, 45\text{vC}^{1,2} F, 46\text{rH} K<sup>1,2</sup>, 48\text{vN},
   55vu. (?)57ro<sup>1,2</sup>, (?)57vI, et passim
ac: no gr equivalent 34rD
academia: 'Ακαδημία 38rJ
accepto: πειράομαι 20vG
accidens: (!) παράβλημα 50rU; σύμπτωμα
   23vD; et vide accido (e.g. 50vK)
accido: παραπίπτω 45vP R, 50rI M O,
   50vK L, 51vE G^{1,2} K M N T V W, et
   passim; συμβαίνω 11vB D, 13vU V Z,
   20vJ, 23vF, 35vI, 38rK, 38vL M, et
   passim
 accipio: ἀπολαμβάνω 12rP V W, 12vB C,
   21vI, 57vO; ἐπιλαμβάνω 38vJ;
   λαμβάνω 11vC V, 12rA B F, 21rF Q,
   21vM, 22vJ, 23vH I, 24rG, 28vO,
   29rB^{1,2}J^{1,2}, 34rHL^{1,2}M^{1,3}N, 35vD,
   43vG, 46vF M, 47vD, 48rC, 53vB, et
   passim; (!) \lambda \epsilon i \pi \omega 22vL, 24vH s^{1,2}
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accusativus casus: 52vLvar, 58rTvar
acquiro: πορίζω 37rR
acutus: ὀξύς 13v0 R U Z Θ, 14rB N,
  57rD, 59rV, 59vG
ad: \epsilon i \varsigma (i \varsigma) 11vC^{1}, 38vR^{1}, 56vE^{1-4}.
  et passim; \ln 12rW^3, 34rH^{1-5}I^{1-4}
  M, 35rD E^1, 38vR<sup>2</sup>, 53rJ<sup>1-3</sup>, 55vK, et
  passim; μέχρι 57vR<sup>3</sup>; ποτί 11vA,
  20rF^{1-5}, 48rK, 48vQ, 52rG^{1-3}; \pi\rho\delta\varsigma
  34rJ, 34vG K<sup>1,2</sup> L, 35rC<sup>1-4</sup> E<sup>2-4</sup>. et
  passim
ad invicem: ἐπ' ἄλλαλας 40rA; ποτ'
  άλλάλους 20vI^{1,2}; πρὸς ἄλληλα,
  -\alpha\varsigma, -\cos 26vC, 28vN^{1,2}, 30vG, 35rS
  T U<sup>1,2</sup>, 36rD E K P, et passim
adapto: ἐφαρμόζω 17rC<sup>1,2</sup>, 17vK O P<sup>1,2</sup>,
  34rH, 41rL, 48rW Y Z<sup>1,2</sup>, 48vA B<sup>1,2</sup>
  C, 53rF<sup>1-3</sup> I<sup>1-3</sup> J, 53vI; καθαρμόζω
  38vB; προσαρμόζω 40rT
adaugeo: ἐπαύξω 38rM
addisco: μανθάνω 37rR; μαστεύω 11vB;
   amans addiscere φιλομαθής 53rB
addo: ποτιτίθημι 17rB; πρόσκειμαι
   34rQ
adduco: ποτάγω 11vS; ποτιπίπτω 13vM
  N^{1,2}; προσβάλλω 39rB; συνάγω 38vC;
  no gr text 57vE
adexistens: ποτεούσα 45rI
adhuc: ἕτι 13vL<sup>1,2</sup>, 18vJ, 34rM<sup>1,2</sup> P
   R, 40rG, et passim; no gr text
   19vc^{1-3}; vide non adhuc
adiaceo: ἐπίκειμαι 17rY; παράκειμαι
   37vL, 45vS; ποτίκειμαι 12vI, 13rE,
   52rN, 52vG; πρόσκειμαι 36vJ, 39rC D,
   42vD I, 43rS Π; adiacentia (!)
   παραβλήματα 50rV
adiectum: παράβλημα 50rU(?) V(?),
   50vM
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ad[i]icio: παραβάλλω 18vD; προσβάλλω 24rD; πρόσκειμαι 24vN adimpleo: ἀποπληρόω 38vG; ποιέω 40rQ adinvenio: εδρίσκω 11vD; προσευρίσκω 36vA adiungo: ἐπισυνάπτω 41rS adnecto: ποτιβάλλω 12rP T V adplumbo: προσμολυβδοχοέω 38vB advolvo: ἐπικλίνω 57vQ affigo: ἐπιζεύγνυμι 13rS ago: πράττω 20vE, 45rA aio: φάσκω 37vA; φημί 34rF I 0, 35rN, 36rN, et passim alicubi: πού 23vG aliqualiter: πώς 39vN aliquando: ποτέ 48vF aliqui, aliquis: τις 11vJ, 18vS, 19rI V, 20rU, 20vR, 21vM, 34rH K, 37rK, 39vP T, 53rD, et passim; aliqua (introduced after ποκά) 17vJ aliter: ἄλλως 33vA, 35rF, 37v0, 42vY, 43rL N Q, 43vJ, 53rX, 55vI\* alius:  $\alpha\lambda\lambda$ oς 11vC, 20vW<sup>1</sup>, 21rC Y, 22rL, 34rC D E L M, 39rP, 44vB<sup>1,2</sup> 45rA B, et passim; etepos 20vW2; no gr equivalent (i.e. aliqua alia magnitudo τι μέγεθος) 56rL; no gr text 20rA; 20vFvar altar, altarium: βωμός 38rJ, L alter:  $\alpha\lambda\lambda$ oς  $11vH^1$ ;  $\epsilon\tau\epsilon\rho$ oς  $11vH^2$ , 3 13rV, 17rB C F, 18rK, 20r⊕, 20vA W, 21rX,  $21vI^{1,2}$ ,  $34rF K o^{1,2} R$ ,  $34vD^{1,2}$ 53rD, et passim; λοιπός 37rK altitudo: 5\(\psi\)0\(\sigma\) 11\(\psi\)1, 18\(\psi\)F\(^{1,2}\), 20\(\psi\)T\(^{1,2}\), X Y Z Θ Π<sup>1,2</sup>, 20vH J<sup>1,2</sup>, 21rB H, 21vU, 23vB D E F, 24rR, 35rO, 35vD 0<sup>1,2</sup>,  $36r0^{1,2}$   $P^{1-3}$ , 53vE, et passim amans addiscere: φιλομαθής 53rB ambligonius: ἀμβλυγώνιος 21rH, 45rC  $G^{1-3}H^{1-3}IJKLM, 47rW, 47vIK^{1,2}$ 

Y, 48vM, 50rX Y<sup>1,2</sup>; ambligonii (amblygonii) coni sectio [=hyperbola] άμβλυγωνίου χώνου τομά 40rs [definitur],  $45rg^{1,2}H^{1,2}I$ , 47rX,  $47vK o^{1}o^{2}$ (! ὁξυγωνίου in gr) P, 48rA<sup>1,2</sup>, 50rK Y; et cf. yperbola ambo: ἄμφω 23vL; άμφότεροι 13rD G R,  $17rK L^{1,2}$ , 17vC Q, 18rN U, 21vS, 22rR, 23vN, 25rT, 26rO, 27rQ<sup>1,2</sup>, 34vF,  $36rH O, 40rB^{1-3} M, 45rM, 48rZ, 53vV W,$ et passim; (!) συναμφότερα [Did Moerbeke intend to add simul?] 45rU: vide simul ambo amicus:  $\dot{\epsilon} v \varphi \iota \lambda \dot{\iota} \varphi = 20 v E^{1}; \varphi \dot{\iota} \lambda \circ \varphi = 20 v E^{2},$ 40rS Ammonius: 'Αμμώνιος 34rD amor laboris: φιλοπονία 11vC-D amplior: πλείων 58vL W, 59vD K analogia: ἀναλογία 19vG, 20rG, 54vA angulus:  $\gamma \omega v i \alpha$  13rW, 13vA D<sup>1-3</sup>, 14vM,  $15\text{rA}^{2-5}$ ,  $17\text{vR} \text{ S U}^{1-3}$ , 5 V,  $18\text{vG}^1$ , 20vW,  $21rI O, 23vY^{1-3} Z, 24rD^{2,3} E, 27rN,$ 34vH x<sup>1,3</sup>, 35rA<sup>2</sup> H T, 53rK, et passim; no gr equivalent 15rA<sup>1</sup>, 17vU<sup>4,6</sup>,  $18vG^2$ ,  $24rD^1$ ,  $35rA^1$ angulus acutus: ὀξὸς γωνία 14rB, 57rD angulus rectus: vide rectus angulus [annulum]: 38rN\*var annus: ἔτος 11vD; no gr text 16vT, 22vH, 33vV, 44vP, 52vO, 55rW, 60rA ante: πρό 23vD, 50vY, 36rJ\*var; ante dictum extremum πρώτου λεγομένου τοῦ ἐσχάτου 51νV antecedens: ἡγούμενος 35vP, 39vG, 42rR, 42vO  $P^{1-4}$  Q,  $54\text{rO}^{1,2}$   $Q^{1,2}$ , 54vA, et passim antiquus: ἀρχαῖος 38rG, 40rS; παλαίος Apollonius: 'Απολλώνιος 36vU, 40vD L R S U, 41vD, 42rI O P, 42vK, 53rL, 53vG R, 58rG; 46rCvar, 47rJvar;

Appollonius: 53vF apotmama i.e. abscisio: 45vC; et vide abscisio appareo: φαίνω llvC, 45rB appendo: κρεμάννυμι 21rD appensio: κρέμασις 20vZ appensum: κρεμαστός 20vZ appono: ἐπιτίθημι 17rX; παραβάλλω 18vA; ποτίχειμαι  $12\text{rL}^2$ ; ποτιτίθημι 12rL<sup>1</sup>, 17rB G<sup>1</sup>, <sup>2</sup>; πρόσκειμαι 25rR, 31vL, 34vA  $B^{1,2}$  F I, 35vG, 36vJ, 37rN, 43vU; προστίθημι 32r0, 34vD L, 40r0, 41rN P, 41vT U, 42vC, 43rR, 43vV, 44rP, 44vE<sup>1,2</sup>; no gr equivalent 44vE<sup>3</sup> appositio: παράθεσις 37rE appropinquo: συνεγγίζω 34rM, 54rC apud: ἐπί 34vA V; κατά 12rV, 15rF<sup>1</sup>  $G^1$ ;  $\pi \alpha \rho \dot{\alpha}$  20vL  $M^{1,2}$   $N^1$ , 38rH, 53rB; ποτί  $15rF^2$   $G^2$ , 18vH; πρός 34vH  $Y^{1,2}$ 35vL, 36vN<sup>1,2</sup>, 38vQ, 53rJ, et passim aqua: no gr equivalent 55vA Archadius: 'Αρκάδιος 39vN Archimedalis: 'Αρχιμήδειος 34rE Archimedes: 'Αρχιμήδης 11vA<sup>1,2</sup>, 17rA, 20vD E, 22vI\*, 23vA<sup>1\*,2</sup>, 31rK L, 33vV, 34rA<sup>1,2</sup>, 36rM, 40rO S, 41rL M 0 R<sup>1,2</sup>, 41v0 U, 44vP, 45rA, 55vA; Archymedes 45rA, 52vO, 53rA C E, 53vC R, 55rW, 56vF, 60rA; Archymenides 20vE; Archimenides (?) 23vAvar Architas: 'Αρχύτας 37vT; Archytas Tarentinus 'Αρχύτας Ταραντίνος 38rJ arguo: ἐλέγχω 11vD arismeticus: ἀριθμητικός 35vQ, 39vR; vide arithmeticus Aristotiles (!), Aristoteles (?): 'Αριστοτέλης 53rB C arithmeticus: introductio arithmetica

'Αριθμητική είσαγωγή 39vQ; vide

artes sagittarum: τὰ Βελοποιικά 36vG

arismeticus

artificiose tracto: φιλοτεχνέω 38vB Ascalonites: 'Ασκαλωνίτης 34rA, 36rM, 44vP, 53rA, 55rV assequor: ἀκολουθέω 41rG; assequens ἀκόλουθος 41rR assimilo: ὁμοιόω llvG; assimilatur ἔοικε (?) 20vX assumo: παραλαμβάνω 34vG, 54rW, 54vP<sup>1</sup>, 54vS; λαμβάνω 36rR; ποτιλαμβάνω 12vH J L M O, 13rA<sup>1,2</sup>; προσλαμβάνω 33vH, 34rN,  $44rD^{1,2}$ ,  $54vP^{2,3}$ , Q assumptio: λῆμμα llvY astruo: κατασκευάζω 40rR, 41vR asymptota: ἀσύμπτωτος 37vK M, 40vC L M R T, 41rA D, 41vC<sup>1,2</sup>, 42rJ<sup>1,2</sup> N O, 42vH I J K; et cf. propinquus at vero: ἀλλὰ δή 38vQ; ἀλλὰ μήν 35vK, 42vW; δέ 16vS attamen: ὅμως δέ 53rL attempto: πειράομαι 39rK attendo: ἐφίστημι 41rG; προσέχω 37rQ attingo: ἐφάπτομαι 20rS, 22vK, 38vK, 40vS T U, 53vI; πότειμι (?) 11vD attritio: (!) κατάτρησις 38rN audio: ἀκοίω 20vE aufero: ἀφαιρέω 17rC<sup>1,2</sup> F<sup>1,2</sup> G<sup>1,2</sup> 1<sup>1,2</sup>, 20rP, 21vT, 22rK, 24vG Q, 35rD N, 35vR, 45rR, 49vH, 50vX $^{1,2}$ Y, 59rJ R U, et passim augeo: αὐξάνω 38rM; ἐπαυξάνω 38rN aut: ἤ 11vF<sup>1,2</sup>, 20vN, 24rL<sup>1,2</sup>,  $34rF^{1,2}$ , 34vF,  $48rV^{3}$ , 48vC J,  $53rO^{3}$ ; ήτοι 55rV aut...aut: hto....h or vice-versa 14rC N-0, 14vB, 53rC, 53rO, et passim; ก...ή 40rB, 45vI autem:  $\gamma \epsilon$  36vT<sup>3</sup>;  $\delta \epsilon$  11vB<sup>1,2</sup> D<sup>1,2,4</sup> F,  $34rG H^{1,2} I^{1-3}$ , 34vL, et passim; δέ γε 53rB; δή (<u>?</u>) 36vB<sup>2</sup> axioma: ἀξίωμα 23vH

axis: ἀξόνιον 38vJ<sup>1,2</sup>: ἄξων 11vM P<sup>1,2</sup>, 23vL, 26vA<sup>1,2</sup> C, 35vC, 36rR  $W^{1,2}$ , 37vP Q  $R^{1,2}$ , 38vK, 53vH,  $58vC^{1-3}$  J<sup>1,2</sup>, et passim

basis: βάσις 11vN, 18rD<sup>1,2</sup>, 18vF<sup>1,2</sup> 20vH  $J^{1,2}$ , 21rB, 22vI M O, 23vB  $C^{1,2}$ E F, 34vY, 35rE<sup>1,2</sup>, 55vM, 56vL, et passim

bene: εὖ 20vE, 45rA; καλῶς 23vG, 34vF, 35rF, 53rE, 54vI Q bis:  $\delta i\varsigma$  13vN,  $14rR^{1,2}$ ,  $54rW^{1,2}$ brevis: βραχύς 38vI, 39v0, 53vF; brevius συντομώτερον 38vC brevitate, in: ἐπὶ βραχύ 38rK

cado: είμί 48rD<sup>1,2</sup> J, 53rQ; ἔρχομαι 20rU; πίπτω 12rS U, 12vB, 13vN Q, 17vL P, 21rN, 23vI J, 34rH I, 38rD<sup>1,2</sup> 39vI J,  $47r\Theta$ ,  $47vW X Y, <math>48rB M^{1-3}$ . 53rY, 58rK

canalis: σωλήν 36vD  $E^{1,2}$ ; χολέδρα 38vA\*

canallo: σωληνίζω 36vE canonium: κανόνιον 36vE I O

capio: χωρέω 38rM

cathetus: χάθετος 12rQ T W, 12vC, 14rD I P, 14vC, 20vY Z, 21rS, 22rC E, 22vM 0,  $24rR U^{1-3} V Y$ ,  $24vA^{1-3}$ , 35rDE<sup>1,2</sup> H Y, 35vA<sup>1,2</sup>, 41vO, 46rF, et passim; vide kathetus et perpendicularis

causa: airía 54vT

cavatura: σωλήν 38vH J

cavus: κοῖλος 17rE, 23vJ(?) M(?) N(?), 29vL(?), 34rH(?) I(?) 0<sup>1</sup>(?), 2(?) P(?),  $34vE^{1(?)}, 2(?)$  I(?), 53rJ(?) K(?), and see the Commentary, 23vJ

[celeriter]: 38rH\*var

centrum: κέντρον 11vR V W<sup>1,2</sup> X<sup>1,2</sup>. 12rL, 17rA D K<sup>1-4</sup> L<sup>1-3</sup>, 20vZ, 21rF K Q, 22vI J O P, 23vK, 24rB Y, 25vH

 $J^{1,2}$ , 34vV, 35rE J K R S<sup>1,2</sup> U. 45rP<sup>1,2</sup>, 53rC<sup>1,2</sup> E, 55rV<sup>1,2</sup>, et passim; no gr text 55vB; vide rope centum pedum: ξκατόμπεδος 38rG cetera, et: xαὶ τὰ ἑξῆς 53vX cetero, de: λοιπόν 13r0 characterizo: χαρακτηρίζω 34vD [chelonarium]: 38vJ<sup>1,2</sup>\*var Chius: Xĩoς 38rI Christus: no gr text 16vT, 22vH, 33vV, 44vP, 52vO, 55rW, 60rA chylindrus: χύλινδρος 34rA; vide cylindrus circa: παρά 42vJ<sup>2</sup>; περί 11vB C, 18rA, 20vF, 22vI, 23rC D, 23vB D<sup>1,2</sup> E  $FQ^{1,2}$ , 34rC D, 34vZ, 35rL  $P^{1,2}Q^{1-3}$  $R^{1,2}$ , 36rT, 36vB, 42vJ<sup>1</sup>

[circinus]: 36vT\*var

circularis: κυκλικός 34rG

circulatio:  $\pi \epsilon \rho \iota \phi o \rho \acute{\alpha}$  llvR  $T^{1,2}$  U<sup>1-4</sup> V. 13rT

 $23vC^{1-3}$  D  $P^{1,2}$   $Q^{1-4}$  R, 34vV X Z,  $35rc^{1-3}$  D E P<sup>1-3</sup> Q<sup>1-3</sup> R<sup>2</sup>,  $45vc^{1,2}$ et passim; no gr equivalent 35rQ4 R1; no gr text 55vB

circumacceptum: (!) περιλελειμμένον 28rB; περίλημμα 24vQ (?)RS U<sup>1,2</sup>, 26vN, (?)28rE; περίλιμμα (?)24vR, (?) 28rE; no gr equivalent 24vP

circumdefero: περιφέρω 11v0<sup>1,2</sup>, 28vK, 30rG, 30vE, 31rD, 45rD H N O

circumduco: περιάγω 11vS T, 13rX, 13vA, 38rA Β; περιφέρω 11vV

circumductio: περιαγωγή 38rA

circumfero: περιβαίνω 38vI; περιφέρω 11vM T, 13rT, 27rM, 28rK, 29vJ, 38rB\*

circumiaceo: παράκειμαι 42rM;

περίκειμαι 37rK\*

circumrelictus: περίλειμμα 35rD N<sup>1,2</sup>

Ο P; περιλειπόμενος 24rL, 24vS, 35rL circumresiduum: περίλειμμα 24r0 Q circumscribo: περιγράφω 11vM, 12rJ, 14vH  $M^{1,2}$   $Q^{1,2}$ , 22vK M, 23v $Q^{1-3}$  V W  $\Theta$ , 24rA, 34vZ, 35rA c<sup>1-4</sup> L M P<sup>1-3</sup> 0<sup>1,2</sup>  $R^{1-3}$ , 38rB, 48vD<sup>1,2</sup>, et passim cito: διὰ τάχους 31r0 coadinvenio: ποτεξευρίσκω 45rC coaptatus: συμφυής 36vE<sup>1,2</sup> coapto: συμβάλλω 38vH; συνάπτω 38vB coassumo: συλλαμβάνω 34rC coeduco: προσεχβάλλω 36r0 S cogito: διανοούμαι 40rS colligo: ἀποσυλάω 40rT columpna: στήλη 38vB C colurus: χόλουρος 35vY<sup>1,2</sup> colus: κώλον 38rH [comburens speculum]: πύριον 37rA commensurabilis: σύμμετρος 17vD<sup>1,2</sup> commensuratio: συμμετρία 23vE, 38vA commensuratus:  $\sigma \hat{\nu}_{\mu\mu} \epsilon \tau \rho \circ \varsigma = 17 \text{ rs}^{1,2} \text{ T}^{1,2}$ , 53rP<sup>1,2</sup> commentum: ὁπόμνημα 39vQ communico: ἐπιχοινωνέω 11vQ communis: κοινός 13rm P, 14vN, 17rT W, 21vT, 23rE, 23vM O, 24vN, 25rE, 34rJ O Q,  $34vA B^{1,2} F G I R X Y, 35rC E K,$ 35vD G 0<sup>1,2</sup>, 40rT, 47rV, 53rB, et passim comparatio: σύγκρισις 38vG comparo: ἀντιπαραβάλλω 23vE; παραβάλλω 42νU, 53νD Ε [compello]: συνωθέω 38rP\* comperio: ἐπίσταμαι 20vH compilatio: σύνταξις 34rB compleo: ἀναπληρόω 32vJ, 36vP, 37rM, 40rQ; συμπληρόω 18vD, 36rS, 36vH, 39rA, 40vH; no gr text 16vT, 22vH,

33vV, 44vP, 52vO, 55rW, 60rA; inven-

tione compleo προσευρίσκω 41rR

componenti: συνθέντι 19rP, 20rK Φ,

22v0, 23vU, 31vE J P, 32rI, 34v0<sup>1,2</sup> P Q S U, 39rE H, 54rF, et passim; no ar text 19vF L N compono: σύγκειμαι  $12rB C^{1-4} D^{1,2} J$ , 14vI, 15rK, 17rK  $L^{1,2}$  M N O,  $20r\Theta^{1-3}$  $\Phi^{1,2}$ , 23vL, 25rD, 25vC D, 26vR, 27rB, 34rG H N, 34vC<sup>1,2</sup> J, 39vO P X, 40rB D  $E G^{1} L M^{1-3}$ ,  $43vD^{1,2}$ , 48vD K, 53vV, et passim; συνάπτω 32rL, 33vC D, 39vT, 40rg<sup>2</sup>; συντίθημι 11vY, 12rE K, 20vI, 21vM R, 23vO, 31rT, 32rC P<sup>1,2</sup>, 32vH, 37vK Q, 40rP, 40vF G H, 41rL, 42rL, 43rs<sup>1,2</sup>, et passim; no gr equivalent 18vE, 53vW1; compositus σύνθετος 24νΡ compositio: σύνθεσις 12rB E F, 20rH, 33rH, 36rY, 36vA, 39vM, 40rB, 42vL<sup>1,2</sup> N, 43rB G N, 43vV, 44rP compositus: vide compono comprehendo: ἀπολαμβάνω 16vK; καταλαμβάνω 59vK; περιέχω 15rJ N O, 34νΧ; περιλαμβάνω 11νR  $U^3$  V W,  $13ru^{1,2}$ , 15rH, 15vA,  $23vM^{1-3}$  N  $0^{1,2}$ R.  $24vC F^{1,2}$ ,  $25rD T^{1,2}$ , 28rK,  $34rO^{1,2}$  $P^{1-3}$  Q, 34vA  $C^{1,2}$  D  $F^{1,2}$ , 45rD E I, 47rL, 55vM N T, et passim; ποτιλαμβάνω 11vT<sup>1,2</sup> U<sup>1,2,4</sup> conatus: ἐπιχείρημα 40rQ concavus: xοῖλος 23vI, 25rD T, 34rH, 34vD, 53rK concedo: συγχωρέω 34rD conceptio: ἔννοια 34rN conceptus: Evvola 34rJ concessibilis, facile: εὐπαραχώρητος conchoydalis: χογχοειδής 38vF L; et vide konconcidentia: σύμπτωσις 24vL, 38rC<sup>1,2</sup> concido: ποτιπίπτω 13vS<sup>1,2</sup>, 15vH<sup>1,2</sup>, 16rE; προσπίπτω 36vS; συμβάλλω 38rB D, 38vS<sup>1,2</sup>, 40yU, 41rD<sup>1-3</sup>;

συμπίπτω 13vE, 14rA B C M, 17vM N, 24vL, 25rN 0, 36v0, 38rP, 38vQ, 39rB C, 40rV, 40vP R<sup>1,2</sup>, 41rI, 45vD, 50vI, 53rL V; no gr text  $57rW^{1,2}$ concludo: ἐπάγω 43vV Y; συνάγω 39rT, 39vE, 42vN W X, 43rQ concurro: ποτιπίπτω 12rP; συμβάλλω 27r0; συμπίπτω 37vU, 42rN, 45rH, 45vC condemonstro: συναποδείχνυμι 33rQ, 43vQ conduco: συνάγω 36rB, 39rR T configo: διαπήγνυμι 38vA confirmo: βεβαιόω 34rE confiteor: ὁμολογέω 34rJ N; tanquam confitentes ἀποθωμολογηχότες (?) 11vD congrego: συνάγω 38vB congruo: ἀρμόζω 23vG, 34vC 0, 36vW, conicus: κωνικός  $24vD F^{1,2} G^{1,2} M$ 0<sup>1,2</sup>. 34rG, 35vH I X, 38rB, 39rM, et passim; [Liber elementorum] conicorum Apollonii 40vD L R S U, 41vD, 42rI O P, 42vK, 53rL, 53vF, 58rG; 46rCvar, 47rJvar; [Liber elementorum] conicorum 20vK N, 42vI, 46rC H, 53vI S coniugus: συζυγής 46 vV coniungo or coniugo: ἐπιζεύγνυμι 11νW, 12rT, 13vC, 17rK, 17vX; συνάπτω 32rL; conjunctus συμφυής 38vJ connecto: ἐπιζεύγνομι 17rK R, 17vE I P, 18vG; ποτιβάλλω 12vC; ποτιπίπτω 12vG conoidalis: χωνοειδής 31r0 conoydalis: κωνοειδής 11vM N<sup>1-3</sup> 0; 45rD<sup>1-3</sup> E<sup>1-3</sup> E<sup>1-3</sup> C I<sup>1-5</sup> K<sup>1-3</sup> L<sup>1,2</sup> 56vK M, 57rA, et passim; [Liber] de conoydalibus...45rA, 52v0 conoydealis: κωνοειδής 45rc<sup>1-3</sup> Conon: Κόνων 11vA D, 20vF, 31rL; Konon 11vC, 20vE<sup>1,2</sup>, 23vG

conor: ἐγχειρέω 20vH, 45rB; ἐπιχειρέω 20vF, 40rQ; πειράομαι 31r0 conproportionalis: ὁμόλογος 45vI K. 46rC, 46vG, 49vB<sup>1,2</sup>, 50rM O U, 50vH K L, 51rC, 51vL U conscribo: γράφω 36rN; συγγράφω 40rQ, 41rS, 53rC consequens: ἀκόλουθος 36rN, 42vO; εξής 11vu, 12vs, 16rn p<sup>1,2</sup>, 16vA, 18vG<sup>1,2</sup> L, 34rJ, 35vH I; ξπόμενος 39vG,  $42vO^2$   $P^{1-5}$  T, 51rB,  $54rO^{1,2}$  $0^{1,2}$ ,  $54vI^{1,2}$   $W^{1,2}$ , et passim: έχόμενος 40rF, 50vY consequenter: ἀχολούθως 42vW: Łξής 12vH, 13rC E W, 20r⊕, 22rS T, 22vD E G, 25rH, 34rI, 35vU, 37vN, 38rF, 41vJ T, 43vC K Y, 44rP, 53vL Q<sup>1</sup>, 2, 54rG, et passim; ἐφεξῆς 12vI, 38r0, 39rK consequentia: ἀχολουθία 40rI; παρακολούθημα 38vR; et vide consequens conservo: ἀποσώζω 38vH; διατηρέω 38rL considero: ἐπισμέπτομαι 23vF G, 45rB, 53rF; θεωρέω 20vK, 34vJ, 45rF L S; κατανοέω 34rB, 35vI, 39vS, 41r0 consimiliter: ὁμοίως 24rE, 40rQ, 48rK, 48vS, 51rK, 52rI, 52vO, 55rC, 57vO, 58vJ, 59vP; no gr text 57rT consisto: ίστημι 58r0 P; καθίστημι 55vK S, 56vL, 57vM, 58rB, 58vB K L T U V W, 59rA B, 59vN; συνίστημι 24rC, 34rQ R; no gr text 55vD E, 57vD, 59rm U X, 59vT<sup>1,2</sup> consistentia: κατάστασις 20vZ, 21rL Q consone: συμφώνως 41r0 constituo: ἐφίστημι 32vJ; καθίστημι 38rL M, 38vF; συνίστημι 32vA I N, 35rB H, 36rS, 38rO, 38vN, 42rM consto: καθίστημι 55vI J; no gr equivalent 55vH construo: κατασκευάζω 38rG consueo: γιγνώσκω 20vF (consueveramus

perhaps renders other words than the εγνωχοτες ειμεν of gr MS A) consuetudo: σύνεσις 11vC consuetus: συνήθης 34rE, 40rS contactus: ἀφή 12rM, 13v0 S Θ, 14rT U V, 24vA L, 30rH, 35 $vX^{1,2}$ , 36 $rH^{1,2}$ , 48rB E I K, et passim; ἐπαφή 24v0 contineo: ἐμπεριέχω 23vK; περιέχω  $12vA H K^{1,2} L^{1,2} M^{1,2}, 14vJ^{1,2}, 15rA.$ 18vF, 20vG<sup>1,2</sup> H, 23vA, 24rS, 24vL, 25rA, 26vH, 34vH X, 35rN, 36vH N, 39rN, 42vI, 44rX,  $45\text{rI}^{1,2}$   $\text{K}^{1,2}$ , 53vD, 55vW, et passim; no gr equivalent (e.g. à ὑπὸ...γωνία angulus qui continetur ab)  $17vU^{1-4} Y^{1,2}$ ,  $18rA^{1-4} B^{1-8}$ et passim; continens τὸ πέρας ἔχον 18rR

contingo: ἄπτω 48rc<sup>3</sup> E<sup>1</sup> M<sup>1</sup>; ἐνδέχομαι  $34rH. 36vT; έπιψαίω <math>11vN^{1-3} S^{1,2}$  $12rM^{1,2}$  X, 12vD,  $13vO^{1}$ ,  $20vL^{1,2}$   $M^{1,2}$ N R S T<sup>1,2</sup>, 21rU Y, 24vK L, 25rN<sup>1,2</sup>, 45rD E<sup>1,2</sup> J<sup>1-3</sup> P<sup>1</sup> Q<sup>1,2</sup>, 48rC<sup>2</sup>, 48rD<sup>1,2</sup> E<sup>2,4</sup> F<sup>1-3</sup> M<sup>2</sup>, et passim; έφάπτομαι 13v0<sup>2</sup>, 22vP, 24rY, 24vM<sup>1,2</sup> 0 S, 34vX Y Z, 35rJ L N,  $35vX^{1,2}$ ,  $36vP Q, 48rc^1 E^3, 53vJ, et passim;$ τυγχάνω 34rL, 34vJ, 39vR, 42vC, 49vP 54rB;  $\psi a \hat{\omega} \omega = 36 \text{ve } \text{F}^{1-3}, 40 \text{vT}, 45 \text{rP}^2;$ contingit evecti 36rR

continuitas: συνέχεια 34rG, 34vD; secundum continuitatem proportionales κατά τὸ συνεχὲς άνάλογον 32νΗ continuus: συνεχής 25vB, 34rM, 34vC, 36vB T, 37rD G, 43rT, 55vA N O V, et passim; proportionales secundum con-

tinuum ανάλογον κατά τὸ συνεχὲς 39rA; vide proportio

contracircumduco: ἀντιπεριάγω 38rC contrapassio: ἀντιπεπόνθησις 54rA contrapassus (adj.): ἀντιπεπονθότως (adv.) 17rS, 17vB, contrapassus

sum ἀντιπάσχω 21rA, 26vB<sup>1,2</sup> G M, 31rR V, 36rX, 40vE H Q, 41vG-H N, 42vZ-43rA, 44v0, 53vX, 55rV contrapation: ἀντιπάσχω 45νΑ<sup>1,2</sup>

contrapello: ἀντωθέω 58rQ

contrarius: ἐναντίος 17vI, 38rB, 44rY; vide econtrario

conus:  $\kappa \tilde{\omega} v \circ \varsigma = 11 v F^{1,2} I M^{1-3}, O^{1,2}$ 18vH J, 19rF, 20vG<sup>1,2</sup> H J<sup>1,2</sup> L<sup>1-3</sup>  $M^{1-3} N^{1,2} R^{1-3} S$ ,  $23vF^{1,2} K^{1-4}$ , 24rRS T<sup>1,2</sup>, 35rY<sup>1,2</sup>, 36rL<sup>1,2</sup> M N O, 38rB, 45rD<sup>1,2</sup> et passim

conveniens: προσήκου 39vR conversio: ἀντιστροφή 40vC L S T,

converto: καθίστημι (?) 58rR: καταστρέφω 38rI, 58vI; convertenti άναστρέψαντι 32rT, 34vT<sup>1,2</sup>, 39vJ, 40rJ, 54vH I; no gr text 19vF J; et vide econverso

convexus: κυρτός 47vW X Y, 48rB copulo: ἐπιζεύγνυμι 11νV<sup>1-3</sup>, 12rN P, 13v0<sup>1,2</sup> P, 14rU<sup>1-3</sup>, 14vA, 17vG W X, 18rE F, 18vB<sup>1</sup>, 20v0, 21rV, 21vN, 23vH Y, 24ru, 24vA  $D^{1-3}$ , 34rF H  $L^{1,2}$  M N  $Q^{1,2}$ , 34vC, 35rH, 35vJ<sup>1</sup>, 53rG<sup>1,2</sup> H, 53vG, et passim ubique; συνάπτω 34rG, 38vH; no gr equivalent 18vB<sup>2</sup>. 35vJ<sup>2</sup>; no gr text 57rN; copulatus συμφυής 38vI J

corolarium: πόρισμα 39rT, 43vM N; [corollarium] 13rA Q, 14vO, 15rB H, 15vR, 17rQ, 22rJ, 28vE, 29rT, 30rD L, 30vA B, 31vM, 46vG

corona: στεφάνη 38vB

correctio: ἐπανόρθωσις 34rD

corrigo: διορθόω 41rS

correspondens: ὁμόλογος 17rD, 17vU, 45rS<sup>1,2</sup>

corruptio: πταΐσμα 40rR T costa: πλευρά 33vS, 50rL

credo: πιστεύω 20vK crus: σκέλος 36vD E F cubus:  $\kappa \delta \beta \circ \varsigma = 20 \text{ rW}^{1-6} \text{ x}^{1-3} \text{ y}^{1-3} \text{ z}^{1,2}$  $33vH^{1-4}$ ,  $37rI^{1,2}$  K L M,  $38rH^{1,2}$ , et passim cum (conj.): Stav 34vM; no gr equivalent 34rE N, 36rY, 53vC cum (prep.): μετά 11vX, 36rF, 36vJ<sup>1,2</sup>  $K^{1,2}$ ,  $43rW^{1,2}$ ;  $\sigma\acute{v}v$  29vD P R. 30rE<sup>1,2</sup>; no gr equivalent 21rC E F, 35vW, 36vR W, 37vH, 44rI, 49vA, 56rB, et passim: cum duabus σύνδυο 20r@ curvus: χαμπύλος 22rB, 23vH, 34rF  $G^{1-3} H^1$ ,  $36vB^{1,2}$ , 38rK; (!) xoĩλoς 23vJ M N, 29vL,  $34rH^2 O^{1,\overline{2}} P$ .  $34vE^{1,2}$  I, 53rJ K cylindralis: κυλινδρικός 25rB C E<sup>1,2</sup> G I, 35vI, et passim cylindriculum: κυλίνδριον 38vI J K<sup>1,2</sup> cylindricus: κυλινδρικός 38rA B cylindrus: κύλινδρος 11vF<sup>1,2</sup>, 20vJ, 23vF,  $25rA^{1-4}$  C D, 35rV W X,  $36rN^2$ ,  $0^{1-3}$ , 45vD, 48vD, et passim; [Liber] de spera et cylindro 23vA, 34rA<sup>1,2</sup>, 36rm N<sup>1</sup>, 41v0 U, 44vP, 53rK, 53vD U, 55rH; vide chylindrus

de: ἐπί 34rI, 35rL M; περί 11vM X, 23vF, 34rA<sup>1,2</sup>, 36rJ, 36vB<sup>1,2</sup>, 37rA, 38vF G, 39vP, 40rQ, 41vO<sup>1-3</sup> U, 45rA B C<sup>1-3</sup> G N, 51rF, 52vO, 53rB E K, 55rH, et passim; πρό 36rJ; ὑπέρ 11vQ; no gr equivalent (gen. case) 17rA<sup>1,2</sup>, 53rA, 55rV, 55vA, 56vF<sup>1</sup>; no gr text 11vA, 20vD<sup>1,2</sup>, 23vA, 56vF<sup>2</sup>, 60rA

de se: αὐτόθεν 34rD

debeo: ὀφείλω 23vF, 37rJ P; debeant (!)
μελει 38rN

decem: δέκα 54vD

decem et octo: δεκαοκτώ 55rB<sup>1</sup>,<sup>2</sup> December: no gr text 60rA deceo: πρέπω 34rD decimus: δέκατος 53rQ; ι΄ 35rJ; no gr text 60rA decindo: ἀποτέμνω  $11vI N^{1-3} O Ovar;$ τέμνω 11vG<sup>1,2</sup> J<sup>1,2</sup> L<sup>1,2</sup> N<sup>4</sup> Pvar: et vide descindentia decisio:  $\tau \mu \tilde{\eta} \mu \alpha \ (\tau \mu \tilde{a} \mu \alpha) \ 11 v G^{1-3} \ H^{1-4}$   $I^{1-3} \ J^{1,2} \ K^{1,2} \ L^{1-4} \ M^1 \ N^{1,2} \ 0^{2-4}$ ,  $17rW^{1-3}X^{1,2}Y; \tau \circ \mu \dot{\eta} (\tau \circ \mu \dot{a}) 11vM^{2,3}$  $0^{1,5,6}$ declaro: δηλόω 53vF declino: κλίνω 56rQ decuplus: δεκαπλάσιος 19rV<sup>1,2</sup>, 19vA B  $G^{1-3}$ ,  $20rE^{1,2} \Phi \Omega^{1,2}$ ;  $\bar{\iota}$  54vA C D<sup>1,2</sup>; quinque et decuplum πεντεκαιδεκαπλάσιον 55rA decurro: διατρέχω 38vH deduco: παράγω 36vV defectu, sine: ἀνελλειπής 38vG defero: χομίζω 11vA Ι; φέρω 11vT,  $12rc^{1,2}$  D F H<sup>1,2</sup>,  $13vH^{1,2}$ deficio: διαπορέω 38rI; έλλείπω 42rI\* M\*; λείπω 38vN; no gr text 24vPvar, 45vPvar, 49rIvar, 56r0var. 56vNvar, 57rFvar, 57vEvar [definitio]: no gr text 45vC; vide diffinitio deinceps: ἐξῆς 12v0, 40rE Q, 53rE, 59rB deinde: εἶτα 34rI, 39rK R, 40rT, 41rP; ἔπειτα 20vF, 22vD, 23vC, 38vK [Delii]: Δήλιοι 38rJ\* demergo: δίω 55vS, 56rD G H<sup>1,2</sup>, 56vG<sup>1,2</sup> I, 58rH<sup>1,2</sup>, 58vE F; καταδίω 55vQ R,  $56rB^{1-3}$ ; no gr text 55vK, 57rL<sup>1,2</sup> U<sup>1,2</sup>, 57vK, 59rI<sup>1,2</sup> O

demitto: vide dimitto

[demo]: 17rLvar

demonstratio: ἀπόδειξις 11vA B D E I. 20vH K<sup>1</sup>, <sup>2</sup>, 23vA B G H, 31rL M, 34rJ N, 34vC O, 36vB W, 37rJ, 38rN, 38vA, 40rI, 45rA<sup>1</sup>, 47rU V, et passim; δείξις 24rT, 42vO; no gr equivalent

demonstrative: ἀποδεικτικῶς 38rK, 39vN

demonstro: ἀποδείκνυμι 20vI J K N. 25vC, 27vH, 34rJ<sup>1</sup>, 38rR, 39rL, 41rQ, 41v0 Q S U<sup>3</sup>, 45rX, 46rC, 47rU, 49rA; δείχνυμι 13vU, 14vB E F N, 17rH S X, 17vG, 18rD, 22vO, 24rM, 24vJ, 25vE,  $34rJ^{2}$  N, 34vJ M P Y, 35rF L M R<sup>1</sup>, <sup>2</sup>, 35vU V, 38vE,  $39rK^{1,2}$ ,  $41vU^{1,2}$ , 45rR, 53rN, 55vI, 56rJ, 58rL; δηλόω 58vL; έπιδείχνυμι 20νF

denominativus: παρώνυμος 39vP deorsum: κάτω 56rI J K N<sup>1,2</sup> P. 56vE<sup>1,2</sup>, 57rE<sup>1,2</sup>, 58rL<sup>1,2</sup> P, 58vI<sup>1</sup>; [deorsum] 20vW, 58vI<sup>2</sup>: no gr text 57vA J; et vide fero deorsum deprehendo: κατανοέω 23vF, 34vE derelinquo: καταλείπω 35rM; 24vHvar descendens: καθιέμενον 55vA descendo: καταβαίνω 56rJ K descindentia: ἀποτέμνοντα 11v0; τέμνοντα 11νΡ

descisco: λήγω 36rY

describo: ἀναγράφω 13rB Q, 15rM Q, 15vI<sup>1,2</sup>, 18rG<sup>1,2</sup>, 20vK, 26vO T, 29vR, 31vC, 36rS, 44rB, 55rF, et passim; γράφω 11vR<sup>1,2</sup> V<sup>1,2</sup>, 12rX, 12vE, 13rT, 27rM, 33rA, 34vV, 36rT U, 36vN W, 37vD K L<sup>1,2</sup>, 38rA, 42rI<sup>1,2</sup>, 46vJ, 55vM U, et passim; καταγράφω 37rF Q; bπογράφω 17rR; no gr text 55vF descriptio: ἐπιλογή 34rH; καταγραφή 34vE, 35rN, 35vA, 36vF, 37rE, 38vM, 39rH, 39vB, 40rI R, 41rG L, 42rL, 53rG, 53vQ; κατασκευή 32rI, 39vE

desidero: ὀρέγομαι 34rB; προαιρέομαι 11vB

desino: λήγω 40rE

despicio: καταγιγνώσκω 20vG

desto: ἀφίστημι 40rR

destruo: ἀφανίζω 41rS

desuper supra: δπέρ (?) 56rI

determinatio: διορισμός 32ro<sup>1,2</sup>,

40rN T, 41rM N<sup>2</sup>; προσδιορισμός

detineo: κατέχω 17rL

detrunco: ἀποτέμνω 11v0

deus: θέος 34rC

devenio: ἔρχομαι 18rS, 34rC, 40rQ,

53rY; καταντάω 41rL 0; πίπτω 38rK

diabeta: διαβήτης 37vT

diagonalis: διαγώνιος 42rJ

diameter, dyameter: διάμετρος 11vJ K L M, 12ro, 17vM N O, 18vG<sup>1,2</sup> H, 20vI<sup>1,2</sup> L M<sup>1,2</sup> N<sup>1,2</sup> O<sup>1,2</sup>, 22vM<sup>1,2</sup>  $0^{1,2} P^{1,2}$ , 23rD E H I, 23vD, 25rB, 25vE<sup>1,2</sup>, 26rN, 26vC<sup>1,2</sup>, 35vH J,

45rG<sup>1,2</sup>, 53rL, 58vM, et passim

dico: λέγω 11vY, 17rK, 17vC R, 18rK, 22rH, 23vO Q  $s^{1,2}$ , 24rU X, 34rF H  $K^2$ R, 34vP, 35rQ, 35vI, 36rB O, 38rG,  $39vN^{1-3}$  Q, 41rP Q, 42vW, 43vV, 44vC, 45v1<sup>1,2</sup>, 53rA<sup>1,2</sup> E<sup>1,2</sup>, et passim; φάσκω 39rL; φήμι (φάμι) 11vD R S T V, 13vC, 17vJ, 20vX, 21rE J P, 34rK<sup>1</sup> P, 39v0 et passim; no gr text 20vE; dictus είρημένος 11vI N X, 13rI, 17vF S, 18rG H N, 21vE S, 23vD, 24rT X, 34rO, 35rQ, 36rB D, 39rS, 40rE, 45rH K X, et passim;

λεγόμενος 41rN O P

[dictio]: λέξις 40rT\*var

dies: no gr text 22vH, 33vV, 55rW,

60rA

differo: διαφέρω 20rU, 36vS, 37rQ,

50vR

#### 668 ARCHIMEDES IN THE MIDDLE AGES

difficilis: δυσθεώρητος 53vC; δυσχερής 40rT difficultas: δυσχολία 34rC; omnino difficultatem habere δυσπότολον ἔχειν (! in gr MS A) 45rB difficulter: δυσχερῶς 38rK, 53vC difficulter speculabilis: δυσθεώρητος 34rB diffinio: ὀρίζω 53vR diffinitio: 8pos 34rE F, 39rL; vide definitio dignifico: ἀξιδω 34rJ dignitas: ἀξίωμα 53rE<sup>1,2</sup> dignus: ἄξιος 23vB, 34rB dikhotomia: διχοτομία 17vI J, 18rQ R S; et vide sectio in duo equa dikhotomizo: διχοτομέω 17vJ; dikhotomito 17vJvar; et vide seco in duo equa [dikhotumus]: 17vJvar diligenter: ἀκριβῶς 53vC; diligentius: άπριβέστερον 38vB; έπιμελέστερον 45rB [dimensio]: μέτρησις 22vI\* dimidium: ήμισυς (ἄμισυς) 17rU, 26rC, 33vS U, 35rM N, 39vR S, 44vC, 58rB, et passim; dimidius 25vH, 27rE, 36rP, 49rC dimitto, demitto: ἀφετόω 56vA<sup>2</sup>;  $dφίημι 55vK^{1,2*} R^{1,2}$ , 56rB G J  $0^{1,2}$  $56vA^{1}$  F G I L, 57rA B F G, 57vL M, 58rB<sup>1,2</sup> R, 58vA K S V W, 59rB N, 59vC D, et passim; no gr text 57vC D, 59rF G X, 59v0 Diocles: Διοκλής 37rA Q R,  $37vA^{1,2}$  H. 40rQ, 41v0<sup>1,2</sup> Dionisodorus: Διονυσόδωρος 40rP, 41rR; Dionysodorus 40rR, 41rT directum, in: ἐπ'εὐθείας 26vI, 27rA, 36vD disco: μανθάνω 24rH, 42vO

discretio: χρίσις 34vG dispono: χατασχευάζω 13vV, 14vF G, 15rA, 16rI, 21vR, 36vD E, 37rK, 41rD, 42vL, 50rS, 50vG, 51rI, 51vR, 56rC, 57vP, 59rC, 59vI U; τεμνω (! τασσω ?) 20rG dispositio: κατασκευή 32rR, 36vR<sup>1,2</sup> Τ W, 37rQ, 38rN, 38vG, 53vE; κλίμα 58vL dissero: φράζω 38vC; παραφράζω 54rN dissimiliter: ἀνομοίως 20rG I. 54vF; no gr text 19vG I K; cf. similiter distantia: διάστημα 11vR V, 13rV W. 13vQ, 34vV, 36vU<sup>1,2</sup>, 38vI, 47rM, 47vB, et passim; no gr text 55vF disto: ἀπέχω 17rQ, 53vU; ἀφίστημι 43rW, 44vC; διίστημι 17vA diversus: διάφορος 36rR divido: διαιρέω 12rK, 14vJ, 15rA, 17rW, 17vK<sup>1,2</sup>, 18rE R T, 18vM<sup>1,2</sup> N, 19rN, 20rQ S, 21rV, 21vG N, 27rP, 34vW, 36vB T, 38vI, 39vD  $R^{1,2}$ , 48vG Q, 49rF, 50vW51vH, 53vK S U; τέμνω 13vC, 15rF; dividenti διελόντι 16vD, 18rH, 20rX, 24rP,  $31vP^{1,2}$ , 34vR  $S^{1,2}$  U, 39vE F, 41vJ, 42vM, 43rE, 44rN O, 53rR, 54rL N divisio: διαίρεσις 17vK, 21vN, 33rC, 34vW, 48vG 0 do: δίδωμι 11vB E F  $G^{1-4}$  H I,  $12rL^{1,2}$  $M^{1-3} Q^{1-3} T^{1-4}$ , 18vA, 19rG, 23vS V, 31r0 Q s<sup>1,2</sup>, 34rK, 35rM P, 45vA, et passim; ἐπιδίδωμι  $38rJ^{\perp}$ ; ἐπιτάττω 37rK M doctor: διδάσκαλος 34rA, 36rM, 37vT, 44vP doctrina: μάστευσις 11vC dolabralis: πελεκινοειδής 36vE, 38vH . doleo: λυπέω 20vE domesticus: οίκεῖος 20vE, 23vG donec: ἔστ'ἄν 14νΜ, 15rL, 15νΗ, 56rJ K; ἔστε κα 15rP, (?)56rG, (?)56vF;

ἔως 36vI; ἔως ἄν 38vD, 57rE; ἕως

οὖ 37rL, 38rP

donec utique: ἄχρις ἄν 36vF N S V;

ἕως ἄν (?)58vJ, (?)59rT, 59vH; no gr

text 57rP, 57vB, 59r0

Doricus: Δωρίς 40rS

Dositheus: Δοσίθεος 11vA, 20vE, 23vA, 31rL, 45rA

dubitatio: ἀπόρημα  $38rI^{1,2}$  J dubito: ἀπορέω  $45rB^{1,2}$ 

duco: ἄγω 11vL N O S, 12rL, 17rD, 17vJ K R, 18rE K L P<sup>1,2</sup> T U, 20vN O P, 21rK Q, 22vK, 23vC X<sup>1,2</sup>, 24rD R U<sup>1,2</sup>, 24vK L M<sup>1,2</sup>, 34vL, 35rJ, 37rA, 44rK, 45rE, 53vB K, 56vC, et passim; εκβάλλω 32vK; ποτιβάλλω 13vR; no gr equivalent 36rH; no gr text 55vG; sursum duco ἀνάγω 58vP

duo: δισσός 58vL; δύο 11vD H O V<sup>1,2</sup>
W, 13vC, 17rK, 17vR, 23vS<sup>1-4</sup> W, 24rA B
N, 34rI L P, 34vA I, 35rI<sup>1-3</sup>, 45rF, et
passim; cum duabus σύνδυο 20rΘ; simul
duo σύνδυο 43vG, 55rM

duo, in: δίχα 13vC D <sup>1,2</sup>, 14vJ, 15rA F, 17rK, 17vN P, 23rA B G<sup>1,2</sup> H, 23vY<sup>1,2</sup>, 54rG

duo equa seco, in: *vide* dikhotomizo, seco

duo equa sectio, in: vide sectio duodecim: δώδεκα 53vN 0, 54rJ K duplatio: διπλασιασμός 38rH dupliciter: διχῶς 36rO W duplo: διπλάζω 38rH<sup>1</sup>; διπλασιάζω 38rH<sup>2</sup>, 3 1<sup>1</sup>, 2 J

duplus: διπλάσιος 11vJ K T,  $12vM^{1,2}$  N,  $17rU^{1,2}$ , 20vI Y,  $22rN^{1-3}$  0, 23vY  $\theta^{1,2}$ ,

24rD V<sup>1-3</sup> W<sup>1,2</sup>, 35vB C D P, 36rF<sup>1</sup> J K, 38rG I, 40rB, 43vB, 45rG N, 50rK, et passim; διπλασίων 33vE<sup>2</sup>, 36rF<sup>2</sup> G, 37vH<sup>1,2</sup>, 43rI, 43vA<sup>1,2</sup>, 53rS διπλοῦς 35vK<sup>1,2</sup>, 39rE; β 54vB<sup>1,2</sup> C; duplus epiquartus διπλασιεπιτέταρτος 40rD<sup>1,2</sup> dyameter: vide diameter

eburneus: ἐλεφάντινος 38vA
econtra: ἀπεναντίον 28vJ
econtrario: ἀνάπαλιν 16vF, 23vT, 32rJ,
32vL R, 34vP U, 39vA J V, 40rB, 42rC,
43vN, 54vG J R, 55rK; 17vUvar
econverso: ἀνάπαλιν 23rH, 54rV
educo: ἐκβάλλω 11vW, 12rN S T<sup>1-4</sup>,
14vC<sup>2</sup>, 17vF G P, 18rF J O S, 20vO,
21vH I, 23vZ, 34vA, 36vD I O V, 37rE
L, 38rP, 40vR<sup>1,2</sup>, 46rS, 46vI, 47rQ,

14vC<sup>2</sup>, 17vF G P, 18rF J O S, 20vO, 21vH I, 23vZ, 34vA, 36vD I O V, 37rE L, 38rP, 40vR<sup>1,2</sup>, 46rS, 46vI, 47rQ, 53rV Y<sup>1-3</sup>, 55vL, 58rJ<sup>1,2</sup>; ἐκπίπτω 13vH; ἐπεκβάλλω 11vV; ποτιβάλλω 14vC<sup>1</sup>; προσεκβάλλω 34vV X, 40vU, 42vL; no gr text 55vC

ego: trú 11vA, 31rL<sup>1</sup>, 45rB; no gr equivalent 31rL<sup>2</sup>; et vide nos

elaboratio: ἐξεργασία 11vC elaboro: πραγματεύομαι 20vF

elementa: elementa [Euclidis] Στοιχεῖα 34rJ, 35rQ, 42vO Q, 53rQ, 53vU; elementa conica στοιχεῖα κωνικά 20vK N, 42vI, 46rC; elementa conica [Apollonii] 40vD L R S U, 41vD, 42rI O P, 42vK, 58rF-G

elementatio: Στοιχείωσις [i.e. Elementa Euclidis] 24rK, 35rL M R, 35vG, 39vN P, 44vF; elementatio datorum στοιχείωσις Δεδομένων [i.e. Data Euclidis] 42vW

elevo: ἀναφέρω 56r0, 58vI; elevatus μετέωρος 46vN, 47rA J 0

elicus: ἔλιξ 31r0, 45vW, 51rF; [de figuris elicis] 11vA elix:  $\xi \lambda \iota \xi$  11vP R<sup>1,2</sup> S<sup>1,2</sup> T V W<sup>1-3</sup>. 13rT<sup>1,2</sup>, et passim in De figuris elicis ellipsis, -eos: ἔλλειψις 42rI J K M N, 46vV, 47rK L; et cf. oxygonii coni sectio eminenter: διαφερόντως 34rC emiolius: ἡμιόλιος (ἀμιόλιος) 11vK 0. 19rN O T, 23vD, 29rT<sup>1,2</sup>, 31rN<sup>1,2</sup> Q<sup>1,2</sup> R, 36rN O P<sup>1,2</sup> Q R S<sup>1,2</sup>, 39vR S, 40rB  $D^{1,2}$ ,  $43rM^{1,2}$   $\Phi^{1,2}$ , 45rF, 49rA B, 56vLemisperium: ἡμισφαίριον 11νΜ, 27rQ  $R^{1,2}$ , 30vL R S, 39rL, 44rZ, 44vA<sup>1-3</sup> 56vc<sup>1</sup>, et passim; no gr text 56vc<sup>2</sup> enim: γάρ 11vB<sup>1,2</sup> C, 17rF G, 20vH, 22vJ, 23vG, 34rB K N, 45vR T W, 53rB G, et passim ubique enunciatio: ἀπόφασις 23vG eodem modo: τον αυτόν τρόπον 13rF W, 13vM, 18vF, 28vH, 29rP, 51vF; ώσα ύτως 14vG, 38vB E, 48vI, 54rP, 54vK epiquartus: vide duplus epiquartus epiplates: ἐπιπλατής 45rC O epitritus: ἐπίτριτος 19rC S, 20vH, 22rB E G T, 23vB, 39vR,  $46rJ^{1,2}$ , 53vE<sup>1,2</sup>, 54rK, 55rE, et passim equalis: 700 11vE F<sup>1,2</sup> H I L. 17rA<sup>1-3</sup> C D<sup>1,2</sup> E<sup>1,2</sup> I<sup>1-3</sup>, 20vG J<sup>1,2</sup> L<sup>1,2</sup> M P,  $22vM^{1,2}$  O,  $23rB E^{1,2}$ ,  $23vC^{1,2} D^{1,2} U$  $\Pi$ , 24rc, 34vE  $H^{1,2}$  I 0, 45rM<sup>1,2</sup> N S, 53rE<sup>1,2</sup> F R, 55vG N<sup>1,2</sup>, et passim; sub equalibus οπὸ τῶν ἴσων 43rW<sup>1,2</sup>; vide per equale equalis altitudinis: ἰσουψής 25rB equalis anguli: ἰσογώνιος 26vF equalis magnitudinis: ἰσομεγέθης 17rW equalis molis: ἴσογκος 56vH<sup>1</sup>; no gr text 57rU; vide moles equalis molis et equalis ponderis sum:

ίσοβαρέω (<u>?</u>) 55vJ equalis reptio: ἰσορροπία 53r0 Q equalis sectio: διχοτομία 36vS equalitas: ἰσότης 34vF equaliter: ἴσον 53vU equaliter inclino: ἰσορροπέω 17rA B<sup>1-3</sup> C: et vide inclino equaliter repo: ἰσορροπέω 17rD E<sup>1,2</sup>  $f^{1-3}$   $g^{1-4}$   $H^{1,2}$   $I^{1,2}$   $J^{1,2}$  L M S. 17vB<sup>1,2</sup> C C-D D<sup>1,2</sup>, 20vX<sup>1,2</sup>, 21rA B C<sup>2</sup> D E F H J, et passim in Quadratura parabole, 53rD E<sup>1,2</sup> N O P W; equaliter repens ἰσορροπής 21rc<sup>1</sup>; et vide equerepens et repo eque molis: ἴσογκος 56r0, 57rF; vide moles equegravis: ἰσοβαρής 55vK P R, 56rM equemultus: ἰσοπληθής 54rE equerepens, eque repens: ἰσορροπικός (?)17rA, 20vD, 53rA, 53vC, 55rV; et vide repo et equaliter repo equerepo: ἰσορροπέω 20vZ, 56rN; et vide repo et equaliter repo equevelociter: ἰσοταχέως 11vQ R, 12rA<sup>1,2</sup> C F G, 13rS<sup>1,2</sup>, 13vH I L equiangulus: ἰσογώνιος 23rF, 28rJ, 35rT, 35vL, 42vR<sup>1,2</sup>, 43rE I, 43vO, 55rF equicrurius: ἰσοσκελής 24rQ R S T W, et passim in De Spera, 35vB, 45rH equidem: (!) ὅπερ 55rV equidistans, equedistans: παράλληλος 14rH, 18rR T, 18vL<sup>1,2</sup>, 20vT, 22rD I, 26r0<sup>1-4</sup> P R S. 34vZ. 35rJ<sup>1,2</sup>, 35vF I K L, 36rD,  $36vE^{1,2}$  P, 37rA B D  $E^{1,2}$ ,  $38rQ^{1,2}$ ,  $40vP^{1-3}$ ,  $41vC^{1,2}$ , 45rP, 45vD, 53rC<sup>1,2</sup> D H R, et passim; equedistans [figura] παραλληλόγραμμον 38rL equidistanter, equedistanter: παρά 17vK, 18rD E<sup>1,2</sup> T, 18vG, 26vA, 27rN, 28r0 R, 36vL<sup>1,2</sup> O R, 37vM U, 41vB, 45rE

J P, 45vB,  $46rG^{1-3}$ , 46vN V, 47rL, 53rQR. et passim: παράλληλον 36vD; παράλληλος 12rX; equidistanter ad παρά 12rR, 35vD; equidistanter ordinate παρατεταγμένως 54rG; equidistanter penes παρά 11vN P, 12rN equilaterus: ἰσόπλευρος 23vY Z Θ, 24rR S. et passim in De spera.  $34vVW^{1,2}Z$ . 35rF G, 35vB equivoce: ὁμωνύμως 13rU equus: ἴοος 23vV, 42v0<sup>2</sup>; equa sectio διχοτομία 53rZ<sup>1,2</sup>; ex equo έξ ἴσου 55vA G O Q V, 56rC K; et vide duo equa, per equam, seco, sectio, tria equa Eraclides: Ἡρακλείδας 11vB Ι Eratostenes: 'Ερατοσθένης 38rg<sup>1,2</sup>.  $38vG^{1,2}$ ereus: χαλκούς 38vA B ergo: ắpa 12rR, 12vF<sup>1,2</sup>, 13rO, 13vA B, 17vL, 18rG L, 23vT, 24vR<sup>1,2</sup>, 29rH<sup>1,2</sup>, 34rQ R<sup>1,2</sup>, 34vA<sup>1,2</sup> L, 53rT, et passim; οὖν 26rN, 33vS, 44vE, 45vU, 52rO, 58vI erigo: ἀνίστημι 46vJ L S T V, 47rE<sup>1,2</sup> F H I M<sup>1,2</sup> O, 48rG L Y, 48vG M N Q, 49rT U, 50vB C, 51rP, 52rD, 52vF; erectus ὄρθιος 37vL; erecta stans άνεστάκουσα 46vI Eron: "Ηρων 36vG R S W, 37vT; (1) 'Ηρώνας 39<sub>V</sub>Q estimo: ἡγέομαι 53vC et: δέ (cf. quidem)  $34 ext{vL}^3$ ; καί  $11vB^{1,2}C^{1-3}E^{1-3}$ ,  $17rC^{1-3}$ ,  $20vE^{1,2}$ 21vU<sup>2</sup>, 22vJ<sup>1-5</sup>, 23vB<sup>1,2</sup>, 34rM<sup>1,2</sup>, 34vH<sup>1-3</sup>, et passim; τε 41vT<sup>4</sup>; τε xaí 21vU<sup>1,3</sup>; no gr equivalent 35rV et cetera: καὶ τὰ ἑξῆς 53vX etenim: xal yáp 11vD, 23vF etiam: δή 29rF, 30vB, 33vG H, 34rM O, 35r0, 35vB Y, 43rH, 43vK, 47vS, 50rD F 50vY. 53rS, 55vS; xai 14rJ, 34vC D H  $J N^{1,2}$ , 35rR, 40rB; μήν 40vD, 58rK,

58vI; τοίνυν 15vM, 16rI etsi: εί καί 12rP Euclides: Εύκλείδης 23vT, 53rQ; 26vA-C\*var Eudemus: Εὔδημος 37vT Eudoxus: Εὔδοξος 23vE F, 36vB, 38rK; Eudoxus Knidius Εὔδοξος ὁ Κνίδιος 36vA Eutokius Ascalonites: Εστόκιος 'Ασκαλωνίτης 34rA, 36rM, 44vP, 53vC, 55rV; Euthochius 53rA; 53vBvar evenio: παραπίπτω 51vU V; προβαίνω 41r0; συμβαίνω 50rK eversus: τεταραγμένος 42v0<sup>1,2</sup> evidens: συμφανής 34rN ex, e:  $d\pi \delta = 37rF^{1,2}$ ;  $\xi x$ ,  $\xi \xi = 17rL^{1-3}$ 0 P, 22vI, 23vC, 34rC G  $H^{1,2}$   $J^{1-3}$ , 34vT, 46vG, 53rB  $C^{1-3}$ , et passim;  $\epsilon\pi$ C 21vI<sup>1</sup>, 23vI<sup>1-3</sup> J<sup>1-3</sup>; παρά 37rD; no gr text 34rA, 55vF ex opposito: vide oppositus ex se: αὐτόθεν 34v0, 40rK exagonum: ἐξάγωνον 35vI examino: συναίρω 34rD excedo: λείπω 49rM; δπερέχω 11vW Y<sup>1</sup>. 12rB F K<sup>1,2</sup>, 13rA, 17rI, 19rU<sup>1,2</sup> V,  $20vI^{1,2}$ ,  $21vM O R^{1-3}$ ,  $22vL O^{1,2}$ , 23vET, 24vE, 29rJ,  $34vN^{1,2}$ ,  $35vQ^{1,2}$   $s^{1,2}$  $T^{1-3}$ ,  $45vG^{1,2}$   $P^2$   $R^2$   $U^{1,2}$  V, 48vJ K, 49rL Y, 50rI<sup>2</sup> J, 51vM<sup>2</sup> W, 52rW, 52vL N,  $55vK^{1,2}$ , et passim;  $b\pi \epsilon \rho \beta \hat{a} \lambda \lambda \omega$ 11vD, 42vJ, 45vP<sup>1</sup> R<sup>1</sup>, 50rI<sup>1</sup> N O, 51vM<sup>1</sup>; bπερίσω 11vΥ<sup>2</sup>exceptus: χωρίς 12vQ, 13rA B D F, 24vQ T, 27rI, 28rL, 29vA, 45vG V, 49rJ, et passim excessus: διαφορά 31rI; ὑπεροχή (bπεροχά) 11vW X Y, 12rK<sup>1,2</sup> L, 17rF I, 17vD,  $19ru^{1,2}$  V,  $21vM^{1,2}$  N o  $R^{1-4}$ 22vL, 45vG P R U V, 51rE, 51vM, 52rW, 52vC L N, 53rP, 54vH I<sup>1,2</sup>, 57rF, et

passim; no gr equivalent 20vI; no gr text 57rP Q

exemplar: ἀντίγραφον 40rP, 41rS; no gr text 20rA; 18vVvar, 20rΠvar, 26vA-Cvar, 34rGvar, 53vLvar, 56rQvar, 56vNvar

exemplum: δπόδειγμα 39vX existentia: ὕπαρξις 34vD existimo: δπονοέω 36vB

existo: γίγνομαι 23vF; εἰμί 20rG, 20vW, 21rB, 23rB, 23vZ<sup>1,2</sup>, 24rA D M, 24vH, 34vZ, 35rA I, 36rD, 36vP, 40rA<sup>1</sup> 0<sup>2</sup>, 40vG, 41rQ, 45vQ<sup>1,2</sup>, 53rD X, 54rN, 55vA<sup>1,2</sup>, 56vF, et passim; ἔχω 21rE; τυγχάνω 25rT, 34vN, 36rR, 41rM; δπάρχω 32rO, 34vE, 40rA<sup>2</sup> 0<sup>1</sup>, 41rN<sup>1,2</sup>, 44rE, 53rO, 56vI

expello: ἐξωθέω 55vA H Q, 56rA I explanatio: σαφήνεια 34rR

explano: διασαφέω 34rF; ερμηνεύω 34rE; σαφηνίζω 40rT, 53vC

explicit: no gr text 18rW, 20vD, 22vH, 31rK, 33vV, 36rM, 44vP, 52vO, 53vB, 55rW, 56vF, 60rA

expono: ἐκδίδωμι 20vK; ἔκκειμαι 24rG, 26rL R Q, 26vH J O P V, 27rA, 27vB C J, 28rF, 29rP, 32rD, 37vI, 39rO P, 49rC; ἐκτίθημι 34rB E, 39rK, 41rR, 53vC, 54rN; ὁπομνηματίζω 53rC

**expositio:** ἕχθεσις 34rE; **b**πόμνημα 35rQ, 37vT

expresse: αὐτόθεν 42vH, 53vD, 54vP expressio: ἔξεσις (?) 38vG; see the Commentary, 38vG

exsurgo: ἀνίστημι 26rA extendo: νεύω 12rN

extendo: νευω 12rN

[extimo]: 23rHvar
extra: ἐκτός 12rS, 22rJ, 32rK, 39vI J,
42vN, 47vW X Y, 48rB U<sup>1,2</sup>, 48vE O,
53rL<sup>1,2</sup> M, 55vL R S, 56rB, 56vE G;
ἐξωτέρω 42rB; no gr text 55vF
extraduco: ἐκβάλλω 14rD

extremitas: ἄκρος 38vJ, 59vG<sup>1-3</sup>;
πέρας 11vV<sup>1,2</sup>, 24vC, 37rK, 47vB,
48rF; no gr text 59rJ R<sup>1,2</sup> U, 59vR
extremus: ἄκρος 35vF V W, 36vL, 40rE,
41vD, 43rT, 43vJ<sup>1,2</sup> K, 44rI, 44vG,
54vS; ἔσχατος 11vK, 50ro<sup>1,2</sup>, 50vL<sup>1,2</sup>,
X, 51rC<sup>1,2</sup>, 51vK L T V<sup>1,2</sup> W

facilis: ῥάδιος 38rK; de facili ῥαδίως 37rL; facilius εὐκολώτερον 36vT; et vide metodus facilis, concessibilis facile, intelligibilis

extrinsecus: ἔξωθεν 54rS

facile

facilitas: εὐμάρεια 34rB
facio, fio: γίγνομαι 11vB², 13rV,
22rS, 24rC D, 28rK, 28vG, 34rP, 34vP
W, 35rJ, 35vB L¹,² S W, 36ro² y¹,²,
36vV, 37rB, 37vT, 45rP, 53rB G, 55rN,
56vF, et passim; καταβάλλω 34rB;
ποίεω 11vB¹ C, 13rW X, 17rD, 17vS U
X, 18rC, 22rK, 23vV W Y, 34rM, 34vC
R X, 35rW, 35vR¹,² T, 36ro¹, 45rS,
53rJ, 54vP¹,², 55vB J, et passim;
ratiocinationem facio διανοοῦμαι
34rC

fallo: σφάλλω 38rH
falsitas: πταΐομα 41rS
falsus: ψεΰδος 11vI J K L
fantasia: φαντασία 34rB
Februarius: no gr text 16vT
fere: σχεδόν 36vR

fero: κομίζω 11νΕ; φέρω 11νR,

12rA<sup>1,2</sup>, 13rS U Y, 13νA, 27rM<sup>1,2</sup> N<sup>1,2</sup>

0 P, 28rK<sup>1,2</sup>, 35νΗ I<sup>1,2</sup> X Y, 38νΚ,

41rS, 55νΚ Q, 56rJ K N<sup>1,2</sup> p<sup>1</sup>,

56νΕ<sup>1,2</sup>, 57rD, 57νR, 58rJ<sup>1,2</sup>, 58rK L

p<sup>2</sup>, et passim; no gr text 57rE,

57νΒ<sup>1,2</sup> J<sup>1,2</sup>; deorsum fero καταφέρω

57νQ, 59rW (pro κάτω φέρω vide sub

φέρω, e.g. 56rJ); sursum fero ἀναφέρω 56rE P<sup>2</sup>, 57vQ, 58rP, 59rW (pro ἄνω φέρω vide sub φέρω, e.g. 57rD) fides: πίστις 20vK figura: σχῆμα 11vL M N, 17rC D E, 17vR

T, 22vL, 23vD E F L, 25rR, 36rB, 38rH P,  $38vc^{1,2}$  D,  $39rm^{1-3}$  R,  $44ry^{1,2}$ , 45rc $D^{1,2} H N^{1,2}$ , 53rC  $K^{1-3} L^{1-5}$ , 55vJ L. et passim; 18vGvar, 56rQvar

Filon: Φίλων 36vW, Filon Bisanteus Φίλων ὁ Βθζάντιος 36νΜ

finis: τέλος 11vD, 19rQ, 32rP, 33rV. 34rc, 40rp<sup>1,2</sup> s, 41rR, 54rF; vide perficio

finitus: πεπερασμένος 20vI, 23vH I, 34rK, 37vI L

fio: vide facio

firmaculum: τυλάριον 37rK<sup>2</sup>; τύλιον 37rK<sup>1</sup>; τύλος 36vE I

foramen: ὀπή 38vI J

forte: ne forte μὴ ἄρα 40rS fractus, non: ἄκλαστος 34rG frivolus: ventalis ac frivolus

άνεμιαΐος 34rD

fundamentum:  $\lambda \tilde{\eta} \mu \mu \alpha$  20vG H I<sup>1,2</sup> J. 53vS

funis: σχοῖνις or σχοῖνος (?) (Moerbeke's false reading of youvixis) 38rN

garrio: φθέγγομαι 34rC

gaudeo: χαίρω 11vA, 23vA, 31rL, 38rG

Geminus: Γεμίνος 53rE

generosus: γενναΐος 53rB

genitivus casus: 45rUvar, 48vNvar, 49rBvar, 49vFvar

genus: γένος 11vQ, 53rB

geometra, geometres: γεωμέτρης 20vI, 23vE, 34rE, 38rH J

geometria: γεωμετρία 11vB C, 20vE F, 23vD, 36vB; 20vFvar

geometrico: 20vKvar

geometricus: γεωμετρικός 20vF<sup>1,2</sup>, 38vG geometrizo: γεωμετρέω 11vX, 20vK, 38rR

Glaucus: Γλαΰκος 38rG glorior: σεμνύνω 38vG

gloriosus: κλεινός 36vA

gnomon: γνώμων 50vX<sup>1,2</sup> Y<sup>1-3</sup>, 51rA B C  $D^{1,2} \to G J K L^{1,2}$ , 51vE  $F^{1-3} \to G I J L^{1,2}$ м и v<sup>1,2</sup> w

gratia: ἕνεκα 38vG; χάρις 34rR; cuius gratia οὖ χάριν (false reading of οὐκ ἄχαριν) 41rS

gravis: βαρύς 17rA, 56rE J K<sup>1,2</sup> N O P; no gr text 20vD; vide eque gravis gravitas:  $\beta \acute{a} \rho \circ \varsigma = 17 \text{rA}^{1,2} \text{ B}^{1-4} \text{ C}^{1-3} \text{ D}$  $E^{1,2}$ ,  $17rQ^{1-4}$ , 20vY Z, 21rF Q, 53rC E $F^{1,2}$  G  $K^{1,2}$  M, 55vP  $W^{1,2}$ , 56rC  $D^{1-5}$  $M^{1-6}$ , et passim; paporns  $53rB^{1,2}$ 

graviter: no gr equivalent 20vE

grecus: no gr text 20rA; 24vPvar, 26vA-Cvar, 34rGvar, 45vPvar, 46vRvar, 47rQvar, 49vCvar Jvar, 53vHvar Ivar Lvar Mvar Rvar, 55rRvar, 56rQvar, 57rFvar, 58rCvar Dvar

grossicies: πάχος (false reading of τάχος) 38rH

habeo:  $\xi_{\chi\omega}$  11vB E G<sup>1,2</sup> H I<sup>1-3</sup>, 17rQ R W X,  $34rD F G P^{1-3}$ ,  $34vD^{1,2} E F^{1-3}$  $s^{1,2}$ , 35rQ, 36vF  $g^{1,2}$ , 45rA G, 55vA  $J^{1-3}$ , 57rE, et passim; se habet (habens) ἔχει (ἔχων) 20vZ, 21rX, 21vA, 36vF, 38vD, 42vM, 53rL, 57rE

habitudino: ἔχω 22vI

hebes: ἀμβλύς 13v0 Q, 21vG<sup>1</sup>, <sup>2</sup>

hemi-: vide emi-

[Heron]: vide Eron

[Heronas]: vide Eron

hexagonum: vide exagonum

hic: αὐτός 11vB<sup>3</sup>; δ 23vA D<sup>2</sup>, 34rP, 34vC,  $36rN^{1} Y^{2}$ ,  $36vJ^{1,2} K^{1,2}$ 41rN,  $42\text{vN}^1$ ,  $45\text{rc}^{1,2}$ ,  $45\text{vW}^2$ , 49rG.

50rI<sup>1-3</sup> 0, 51vH, 53rJ, 54rD, et passim: δδε 11vB<sup>1</sup> E<sup>2</sup> J<sup>2</sup> M<sup>2</sup> Q<sup>2</sup>, 3 X<sup>2</sup> Y, 23vB, 45rA C<sup>3</sup> F G L<sup>1</sup> N S X<sup>3</sup>; οὖτος 11vB<sup>2</sup> C E<sup>1</sup> I<sup>1</sup>, 2 J<sup>1</sup> L M<sup>1</sup> P<sup>1-3</sup> Q<sup>1</sup> W X<sup>1</sup>, 3, 23vC D<sup>1</sup> E F<sup>1-3</sup> G<sup>1</sup>, 2, 34rB<sup>1</sup>, 2 C H J M N, 34vD G<sup>1</sup>, 2 J V, 35rA, 36rN<sup>2</sup> Y<sup>1</sup>, 37rG Q<sup>2</sup>, 42vN<sup>2</sup>, 45rL<sup>2</sup> M X<sup>1</sup>, 2, 45vW<sup>1</sup>, 53rC<sup>1</sup>, 2, 53vD, 56rH, 56vF, et passim; τοιοῦτος 37rQ<sup>1</sup>, 38rH; hoc est τουτέστι(ν) 17rT, 19rQ T, 20rI L X, 34vV, 35rU V<sup>1</sup>, 2 W, 35vN, et passim

hic (adv.): ἐνθάδε 32r0, 40r0, 41rN; ἐνταῦθα 34rL, 36vC S, 37rR<sup>1,2</sup>, 42v0 P, 43rN, 43vK, 44rI, 53vD, 54rJ [Hip]pocrates Chius: Ἡπποκράτης ὁ Χῖο 38rI

homo: ἄνθρωπος 41rS humefio: βρέχω 58vL

humecto: no gr text 58vW, 59vD

humidus:  $b\gamma\rho\delta\varsigma$  38rL,  $55vA^{1-3}$  I<sup>1,2</sup> J,  $60rA^{1}$ ; no gr text 55vD E G<sup>1,2</sup> H<sup>1-3</sup>,  $60rA^{2}$ ; et passim ubique in De insidentibus aque

[hyperbola]: vide yperbola et cf. ambligonii coni sectio

[hypothenusa]: vide ypothenusa [hypothesis]: vide ypothesis

iaceo: αἰτέω 43rL; κεῖμαι 12rR,
 17vL R<sup>1,2</sup> S U<sup>1,2</sup>, 18rC<sup>1,2</sup>, 21vB I,
 23vL, 24vA, 32rK Q, 32vG, 33vB, 34vH
 J K, 35vR, 36rP, 43rΦ, 53rX, 55vA,
 56vM, 57rB, et passim

iam: ήδη 22vJ, 38vH, 45rB; λοιπόν12vM, 40rL

ibi: ἐκεῖ 36vS

idem: αὐτός 11vS, 12vC, 17rE<sup>1,2</sup> K N S, 17vB C, 20vO, 34rF H<sup>1-3</sup> N, 34vC J<sup>1,2</sup>, 36rN<sup>2</sup>, 43vU, 55rH, 55vB, et passim; no gr equivalent 36rN<sup>1</sup>; et

vide eodem modo, proportio (eiusdem
proportionis)

Idus: no gr text 52v0

igitur: ἄρα 17vB<sup>1</sup>, 41rL, 42rJ; δή 47rP; οὖν 11vI, 12rC, 17rG L M, 17vA, 34rK Q, 34vH I, 45rC, 53rD, et passim; τοίνον 13rB Q, 15rO, 17vB<sup>2</sup>, 24vH, 38vJ, 53vC; igitur non οὐκοῦν οὐ 21vQ

ignoro: ἀγνοέω 23vD F

ille: ἐκεῖνος 17rB, 25vB, 34r0, 34vG, 37rQ, 39vR, 43vU, 53rW; ὁ 12rQ, 16vL, 34rC, 57rF; δς 19rI, 23rB E G<sup>1,2</sup> H<sup>1,2</sup>; no gr text 19vH, 20rA

immoror: ἐνδιατρίβω 39v0

immotus: ἀκίνητος 55vK; no gr text
55vD; 55vEvar; et vide non motus sub

impar: περισσός 12vP<sup>1,2</sup> S, 17rQ, 18vG L, 53vL Q

impedimentum: ἐμποδών 40rI impingo: (!) ἐπεγγελάω 38vG

impleo: ἀποπληρόω 39vN

impossibilis: ἀδύνατος 11vE, 13vZ,
14rG L S, 14vE, 15vR, 17rM, 17vV,
18rJ, 19rJ M, 21vQ T, 26rE, 30vQ,
31rG, 41rM, 46rR T, 53rW, et passim;
ἀμήχανος 38vG

imprimo: βιάζω 56rE 0

[impulsatus?]: ἐπωστός 38vA\*

impulsivus: καταπαλτικός 38rM
in: εἰς 11vJ<sup>1,3</sup>, 17rW<sup>1,2</sup>, 34rA<sup>1,2</sup> E<sup>1</sup>,
 et passim; ἐν 11vA B<sup>1,2</sup> C J<sup>2,4</sup>,
 17rW<sup>3-5</sup> X<sup>1</sup>, 20vE, 23vI<sup>1</sup>, 34rB E<sup>2</sup> F<sup>1,2</sup>
 J, et passim; ἐπί 17rQ W<sup>6</sup> X<sup>2</sup> Y, 34rC
 H, 35rG, et passim; κατά 23vI<sup>2</sup>; σύν
 12vQ; etiam vide duo, in; duo equa,
 in; seco; sectio; et tria equa, in
in infinitum: ἑπ' ἄπειρον 37vQ

in precedenti: ἐν τῷ πρὸ τούτου 21vs,

26rM, 39vE; έπὶ τοῦ πρὸ αὐτοῦ 58vI;

35rF\*var

inapto: ἐναρμόζω 37vU, 38vA J, 59rD, 59vB; no gr text 59vL

incertus: ἄδηλος 34vE F

incido: ἐμπίπτω 11vS, 13rW, 24vC<sup>1,2</sup>, 38rJ<sup>2</sup>, 40rC; ἐντυγχάνω 36vA, 41rS; έπιβάλλω 38rJ<sup>1</sup>; παρεμπίπτω 39vX. 40rF; ποτιπίπτω 13vD F<sup>1,2</sup> J<sup>1,2</sup>, 15rL<sup>1,2</sup> P Q, 15v0<sup>1,2</sup>, 16rE K<sup>1,2</sup>; προσπίπτω 38νΜ

incīdo: τέμνω 12rS

incipio: ἄργω 11vR<sup>1</sup>, 13rS<sup>2</sup> T, 40rE: δρμάω 11vQ R<sup>2</sup> T, 13rs<sup>1</sup>, 45rD H N O; no gr text 11vA, 17rA, 18vA, 31rL, 36rN, 56vF

inclinatio: κλίσις 58rK; sine inclinatione άκλινής 58vI

inclino: ἐπικλίνω 59rT, 59vH K; κλίνω  $56vL^{1,2}$  M,  $57rA^{1,2}$  B F  $G^{1,2}$ , 57vS, 58rB R<sup>1,2</sup> 58vJ K<sup>1,2</sup> L U V<sup>1,2</sup>, 59rA<sup>1,2</sup> B<sup>1,2</sup>, et passim in De insidentibus aque; βέπω 17rB<sup>1,2</sup>; no gr text 57r0<sup>1,2</sup>, 57vC, 59r0<sup>1,2</sup> X: vide equaliter inclino et repo

incommensuratus: ἀσύμμετρος 17vB C

[inconcussus]: 38vB\*var

inconfusus: ἄσχαστος 38vB

inconveniens: ἄτοπος 18vS, 22vK L, 29rE G, 34rN, 35rW, 36vB, 39v0

indearticulate: άδιαρθρώτως 39vN

indigeo: δέω 34rB

indivisibilis: άδιαίρετος 39vR

induco: ἀνάγω 20vK; ἐκβάλλω 56vD; έπάγω 39rT

inductio: ἐπαγωγή 39vN

inequalis: ἄνισος 11vJ<sup>1,2</sup> Y, 12rJ, 13v0 @, 17rA D F H<sup>1-3</sup> I, 20vH, 23vM N  $0^{1,2} \text{ s}^{1-4} \text{ v}^{1,2}$ ,  $34\text{r}0^{1,2}$  Q, 34vE G, 37vC, 43rW, 44vB E<sup>1,2</sup>, 58vP, et passim; inequaliter no gr text 55vH

inequalitas: ἀνισότης 34vD F G

inferius: ad inferiora ές τὰ κάτω 55vQ; ad inferius έπὶ τὰ κάτω 55vK. ές τὸ κάτω 56rI

infinitus: in infinitum ἐπ' ἄπειρον 37**v**Q

infra: ἐξῆς 40rQ

iniaceo: ἔγκειμαι 38vJ

iniicio: ἐμβάλλω 38rN

iniungo: ἐπιτάττω 38vF

inquisitio: ζήτησις 40rR

inscribo: ἐγγράφω  $14vI^{1,2}$  Q, 15rB D  $E^{1,2}$   $o^{1-3}$ ,  $15vM^{1,2}$ ,  $18vF^{1-3}$   $G^{1,2}$   $H^{1,2}$  $I^{1,2}$  J. 22rK  $L^{1-4}$   $S^{1,2}$ ,  $22vB^{1,2}$   $C^{1,2}$ J,  $23vP^{1,2}$  V W @,  $24rB^{1,2}$ , 34vZ, 35rAC, 40rS, 46rD J N<sup>1-4</sup>, et passim

inscriptio: ἐπίγραμμα 38vC

insideo: καθίστημι 56rQ, 56vA; ὀχέω 55vA L (οχημα, false reading of σχήμα), 56vF. 60rA

insignis: ἄξιος λόγου 23vF

insinuo: ἐμφανίζω llvE

instrumentalis: ὀργανικός 38vB; instrumentaliter ὀργανιχῶς 38rR

instrumentum: ὀργάνιον 38vF; ὄργανον 38rN\*, 38vD G R

insum: δπάρχω 11vC

intellectus: ἔννοια 39vN

intelligibilis, facile: εὐκατανόητος 38vM

intelligo: ἀχούω 53r0; ἐπινοέω 23vE, 34rI, 34νΜ, 38rI, 38νΚ<sup>2</sup>; κατανοέω 20vW, 23vG; νοέω 20vV, 21rW, 25rP, 25vP, 26rF<sup>1</sup>, 2, 26vP, 34rP Q, 34vA D E H I J, 35rB, 38vK<sup>1</sup>, 53rF V, et pas-

intendo: καθίημι 34rB; intentum έπίταγμα 36rY; no gr text 19vRvar(?) intentio: ἔννοια 34rJ, 36vC; πρόθεσις 37rI, 41rM R; σκοπός 34rD inter:  $\varepsilon i \varsigma = 18vK$ ;  $\varepsilon v = 11vD$ ,  $38rQ^{1,2}$ ,

38vD<sup>1,2</sup>; μεταξό 20rU<sup>1,2</sup>, 35rB, 37rK

L<sup>1-3</sup>, 40rI, 41rC<sup>1,2</sup> G<sup>1,2</sup>, 56vD, 57rD, et passim; no gr equivalent (gen. case) 35vY<sup>1,2</sup>; intermedie inter μεταξύ 38vO; medius inter μεταξύ 12rW

intercido: παρεμπίπτω 40rA B E intercipio: ἐναπολαμβάνω 12rT, 45rE K Q, 47vB J P V

interius: ἐντός 47rΘ

intermedius: μεταξύ 11vW, 12rL M P S
T, 12vB C, 17rN Q R, 17vL, 19rF, 23vI,
24vD E F G<sup>1,2</sup>, 34rM, 36vO, 38vL, 40vT,
43rW, et passim; intermedie inter
μεταξύ 38vO

intitulo: ἐπιγράφω 38vG

intra: είς 15r0, 15vM, 24rE, 35rP  $Q^{1-3}$ , 46rS T; είς τὸ ἐντός [τοῦ τροῦ] (?) 58rJ<sup>2</sup>; ἐν 37vK L, 58rI, 59rT; ἐντός 12rU, 23vK, 34rQ, 39rM, 42vN, 47vW X, 48rB D<sup>1-3</sup> J<sup>1-2</sup> K M<sup>1,2</sup> U, 53rK<sup>1,2</sup> M, 58rJ<sup>1</sup>, 58vI; no gr text 59vS

intrascribo: ἐγγράφω 14νΜ N 0<sup>1,2</sup> P Q, 30νB, et passim

introduco: εἰσάγω 38rG; παρεμβάλλω 37rH

introductio: mechanice introductiones
Μηχανικαὶ εἰσαγωγαί 36νG (Hero), 37rI
(Pappus); introductio arithmetica
'Αριθμητική εἰσαγωγή 39νQ

intueor: ἐντυγχάνω 40rS

intus: ἐντός 39rM, 53rK

inutile: οὐ χρηστ' (! error in gr MS
for εὕχρηστον = utile) 58rL

invenio: ἐξευρίσκω 11vC<sup>2</sup>, 45rB; εδρίσκω 11vC<sup>1</sup> E<sup>1,2</sup> F<sup>1,2</sup> H, 20vF G<sup>1,2</sup>, 23vS<sup>1,2</sup> X, 24rA, 29rF, 31rP, 34rB M N, 36vA<sup>1,2</sup>, 37rJ<sup>1-4</sup>, 37vT<sup>1,2</sup>, 45rX, et passim; ποτεξευρίσκω 45rA

inventio: ἐπινόημα 38rM; εὕρεσις 36vA C, 38rN, 41rS, 45rB; εὕρημα

38vG; εὕρησις 37vT; inventione compleo προσευρίσκω 41rR

invicem: ἀλλήλους (ἀλλάλους) 12vI<sup>1,2</sup>,
12vJ, 17rY, 17vO, 34vF, 35vQ<sup>1,2</sup>, 36vD
H, 37vO, 45vO P, 49vR, 51rL, 53rL Z,
53vR, 55rL, et passim; ἐπ' ἄλλαλα
17rC; et vide ab, ad, et super invicem
ipse: αὐτός 11vB<sup>1,2</sup> C D<sup>1-3</sup>, 12rA<sup>1,2</sup>,
12vC, 17rE N, 17vB<sup>1,2</sup>, 34rB E<sup>1,2</sup> F<sup>1,2</sup>,
39rH\*, 48rA T<sup>1-3</sup>, et passim ubique;
ὲαυτοῦ 35vD; ὁ 12vI J<sup>1-6</sup> L, 17rI<sup>1,2</sup>
K<sup>1,2</sup> L P, 17vE<sup>1,2</sup>, 34rG Q<sup>1-3</sup>,
37vK<sup>1-2\*,3</sup>, et passim ubique; οὖτος
53rB

is: αὐτός 11vC; ὁ 11vB, 17rL, 34rA<sup>1,2</sup>
B<sup>1,2</sup> F O, 34vD, 35rA B H<sup>1-3</sup> Q, 58rA;
id est no gr text or no gr equivalent
13rT and 45rC<sup>1,2</sup> I N O S, 45vC, 53rB;
vide qui pro is qui

Isidorus: 'Ισίδωρος 36rM, 37vT; Isedorus 34rA, 44vP

iste: οὖτος 14vA, 29vG, 30vG I, 34rP, 44rZ, 48vJ, 50rK, 50vX<sup>1,2</sup>, 52rP T; no ar text 19vH

ita: obtws 17rs T  $u^{1,2}$   $v^{1-4}$ , 17vs,  $34vP^{1,2}$  R,  $35vN^{1-5}$ , 36vD, 37rN R, 39vN,  $54vA^{1-3}$ ,  $56rQ^{1-3}$ ,  $56vA^{1,2}$  L,  $57vL^{1,2}$ , et passim

ita ut: ζνα 53νΤ<sup>1</sup>; ὅπως 23νL; οὕτως ὥστε e.g. 56rQ<sup>1-3</sup> sed vide ambo ita et ut; ὥστε 11νL, 12rL P, 23νS, 34rH N, 37rL, 41rI, 53rP, 53νΤ<sup>2</sup>, 55νK, et passim; no gr text 55vD E

itaque:  $\delta \hat{\eta}$  11vE N, 17rQ T, 17vJ<sup>1,2</sup> K L, 21vJ<sup>1</sup>, 34rK L<sup>1-3</sup> P, 35rC, 53rH<sup>1,2</sup>, 59rC, et passim ubique

iterum: πάλιν 14rH, 18vF, 27rP, 34vS, 36rR, 40vP, 45rD H N O

iudicium: χρίσις 34rD iuventus: νεότης 34rC Kalendae: no gr text 44vP

kamarica Eronis: τὰ Καμαρικὰ "Ηρωνος 37vT

kathetus: κάθετος 12rQ, 21rN, 22rB;

vide cathetus

Knidius: Κνίδιος 36νΑ

konchoydalis: χογχοειδής 38vG M; et

vide conch-

konkhoydealis: χογχοειδής 38vS, 39rC;

et vide conch-

Konon: Κόνων 11vC, 20vE<sup>1,2</sup>, 23vG;

Conon 11vA D, 20vF, 31rL

laboriose: φιλοπόνως 38rJ

laboro: πονέω 38vG

lapidum proiectivus: λιθοβόλος 38rM

lateralis: πλάγιος 50rL

laterculus: πλινθίον 38vA

latinus: no gr text llvP

latio: φορά 57rE

latitudo: πλάτος 37vL, 38vI, 42vU,

45vU, 46rH,  $50vX^{1,2}Y^{1-3}$ ,  $51vEF^{1-4}$ 

latus: πλευρά 14vN, 17rD, 17vS U X,

18rA, 20vW, 21rJ M N, 22vK, 23vP W<sup>1,2</sup>  $z^{1,2}$   $\Theta$ , 24rA, 34rQ, 34vV  $W^{1,2}$  Z, 35rG

Y,  $35vA^{1-3}$ ,  $45vC = PQ^{1,2}$ ,  $53rZ^{1,2}$ ,

53vB, et passim; no gr equivalent

34rR; et vide parium laterum et

plurium laterum

lectio: λέξις 40rT

lego: ἀναλέγω 53rB; παραναγιγνώσκω

34rA, 36rM, 44vP

[lemma]: no gr text 26vA

levis: levior κουφότερος  $55vR^{1,2}$ .

56rA B C, et passim in De insidentibus

aque

levitas: κουφότης 53rB<sup>1,2</sup>

liber: βιβλίον 11vB E F Q X Y, 31vE G,

32rE, 35vG, 36rN, 39rK L N, 40rQ R,

40vC R S U, 41vD, 42rI O P, 42vK,

43vM, 44vF G, 45rA<sup>2</sup>, 53rB C L, 53vE S; σύγγραμμα 34rF; σύνταγμα 39vN; no gr equivalent 11vA, 17rA<sup>2</sup>, 18rW, 20vD E, 22vH, 23vA, 31rK, 34rA, 37rA, 38vF,  $41v0^{1-3}$  U,  $45rA^{1}$ , 52v0, 53rA, 53vB $C^{1,2}$  D, 55vA, 56vF<sup>1,2</sup>, 60rA; no gr

text 17rA<sup>1</sup>, 18vA, 58rF

[libet]: 38vF\*

libra: ζύγιον 21rG I M O S W, 21vI<sup>1</sup>; ζυγός 20vW<sup>1,2</sup> x z, 21rB<sup>1,2</sup> E H J N P

 $Q X^{1,2}$ , 21vA B  $I^{2,3}$ , 53rC  $D^{1,2}$  N O

licet: ἔνεστι(ν) 34vC, 42vY; ἔξεστι(ν)

34rI, 41rJ, 53rB; licebit ἐξέσται

23vF G

ligneus: ξύλινος 38vA

linea: γραμμή 11vQ<sup>1,2</sup> S T V, 17vV,

 $20vQ^{1}$ ,  $23vH I^{1,2} L^{1,2} O T$ ,  $34rF G^{1-4}$ 

 $H^{1-3}$ ,  $36vB^{1,2}$ , 37vA, 38vF, 45rH, 45vO,

46vH I, 53vG, et passim; no gr equiva-

lent (e.g. & AB linea AB)  $17vW^{1,2}$ ,

 $x^{1,2}$ ,  $18rE^{1-4}$   $F^{1-3}$ ,  $20v0^{1-3}$   $P^{1-3}$   $Q^{2-6}$ 

 $R S^{1-3}$ ,  $22vL^{1,2} N$ , 23rF, 35rH N, 54rA,

et passim; no gr text  $55vE^{1-3}$ 

lingua: γλῶσσα 40rS

locus: τόπος 38rC, 55vW<sup>1,2</sup>, 58vW, 59vD

K; σηκός 38rG\*; no gr text  $55vH^{1,2}$ 

longitudo:  $\mu \tilde{a} \times o \varsigma$  ( $\mu \tilde{\eta} \times o \varsigma$ )  $17 \text{rA}^{1,2} \text{ B}^{1,2}$ 

 $D E^{1,2} F G^{1,2} H^{1,2}$ , 21rA, 53rE 0, et

passim; longitudine μάκει (μήκει)

[i.e. in the first power] 20rV W<sup>1,2</sup>,

 $20vP^{1,2}$ ,  $22rE G^{1-3}$ , 22vQ, 23rB, 25vKM,  $26rB^{1,2}$  G M, 35rV,  $49vT^{1,2}$ , et pas-

sim; no gr equivalent 20vN

magis: μᾶλλον 23rI, 34rB M, 53rD, 54rC, 55vA H, 56rA K; magis proprie

κυριώτερον 39vQ; vide multo magis magnitudo: μέγεθος 12vH, 13rC, 15rL Q,

15vH O, 16rE K, 17rD K<sup>1-4</sup>, 22rS T<sup>1,2</sup>,  $23vs^{1-3}v^{1,2}w^{1,2}x$ , 24rA, 34vP, 38rM,

38vA, 42rE,  $42vO^{1,2}$ ,  $45vG^{1-4}$ , 53rD E,

 $54vF^{1,2}$ , 55vK, et passim; no gr equivalent 34vM<sup>1,2</sup> N; equalis magnitudinis ίσομεγέθης 17rW

maior:  $\mu \epsilon i \not\subset \omega v$  11vI J<sup>1-3</sup> K<sup>1-4</sup>, 17rB F G<sup>1,2</sup>, 21rE G<sup>1,2</sup> I, 22vJ<sup>1,2</sup> L<sup>1-3</sup> M, 23vQ<sup>1-3</sup> V<sup>1,2</sup>, 24rB<sup>1,2</sup>, 34rL M<sup>1-4</sup> N<sup>1-3</sup> P Q R<sup>1-4</sup>, 34vA<sup>1-3</sup> E H<sup>1,2</sup> I<sup>1-3</sup>  $J L^{1,2} P^{1,2} Q^{1-4}$ , 45rN, 53r0<sup>1-6</sup>, et passim

Maius: no gr text 22vH

maneo: μένω 11vM Q  $R^{1,2}$  S  $V^{1-3}$ , 13rS T, 20vZ<sup>1</sup>, 2, 21rL Q, 27rM, 28rK, 28vK, 29rL, 29vJ, 36rR, 36vI, 38rB 0, 38vK, 45rD<sup>1,2</sup> G H, 53rC D E N, 55vI K S, 56rA, et passim; no gr text 55vD E manifesto: δηλόω 34rD; έμφανίζω 34rJ manifestus: φανερός 11vE J, 12rD, 13rA, 14vO, 15rC H, 17rJ Q, 17vM, 18rS, 18vG, 21rA D, 21vD E F, 23vZ ⊕, 24v0 T, 34rL, 34vL S, 35rS, 35vB, 36vH P, 37vH, 39vN X, 40rK, 43vI, 45vH, 46vG, 47vA, 53rZ, 53vE<sup>1</sup>, 57vQ R, et passim; δήλος 40rl, 53vE<sup>2</sup>; εμφανής 34vT, 36vC, 41rJ; κατάδηλος 34rP; πρόδηλος 42vW; συμφανής 40rE; no gr text 57vK, 59rM, 59vS<sup>1,2</sup>; manifestius σαφέστερον 24rT

manus: manu operor χειρουργέω 38rK mathema: μάθημα 11vB C, 20vE,  $23vG^{1,2}$ 

[mathematicus]: 20vFvar Kvar Yvar, 21rKvar

maximus:  $\mu \hat{\epsilon} \gamma \iota \sigma \tau \circ \varsigma = 11 \text{vL M. } 19 \text{rU}^{1-3}$  $v^{1-3}$ ,  $22rT^{1,2}$ ,  $22vD^{1,2}$  G,  $40vE O Q, 41rG, 45vG^{1-2} H; maxime$ μάλιστα 23vG

maximus circulus [great circle]: μέγιστος κύκλος 11vF, 23vB-C D, 27rL, 27vI<sup>1,2</sup> J N<sup>1,2</sup>, 28rF H, 28vI\*, 29rA<sup>1,2</sup>  $H^{1,2}$ , 29vB  $C^{1-3}$  D E, 30rM, 32rA C,  $33vN^{1,2}$ , 39r0

mechanicus, mecanicus: μηχανικός 20vF K, 34rA, 36rM, 37vT, 44vP; mechanica Μηχανικά (i.e. liber primus De cent. grav.) 20vY, 21rK, etiam vide introductio

medietas: ἡμίσεια 12rQ W, 12vC, 14rI P, 14vC, 17vX<sup>1,2</sup>, 20vW, 21rB, 22rE, 23vY, 24rD, 27rI, 35rT, 35vY<sup>1,2</sup>,  $36rE^{1-3}$  F S, 39rE,  $42rR^{1}$ , 42vR, 45rWX, 46vK 0<sup>1,2</sup> P, 49rI, 58rF<sup>1,2</sup>, et passim; ຖືມເວບ 21vI, 22rH, 25rH, 26rN, 42rR<sup>2</sup>, 48vF 0, 52rU, 55rE; no gr text 18vD, 20rQ

medimnus: μέδιμνος 38rM mediocriter: μετρίως 36vB, 53rF, 53vC meditatio: ἐπίστασις 34rB medius: μέσος 17rN P, 17vL<sup>1,2</sup> Q V,

20v0, 21rB D G I, 29rF, 35vF V W,  $36\text{rA}^{1,2}$ ,  $38\text{rN} \circ P$ , 38vF,  $43\text{vJ}^{1,2} \text{ K}^{1-3}$ 53rD, 55rP, et passim; medius inter μεταξύ 12rW; vide proportio, proportionalis, proportionaliter

melodia: μέλος 34rC

Menechmus: Μέναιχμος 37v1, 38rK

mensis: no gr text 16vT

mensura: μετρητής 38rM; μέτρον 17rW mensuro: ἀναμετρέω 38rM; μετρέω 12vQ, 17ru, 23vY Z<sup>1,2</sup>, 27rL, 27vI, 29rK, 35vH<sup>1,2</sup> I, et passim

merito: εἰκότως 34vD

metodus, facilis: εὐμέθοδος 11vC

metrum: μέτρον 38rM

meus: ἐμός 34rB D

Milesius, Millesius, Melesius: Μιλήσιος 34rA, 36rM, 37vT, 44vP

minimus:  $\ell \lambda \acute{a} \chi \iota \sigma \tau \circ \varsigma = 12 v H^{1,2}$ ,  $13 r D^{1-3} Q$  $R^{1,2}$ , 15rK L  $Q^{1,2}$ , 15vG H  $I^{1,2}$  J O, 16rE F K, 19ru<sup>1,2</sup>, 22rT, 23vL, 34rK, 45vG P R<sup>1,2</sup>, 49rE F, 50rI J, 51rE, 51vM

minor:  $\xi\lambda$ áσσων ( $\xi\lambda$ áττων) 11v $J^{1-3}$   $K^{1-4}$ 

L, 18rR<sup>1-3</sup>, 19rD F, 21rE F J, 21vK<sup>1-3</sup> L M<sup>1,2</sup>, 22rK<sup>1,2</sup>, 23vM N 0<sup>1,2</sup> p<sup>1,2</sup> S<sup>1-3</sup>, 34rK Q<sup>1,2</sup> R, 34vA B<sup>1,2</sup> J 0<sup>1,2</sup>, 45r0, 45vG Q, 53ro P, et passim; minus ἦσσον 55vA H, 56rA; nichilominus οδδὲν ἦττον 34rJ

minoro: έλαττόω 22rK, 43rU

Minus: Μίνως 38rG

mirabilis: θαυματός 20vE

miror: θαυμάζω 11vB

mitto: ἀποστέλλω 11vA<sup>1</sup> E P, 20vF K,
23vA G, 31rL<sup>2</sup> M 0<sup>1,2</sup>, 45rA<sup>1,2</sup>;
ἐπιστέλλω 11vA<sup>2</sup> B, 31rL<sup>1</sup>; prius mitto
προαποστέλλω 11vJ M

modicus: μικρός 38rG; ὁλίγος 40rR; modicum (adv.) βραχύ 38vI

modus: τρόπος 20rQ, 34rO, 36rN, 36vC, 38rH, 41rS; multis modis πολυτρόπως 40rR: *vide* eodem modo

moles: ὅγκος 56rB<sup>1,2</sup> D E F G<sup>1,2</sup> H<sup>1,2</sup>

J<sup>1,2</sup> L<sup>1,2</sup> M N O, 56vH I; no gr text

56vG J; equalis molis ἴσογκος 56vH,

no gr text 57rU; eque molis ἴσογκος

56rO, 57rF; equalis molis et equalis

ponderis sum ἰσοβαρέω (?) 55vJ

morior: τελευτάω 20vE<sup>1,2</sup>

mors: τελευτά 11vD

motus: χίνησις 36vE, 38rB, 38vK; no gr text 57vB

moveo: διαπορεύομαι 12rE H<sup>1-3</sup> I<sup>1-3</sup>; κινέω 11vD, 35vH, 36vD I<sup>1</sup>, 2 N<sup>1</sup>, 2 S<sup>1,2</sup> V, 37rJ K R, 38rC, 38vJ K; παράγω 37rL; φέρω 12rA D F G; non motus ἀκίνητος 55vI J Q<sup>1,2</sup> S, 56rA C<sup>1,2</sup>, et vide immotus

multiplex: πολλαπλάσιος 11vU, 12vP S, 14rT, 16rN P, 34vN, 39vQ, 54rP, 54vK; πολλαπλασίων 17rV<sup>1,2</sup>; multiplex superparticularis πολλαπλασιεπιμόριος 34vN; multiplex superpartiens πολλαπλασιεπιμερής 34vN

multiplico: πολλαπλασιάζω 23vT, 34vN, 39vP Q  $\rm S^{1,2}$  T U $^{1-6}$  et seq.,  $\rm 43vE^{1-4}$   $\rm F^{1,2}$  G

multitudo: πλῆθος 12rI, 12vH, 13rC, 15rL Q, 15vH O, 16rE K, 17rQ R W, 17vL, 18vK L, 27rL, 28rJ, 28vI, 35vH, 40rT, 41rS, 42vO, 45vG, 53vS multus: πολύς 11vC D, 23vE F, 36vA, 38rI, 38vG², 39vN, 40rR, 41rS, 45rX; multo πολλῷ 19rI, 24rI, 26rI, 34rM R¹,², 34vA B¹,², 35rC O, 35vT, 49rK, πολύ 36vT; multo magis πολλῷ 24vJ R U-V, 29rM; πολὺ μᾶλλον 23rD; πολλῷ μᾶλλον 24rO, 38vQ; multum μεγάλα 38vG¹; vide modus

musica: de musica Nichomachi Περί μουσικής Ν. 39νΡ

nam: γάρ 49rQ, 55rB

narro: ἱστορέω 37vT

natura: φύσις 23vD, 55vA

naturalis: φυσικός 53rC; naturaliter φυσικώς 23vF

navicula: χελωνάριον 38vJ; χελώνιον 38vH

ne forte: μὴ ἄρα 40rS

nec: μή 48vJ; vide neque

necessarium: ἀναγκαῖον 21vG, 22rI, 41rS, 46vM, 47rS T, 48rO, 49rX, 53vC F, 55vI; *no gr text* 55vD, 57vG

necesse: ἀναγκαῖον 13vQ; ἀνάγκη 41rI

negligentia: ἀμελετησία 41rS

negligo: παροράω 34rB

negocior, negotior: πορίζω 36rW Y,

37vC; πραγματεύομαι 11vB, 23vB

neque: μηδέ 34rD, 52rB, 57vQ, 58vL,

59rB, 59vN; μήτε 48rW; οὐδέ 13vU,

14rS, 14vE, 15rO, 16rM, 21vT, 22vG,

30vR, 34vE, 40rR, 45rB, 46rT, 49rL Q,

49vE, 50rR, 51rH, 58rK, 58vI, 59vU<sup>1,2</sup>;

neque...neque μήτε...μήτε 36rW,

45rV, 47vA; οὅτε...οὅτε 50rX, 51rM V, 52rB, 56rN, 57vS, 58rO R; neque ad unum οὁδὲ ποθ'ἕν 50rO, 51rC, 51vK L; neque alter μηδέτερος 46rJ; neque... nequaquam οδδέ...πάντως (?) 34vG; no gr text 51rT, 57rW, 59rM, 59vT; vide nec

nervus: νεῦρον 38rN

neuter: μηδέτερος 34rH; οδδέτερος 53rD, 56rI<sup>1</sup>,<sup>2</sup>

nichilominus: οδδεν ήττον 34rJ

Nichomachus: Νικόμαχος 39vP; Nicoma-

chus 39vP\*var

Nichomedes: Νικομήδης 38vF G L; Nicomedes 38vF\*var G\*var L\*var

nihil, nichil: μηδέν 55vS; μηδὲ(ν) καθ' ἕν (?) 58vV; οδδέν 11vQ, 20rU, 23vJ, 34rF, 39vO\*, 41rM, 50vR

nisi: πλήν 57vS, 58rR

nomen: Övopa 34rJ, 40rS

nomino: ὁνομάζω 34rG I, 39vR, 40rS,

53vR

nominatio: ὀνομασία 34rE

nominativus casus: 45rVvar Xvar,

52vLvar, 58rTvar

non:  $\mu\dot{\eta}$  11vB D P, 14rC, 17rB<sup>1,2</sup> C<sup>1</sup> K L. 34rB D. 34vE J<sup>1</sup>, 35vI<sup>1</sup>, 36rY, 36vB, 38rG K, 38vE Q, 39rN, 39vR, 40rA E P Q, 41rP R, 45rV,  $46vS^{1,4}$  W, 47rD H<sup>1</sup> L  $P^{1} \Theta$ . 48rB E F I K<sup>2</sup> M<sup>2</sup> O<sup>1,2</sup> P W, 48vC F J L, 49rD R X, 49vF R, 50rE X, 50vE T, 51rN R W X, 51vA, 52rB<sup>2</sup> H L, 53vA, 56rq<sup>1</sup>, 56vB<sup>1</sup> L<sup>1</sup>, 57rF<sup>1,2</sup>, 57vS, 58rc<sup>1,2</sup>, 58vB K T V, 59rA B, 59vN; μή...μηδέν 55vK; μηδέ (?) 57vM<sup>2</sup>; ού, ούχ, ούχ 16rm<sup>1</sup>,<sup>2</sup>, 17rC<sup>2</sup> G J, 34rG  $H N O, 34vD J^{2,3}, 35rF G, 35vI^{2,3},$ 38rI L N, 38vP, 39rL M, 39vN<sup>1,2</sup>, 40r0 R, 40vG, 41rN, 45rA, 46rT, 46vS $^2$  U $^1$ , 2 Y,  $47rH^2$  P<sup>2</sup> T X,  $48rK^1$  M<sup>1</sup> O<sup>3</sup>, 48vO, 49rK Q<sup>1</sup> T, 49vE<sup>1,2</sup>, 50rR W, 50vB N,

51rm P T V, 51vR, 52rB<sup>1</sup> I, 53rM 0<sup>1,2</sup> W<sup>1,2</sup>, 53vD H, 54rC, 55vH<sup>2</sup> O Q<sup>1-3</sup> R V, 56rA B Q<sup>2</sup>, 56vB<sup>2</sup> E L<sup>2</sup> M N<sup>1-3</sup>, 57rA C<sup>1,2</sup> E F<sup>3</sup>, 57vM<sup>1</sup>, 58rJ O, 58vI J, 59rT, 59vG H K U V<sup>1,2</sup>; οὸκ...οὸδὲ 49rQ<sup>2</sup>, 50vP, (sed non...neque 52rK); οὸδὲ 36vA, 46vS<sup>3</sup>; οὕτως (! sed ὅ [= οὕτως] in gr MS A?) 40rN; [non] 45rT, 56vK, 57rA, 59vU; no gr text 55vC<sup>1,2</sup> D E<sup>1,2</sup> H<sup>1</sup>, 57rH<sup>1,2</sup> K<sup>1,2</sup> M<sup>1,2</sup> P Q S<sup>1,2</sup> T U V<sup>1,2</sup> W, 57vB J<sup>1,2</sup>, 59rF L O R X, 59vS T

non adhuc: μηκέτι 34vN; οὐκέτι 35rM Q R, 39vQ, 41rQ (?), 55vK non aliquid: οὐκ...οὐδέν 55vQ

non aliquod: οόκ...οόδέν 46vS

non fractus: ἄκλαστος 34rG

non motus: ἀχίνητος 55vI J Q<sup>1,2</sup> S, 56rA<sup>1</sup> C<sup>1,2</sup>; no gr equivalent 56rA<sup>2</sup>; no gr text 55vE; et vide immotus, moveo

non nunc: οὕπω (?) οτ οὕτω (?) 11vP non possum: ἀδυνατέω 40rP; ἀτονέω 41rR

nonus:  $\tilde{\epsilon}\nu\nu\alpha\tau\sigma\varsigma$  54rN<sup>2</sup>, 55rB;  $\theta$ ′ 35rH, 54rN<sup>1</sup>

nos: ἡμεῖς (ὁμεῖς) 20vE H K, 23vA B
D, 34rB C, 36rN, 36vB, 38rK, 41rO S,
43vV, 44rK P, 53rK, 54rG; 20vFvar,
33vK\*var

nosco: γιγνώσκω 34rF; οἶδα 34rB; vide notus

noster: ἡμέτερος 34rA, 36rM, 37vT, 44vP

noto: ἐφίστημι 35rF

notus: εὐθύγραμμος (?) 18vR;
γνώριμος 20vE, 38vO; note γνωρίμως
18vG J K U, 53vF R S T, 54rC<sup>1,2</sup> D<sup>1,2</sup>
<sub>E</sub>1,2

novem: Ėvvė̃a 53vP<sup>1,2</sup>, 54rM November: *no gr text* 44vP, 52vO, 55rW nullus: μηδείς 20vJ, 23vI J; μηδείς πω 34rB; οὐδείς 11vD, 20vH, 23vE, 34rA I, 40rI P Q; a nullo οδδ' δφ' ένός 11vD; ad nullum οὐδὲ ποθ' ἕν 50r0, 50vL<sup>1,2</sup>, 51rC

numerus: ἀριθμός 11vU, 12v0 P S, 13vN,  $14rT^{1,2}$ , 14vG, 15rC,  $15vS^{1-3}$ , 18vL, 34vW, 39v0<sup>1,2</sup> P Q T X, 40rE.  $53vL_0^{1,2}$ 

nunc: νῦν 13rN, 20vF H X, 21vH, 34rM, 35rQ, 36vT, 39rM, 45rC, 57vQ, 58rO; no gr text 59rM; vide non nunc nunquam: οὐδέποτε 57vL; no gr text 57**v**C

[nuo]: νείω 12rU\* nusquam: ούδαμοῦ 41rR

o: & 53rB

oblongus: παραμάχης 45rC N, 47vP

obscuritas: ἀσάφεια 40rR

obscurus: ἄδηλος 11vC; ἀσαφής 36rB, 53vF, 54rN

obtusus: ἀμβλύς 13vU W Z Θ, 34vH,  $44rx^{1,2}$ 

occurro: ἐντυγχάνω 39vN, 40rR, 41rR; έπιτυγχάνω 40rP; bποπίπτω 23vB; no gr text 55vC E F G

octavus: n' 35rD, 43rO, 54rF octo, decem et: δεκαοκτώ 55rB<sup>1,2</sup> octuplus:  $\bar{\eta}$  (error in gr MS for  $\bar{\beta}$ ) 54vM; ὁχταπλάσιος 22rL 0 Q, 38rH

omnino: ὅλως 36vA; πάντη 34rD; πάνυ 34rC, 34vG; omnino difficultatem habere δυσποτολον εχειν

(! in gr MS A) 45rB

omnis:  $4\pi a\varsigma$   $36rE^{2,3}$ , 38rM,  $39vG^{1,2}$ . 40rJ<sup>1,2</sup>, 54rQ<sup>1,2</sup>, 54vL<sup>1,2</sup>; ὅλος 23vH  $J^1$ ;  $\pi \tilde{a} \leq 11vC$  D I Y, 12vH I  $o^{2,3}$  $P, 14vP^{1,2} Q, 17rE N O P Q, 20vH I$  $J^{1,2}$ , 21vD U, 22vI O, 23vA B  $C^{1,2}$   $F^{1,2}$  $IJ^{2}$ , 34rE F G K N, 34vM, 35vI  $M^{1-3}$ ,

 $36rE^{1,4}F^{1-3}$ , 41v0, 42vN, 45rK, 45vC, 53rB  $F^{1-3}$ , 56vL, et passim; σύμπας 12v0<sup>1</sup>: no ar text 55vC D: vide simul omnis

omologus: ὁμόλογος 45rS; 12rF\*var operor: manu operor χειρουργέω 38rK opinio: δόξα 53rB

oportet: δεί 11v0 P, 17rE, 18vN, 19rK T, 24rC G, 30vM, 31vM, 32rG, 34vD F G N. 36rW Y, 36vD H M U, 37rI, 37vC I T U, 38rM N, 39vX, 40vF,  $41r0^2 Q S T$ , 41vK, 42vC D H<sup>1,2</sup> T, 43rU, 43vF Q S,  $44rK^{1,2}$  L\*  $M^{1,2}$  46vJ U, 47rD F L, 51rV, 53rK O P, 54rL, et passim; χρή 37rQ, 38vH, 41rG 0<sup>1</sup>, 43vT, 44rJ; no gr equivalent 35rG

oportunitas: χρεία 11vX, 38vG, 45vB oportunus: χρείαν ἔχων 20vK; χρησιμείων 34rJ; χρήσιμος 35vH, 38rM, 38vR; oportunum δέον 36r0 R W, 40vF; oportune δεόντως 34vG oppositus: ἐναντίος 34vF; opposite άπεναντίου 25rS; ex opposito άπεναντίον 25rA T U, 35vI;

opus: σύγγραμμα 38vG; σύνταξις 34rE; (!) δπόθεσις 34rC

oraculum: χρησμός 38rJ

κατεναντίον 25rS

ordinate: τεταγμένως 20rV, 54rG; equedistanter ordinate παρατεταγμένως 54rG

ordinatio: ἐπίταγμα 23vS, 24rC

ordinatum: ἐπίταγμα 23vW

ordinatus: sub ordino

ordino: ἐπιτάττω 24rG, 37rK; τάσσω (τάττω) 11vG<sup>1,2</sup> I, 20rD I, 45vH, 50vR, 51rB, 51vJ, 54vG ordo: τάξις 18vH, 40rF, 53vF

organicus: ὀργανικός 38rK

organum: ὄργανον 38rM

orizon: δρίζων 20vV X Y<sup>1,2</sup>, 53rC<sup>1,2</sup>

 $D^{1,2} E M N$ 

orthogonaliter: ὀρθός 14νΑ
orthogonius: ὀρθογώνιος 11νΜ<sup>1,2</sup>
ostendo: δείκνυμι 11νF M O P, 12rB E
H, 12νJ, 13rF J K O<sup>1,2</sup> Q X, 13νΗ I L
K M N P R U X Z Θ, 14rC F K N<sup>1,2</sup> R
S<sup>1,2</sup>, 14νC, 17rV, 17νN O<sup>1,2</sup>, 18rB Q,
20νΥ, 21rK, 21νB C Q T<sup>1,2</sup>, 22νG<sup>1,2</sup>,
23rC, 24rJ, 24νU, 25rH, 25νV, 26rK,
36rJ, 42νΗ; ἐπιδείκνυμι 12νΜ;
ὁποδείκνυμι 40rA; no gr text 57νD
oxygonius: oxygonii coni sectio [=ellipse] ὁξυγωνίου κώνου τομά 45rN<sup>1,2</sup>
O, 45νC<sup>1,2</sup> D<sup>1,2</sup> E<sup>1,2</sup> F<sup>1,2</sup>, 46rL<sup>1,2</sup>
M<sup>1,2</sup> N, 47νO(2), et passim in De
conoydalibus; et cf. ellipsis

palam: δῆλον 11vF L 0<sup>1,2</sup>, 12rC E F, 17rM, 17vA Q, 18rK S, 20vQ, 21rA, 24vQ, 34rL, 34vW Z, 35rP T, 45vC, 55vJ, et passim

Pappus: Πάππος 37rI<sup>2</sup>, 37vC H, 39vN, in expositione elementorum 35rP-Q, in mechanicis introductionibus 37rI<sup>1</sup>

par: ἄρτιος 17rR X, 17vA L, 27rI, 34vW; parium angulorum ἀρτιογώνιος 28rS, 30vN, 31rC I; ἀρτιόγωνος 27vI, 29vJ, 30vD, 46rN; parium laterum ἀρτιόπλευρος 27rD J, 29vE Q, 34vV\* W Z, 35vI, 46rS; pariter par ἀρτιαχισάρτιος 34vW

parabola: παραβολή 20vE, 22vH, 37vJ

L M P Q R<sup>1-4</sup> S T, 40rS, 40vB C K L O
Q S U<sup>1,2</sup>, 41rB E H I K<sup>1,2</sup>, 41vB<sup>1,2</sup> C

E, 53vG H S V, 54rD G; (used only by
Eutocius, not by Archimedes, thus not
genuine in the title Quadratura parabole.) et cf. rectanguli coni sectio
parallelogrammum, paralellogrammum:
παραλληλόγραμμον 17vI<sup>1,2</sup> J<sup>1,2</sup> K<sup>1-3</sup>

M<sup>1-3</sup>, 22rJ, 25rA B<sup>1</sup>, 2 C<sup>1</sup>, 2 D<sup>1-3</sup> E, 36rS<sup>1</sup>, 2 U<sup>1</sup>, 2, 36vH, 42rJ, 53rW, 53vU V, et passim; parallelogrammus παραλληλόγραμμος 17vL; parallelogrammata (!) παραλληλόγραμμα 55rF parallelus: παράλληλος 18rL N Q<sup>1</sup>, 20rS, 20vL, 24vM, 38rP<sup>1</sup>, 2 paramales (! paramakes): παραμάχης 45rN

paramikea: παραμάχης 45rC pariter par: ἀρτιαχισάρτιος 34vW pars: μέρος 11vU, 12rP, 18rK, 21rX,  $21vN^{1-4}R^{1,2}$ ,  $23rD^{1,2}I$ ,  $34rHI^2O^{1,2}$ ,  $35vs^{1-3}$ , 36vF, 37rK, 38vH, 53rD E FW.  $55vA^{1,2}Q^{1,2}$  et passim ubique; μόριον 43rJ; no gr text 55vG; pars demersa τὸ δεδυχός 58rH<sup>1,2</sup>; ad eandem partem έπὶ τὰ ἀυτά 23vH M; ad easdem partes ἐπὶ τὰ αὐτά 34rI; ad utramque partem έφ' ἐκάτερα 42rM; ex altera parte ἐπὶ θάτερα 21vI, ἐπὶ τὰ ἔτερα 23vI; ex eadem parte έπὶ τὰ αὐτά 23vI J; ex parte έπὶ τὰ αὐτά 57vR; ex utraque parte έφ' ξκάτερα 37rA, παρ' ξκάτερα 37rD; et vide tertia pars, quarta pars, quinta pars, sexta pars particulari[us]: μερικώτερον 41rP pauci: post pauca μετ' ὁλίγον 39rV

K, 27rE
paulative: κατὰ μικρόν 40rT
pavimentum: ἔδαφος 38vK
pecco: ἀμαρτάνω 40rR; διαμαρτάνω
34rD, 38rH

paucior: ἐλάσσων 13rC, 15vH 0 T, 16rE

pello: θλίβω 55vA<sup>1-3</sup>

penes: κατά 12rA, 17vM, 24vE, 34vI, 35vR, 36vF<sup>1</sup>,<sup>2</sup>, 37rH, 37vL<sup>1</sup>, 38rD<sup>1</sup>,<sup>2</sup>, 45rD, et passim; παρά 18vA, 20rV, 20vL, 25rQ, 37vL<sup>2</sup> R<sup>1</sup>,<sup>2</sup>, 45vR, et passim; equidistanter penes παρά 11vN,

12rN; penes equedistanter παρά 17vJ penitus: πάντη 34vE; πάντως 35rF penso: λογίζομαι 34rC pentagonum: πεντάγωνον 19rA per: διά 11vJ L<sup>1,2</sup>, 20vF<sup>1,2</sup>, 34rI N, 34vL S, 37rF<sup>1</sup>, 39rC, 45rE, et passim; κατά 11vR T, 13rT, 37rJ, 38rJ; bπό 37rF<sup>2</sup>,3 per equam: δι' ἴσου 32rU, 39vA, 42rE Q, 42v0 Q S T, 43rE Q, 43vG, 54rX, 54vN X, 55rN per equale: δι' ἴσου 17rV, 18rA, 20rE GIN ® per se: αὐτόθεν 34vZ, 37rJ perambulo: διανύω 13rU; διαπορεύομαι 12rB, 13rT Y<sup>1,2</sup>, 13vA L<sup>1,2</sup>; πορεύομαι 12rA, 13vI<sup>1</sup>; no gr equivalent 13vI<sup>2</sup> percipio: αίσθάνομαι 11vD percurro: διατρέχω 38vJ perduco: διάγω 27rJ, 38v0 P Q R; notininto 14vL<sup>1,2</sup> perficio: ποιέω 38vE; συντελέω 38vB; perficit έπιτελεῖ (Moerbeke's false reading of έπὶ τέλει) 39rT [perforatio]: 38rN\*var periferia:  $\pi \in \text{propersion}$  11vS W<sup>1,2</sup>, 12rJ<sup>1,2</sup> K<sup>1,2</sup> M<sup>1-4</sup>, 22vJ K, 23vC P<sup>1,2</sup> Q R<sup>1,2</sup> Z, 34vC W<sup>1-3</sup>, 35rJ L M, et passim; no gr text 55vB periferialis: περιφερής 34rH perimeter: περίμετρος 12rJ, 22vI K<sup>1,2</sup>. 23rC H I,  $23vP O^{1-3}$  R, 24rR U, 35vB CD, 53rJ K L M<sup>1,2</sup>, et passim; perymeter permaneo: διαμένω 36vD, 38rH, 38vB permeo: διανίω 12rG permutatim: ἐναλλάξ 14rJ P, 18vE, 19rQ, 22vQ, 35rV, 35vP, 37vG, 39rU, 39vE, 53vV, et passim perpendicularis: κάθετος 26vE, 35rF, 37vR, 38rC, 38vR, 40vD M, 41rI, 41vC

 $P^{1,2}$ , 42rN, 43rH  $O^{1,2}$ , 44vD<sup>1,2</sup> J,  $46\text{ro}^{1,2}$  s, 46vY, 47rc I J K P Q  $\Theta$ ,  $47vD^{1,2}$  E F H<sup>1,2</sup>, 53vH, 55vA, 56rP, et passim perspicax: εὐεπίβολος 34rB pertingo: ἀφικνέομαι 13rX, 13vA pertraho: διάγω 12vD pertranseo: διανίω 11vR pervenio: ἔρχομαι 36vB pes: centum pedum εκατόμπεδος petitio: αἴτημα 34rJ K, 53rE peto: αίτέω 17rA, 34rL Petrus: Πέτρος 53rB philosophia: φιλοσοφία 34rC philosophus: φιλόσοφος 34rD pixidula: πινακίσκος 38vA B F pixis: πίναξ 38vD planum: ἐπίπεδον 11vG<sup>1,2</sup> I J<sup>1,2</sup>, 17rA, 18rK, 20vY, 23vH J<sup>1-3</sup> L<sup>1,2</sup> N<sup>1,2</sup>, 24vL,  $34rF G^{1-3} K P. 34vH J M. 35rE^{1-3}, 45rD$  $E^{1-5}$ , 53rC, et passim ubique; no gr text 20vD planus: ἐπίπεδος 11vE F, 17rC, 23vN<sup>1,2</sup>, 53rC F<sup>2</sup>, et passim: σαφής 34rF, 34vH. 39vR, 43rN, 53rF<sup>1</sup>, 53vT; plane σαφῶς 34rB J, 36rB N O, 39vO, 41rR, 53rK Plato: Πλάτων 36vC, 38rJ, 53rB C plurimus: πλεῖστος 11vA, 20vG, 31rL; πλείων 11vC; πολύς 41rS plus: πλείων (πλέων) 11vB, 12rE, 34vJ, 37rD, 38vF<sup>1,2</sup>, 40rE, 43vK, 44vC; no gr text llvA; plurium laterum πολυπλευρότερος 54rC Pocrates: vide [Hip]pocrates poligonium, polygonium: πολύγωνον 12rJ, 22rK S, 22vC, 23rC D H,  $23vP^{1-3}$   $Q^{1-4}$  $R W^{1,2} Y$ , 34 $vV W^{1,2} Z$ , 35rL X, 35vA<sup>1-4</sup>, et passim; poligonium 96 (an error for Θςγωνον) 23rC I polus: πόλος 38vL M S pondus: equalis molis et equalis pon-

deris sum ἰσοβαρέω (?) 55vJ pono: κεῖμαι 12rN, 12vI, 13rE, 17rN 0 R T, 17vB, 22rQ,  $22vE^1$ , 23rB,  $37vJ^{1,2}$ , 39rV, 40rE, 50vW, 51rE, 53rF, 55v0, et passim; τίθημι 12vA E H<sup>1,2</sup>, 13rC<sup>1,2</sup>, 17vC<sup>1,2</sup> D P, 22rO, 22vE<sup>2</sup>, 34vV, 35rI, 37rE, 40rI, 42vM, 48rY, 48vA, 56vL, et passim; ponenti συνθέντι 55rI porro: δέ 14rB, 16vA portio: τμήμα (τμάμα)  $18 v G H^{1-3} I^1 J$  $K^{1-3}$   $0^{1-4}$   $P^{1,3,4}$ ,  $20vG^{2,3}$   $H^{1,2}$ , 22vJ, 23vA B  $C^{1,2}$ , 24vE F, 35rM $^{1,2}$ , 36rE F, 39rK $^{1,2}$ , 45rE $^{1,2}$  F $^{1-5}$ , et passim; τομά 20vG<sup>1</sup> L M<sup>1,2</sup> N; no gr equivalent 18vP<sup>2</sup>: no ar text 18vI<sup>2</sup> positio: θέσις 13rT, 32rC, 36vF G I O, 37rL, 37vI L, 38rB, 39vD, 40vB C  $D^{1-4}$ , 41vT U, 42rD<sup>1-3</sup>, et passim; no gr equivalent 38rc<sup>1,2</sup> possibilis: δυνατός 11vF Y, 12rI K, 17vJ T, 20vF I, 22vJ K, 23vO S<sup>1,2</sup> V, 34rN,  $34\text{vE}^{1,2}$  M V, 35vI,  $46\text{rN}^{1,2}$ , 55vK, et passim possibilitas: secundum possibilitatem κατά τὸ δυνατόν 54rN possum: δύναμαι 18vA, 23vF G, 26rQ<sup>1,2</sup>, 27vB c<sup>1,2</sup>, 28rP, 35rG<sup>1,2</sup>, 35vC, 36rB C, 37vR<sup>1,2</sup>, 38vH I, 46rH<sup>1,2</sup>, 58vA, et passim; δυνατός 34rJ; potest ἔνεστιν 35vI; secundum posse κατὰ δύναμιν 34rB, 41rS; κατά τὸ δυνατόν 40rT, 41rR; et vide non possum post: μετά 11vD I, 20vG, 34rJ 0, 38rJ, 45vB, et passim postea: ὕστερον 45rA posterior (adj.): υστερον (adv.) 11vU, 45vJ, 55vU; posterius ὕστερον 13vY, 22rS, 22vC, 23vB, 45rB, 45vI postquam: no gr equivalent 11vB potentia: δύναμις 38vH; potentia [i.e. squared] δυνάμει 11vP, 15vE F, 16rB

C,  $20\text{rV W}^{1-3}$ ,  $20\text{vN P}^{1,2}$ , 22rG, 22vQ,  $25vJ^{1-3}$ ,  $26rB^{1,2}$  G, 28vN,  $33vQ^{1,2,3*}$ . 35rR S U<sup>1,2</sup>, 44rX, 46vG, 49rH N. 49vB<sup>1,2</sup>, 50rK, 50vH potestas: ¿ξουσία 34rF poteusa: ποτεοῦσα 45rl K M<sup>1,2</sup> N<sup>1,2</sup>.  $50rB^{1,2}$  C K  $Y^{1,2}$ . 50vBpreaccipio: (!) καταλείπω 40rQ; προλαμβάνω 43vP Q S, 53vW; in preaccepto fundamento έν τῷ προλαβόντι λήμματι 53vS (et cf. 54rI) precedo: ἡγέομαι 20rΦ, 22rQ, 39vQ S; προηγέομαι 13rV, 13vG 0  $Q^{1,2}$  V Θ. 14rV, 14vK M, 15rG; precedens no gr text 59vS; precedenti τῷ πρὸ τούτου 57v0; in precedenti ἐν τῷ πρὸ τούτου 21vS, 26rM, 39vE; ἐπὶ τοῦ πρὸ αὐτοῦ 58vI; 35rF\*var preconor: προχειρίζομαι 20vE predemonstro: προαποδείκνυμι 26vR; προδείχνυμι 27rB, 27vK, 29rT, 30rO, 32rE, 34vL, 38vS, 42vE, 43rT, 53vL, et passim predico: προλέγω 34rE, 36rX, 37rG, 40rP, 41rR, 53vF predictus: είρημένος 24rE<sup>1</sup> S, 41vR; προειρημένος 11vQ, 15rJ, 20vJ<sup>1,2</sup> 24rE<sup>2</sup>, 25vA, 27rP, 29rT, 34rR, 34vC M, 40rB, 41rJ, 53vT, et passim preexisto: προυπάρχω 23vD F preiaceo: πρόκειμαι 11vX, 36rW; προτίθημι 36rX; no gr text 59rP premanifesto: προσφηνίζω 39vS premitto: πρόκειμαι 24rK, 28rS<sup>1,2</sup>. 34rQ; προλέγω 41v0; προτίθημι 22rS, 24rO, 34vC, 36rP U premo:  $\theta\lambda$ 1 $\beta\omega$  55vB  $H^3$ ,  $^4$   $O^1$ ,  $^2$  Q  $V^1$ ,  $^2$  W,  $56rA^{1,2}C^{1-3}$ : no gr text  $55vH^{1,2}$ : vi premo βιάζω 56rF preostendo: προδείκνυμι 17rL prepono: προκατασκευάζω 37rG;

προτίθημι 11νΥ, 14νΙ J<sup>1,2</sup> M 0, 19rF G, 20νΙ, 22rK<sup>1,2</sup>, 23ν0, 48νD F I J K p<sup>1,2</sup>, et passim prescribo: προγράφω 20νΚ, 30rL, 30νB J, 37rH, 45νB, 49rA, 59rW; no gr text 59rF K

preter: παρά 34rC G; χωρίς 13rQ, 24rR, 50rP<sup>1,2</sup>, 50vM<sup>1,2</sup>, 51rF, et passim

pretermitto: παραλείπω 40rQ
preterquam: πλήν 38rK
primus: α΄ 18rW, 36rN<sup>3</sup>, 36rY; πρῶτος
11νΕ U, 12rG, 13rT U<sup>1-4</sup>, 20νΗ Κ S,
23νΒ, 31νΕ, 32rΕ, 34rF K, 35rF, 35νG,
36rM N<sup>1,2</sup>, 38rI, 45νΙ, et passim;
primo πρότερον 25rR; septuagesimus
primus ξβδομηκοστόμονος 22νΡ
principalis: αρχηκη (! error in gr MS
for ἀρχικά) 20rV
principium: ἀρχή (ἀρχά) 11νC, 13rT

principium: ἀρχή (ἀρχά) 11vC, 13rT v<sup>1,2</sup> W, 13vC<sup>1,2</sup>, 34rF, 39vO, 41rH M R, 44vE, 53rQ

prior: πρότερος 52rI; πρότερον 20vB I V, 21rI, 39vE, 42vL, 45rB, 47rU, 47vS, 52vO, 56rC; prioribus ἔμπροσθεν 25vA; *et vide* prius

prisma:  $\pi \rho i \sigma \mu \alpha$  20vJ, 23vE, 25vG I<sup>1-3</sup> N 0<sup>1,2</sup>, 35rV W<sup>1,2</sup>, et passim

prius: πρότερον 11vB, 20vF<sup>1-3</sup>, 22vB, 23vA, 36rW, 38vM P, 41rO Q, 45rA B, 58rS, et passim; et vide prior, mitto: prius mitto, sumo: prius sumo

privatio: στέρησις 53rB

privo: στερέω 38vG

pro: δπέρ 11vA, 23vG; pro se ξαυτούς 38vA

problema: πρόβλημα 11vD  $E^{1,2}$  K Q, 32rA O, 32vH, 33rI, 36rR W Y, 36vA, 38rH, 38vG, 40rO $^{1,2}$  R T, 40vG O, 41rH J L  $M^{1,2}$  N O  $P^{1-3}$  Q S, 41vT U, 45rX, 45vA

problematizo: προβάλλω 11vM Q, 45rB<sup>1,2</sup>
F L S, 49rA

probo: διαπειράζω 36vT; δοχιμάζω 11vE, 23vG

procedo: πορεύομαι 48rN; προβαίνω 36rY; πρόειμι 39rU; προέρχομαι 37rI, 42vN

produco: ἄγω 14rI, 15vV, 17vV, 18rD

E F, 20v0 R S U X, 21vG, 24rE, 24vS,
25rV, 27rI, 29vL, 30rD M, 34rI, 35rE

J L, 37rF, 37vM, 39vB, 40vM P, 42vY,
43rL, 45rE, et passim; γίγνομαι
14vJ, 15rA; διάγω 24vD, 37vD<sup>1,2</sup>,
40rU, 50vF; κατάγω 20rV, 23vX, 34vV,
40vB, 53vQ; ποτιβάλλω 14rD P;
ποτιπίπτω 13vJ K Q; προάγω 11vC;
προσεκβάλλω 36vS; no gr equivalent
13rK<sup>1-3</sup>

profero: ἐκφέρω 11vD²; προφέρω 11vD¹
progredior: πορεύομαι 21vP; simul
progredior συμπορεύομαι 38vL
prohemium: προοίμιον 36vA, 53rK
proiectivus: see lapidum proiectivus
proiicio: no gr text 56rN
prolixius: μακρότερον 41vU
promissus (n): ἐπάγγελμα 40rQ
promitto: ἐπαγγέλλω 40rP Q S, 41rR
promptius: εθθετώτερον 36vT
propinquus: ἐγγός 18vT X, 19rA E,
41rK, 43rX, 44vB, 54rB, et passim;
ἔγγιστα 18vG, 22vO; propinquissime
ἔγγιστα [= asymptotes] 45rG H¹,² I,
50vI

propono: παρίστημι 39v0; πρόχειμαι 16rN, 20vV<sup>2</sup>, 24rA, 35rF G<sup>1</sup> M, 35vR, 36vG R, 37rE J, 38vR, 39rM, 40rA U, 45vB; προτείνω 41vR; προτίθημι 13rK, 17vO, 18rK W, 20vV<sup>1</sup>, 28vD, 35rG<sup>2</sup>, 36rR, 37rI, 39vS, 47vX

proportio: ἀναλογία 36vB, 55rT; λόγος  $11vG^{1,2}$  I J K<sup>1,2</sup> P.  $18rH^{1-4}$  I J V. 18vB, 19rE<sup>1,2</sup>, 20vI<sup>1,2</sup> o Q<sup>1,2</sup> R<sup>1,2</sup> T.  $22vM N^{1,2} P^{1,2} Q^{1,2}, 23rA^{1-3}, 23vS$  $v^{1-3}$  V W,  $34v0^{1,2}$   $p^{1-3}$   $q^{1-3}$ , 35vL S  $y^{1,2}$ , 37rH I, 38v0<sup>1,2</sup>, 45rG, 58vQ<sup>1</sup>, et passim; no gr text 58vQ2; eiusdem proportionis ὁμόλογος 20vR; arismetica proportio άριθμητική άναλογία 35vQ; continua proportio συνεχής άναλογία 19rT, 36vA C, 37vC, 38rI O, 38vC; media proportio μέσος λόγος 25vD E V, 26rO, 35vY<sup>1,2</sup>; proportio turbata τεταραγμένη άναλογία 20rD I,  $42v0^{1,2}$ , 54rX, 54vG N W-Xproportionalis: ἀνάλογον (adv.) 17vH X, 18rA, 20rA, 20vP, 25vL, 29rF, 35vU, 36rG, 36vL, et passim; δμόλογος 12rF, 18rM, 36rF; no gr text 19vB; media proportionalis μέση 38rR: μέση ἀνάλογον 25vW, 26rL P, 29vB, 35vQ, 36rY, 36vC D H M<sup>1,2</sup>, 37rC, 38vF, 39vB, 41vA, 43rH, 47vF, et passim proportionaliter: ἀνάλογον 19rT U. 20r@, 38rF M N, 39vI, 52vB, 53rT; media proportionaliter μέση ἀνάλογον 24rH, 25vK, 29vB propositio: πρότασις 31rL, 36rY, 53vC proprie: κυρίως 39rL; magis proprie κυριώτερον 39vQ propter: διά 12rD, 17rJ, 17vE N, 18rB C, 22rK, 34rB  $C^{1,2}$ , 34v $Q^{1,2}$ , 35rA $^{1,2}$ K, 35vG, 37rH, 38vS,  $43r\Pi$ ,  $45rF^{1,2}$  L S U, 48vC, 52vB, 53rI, et passim;

διὰ τό 43vN; propter quod διό 34rH, 34vF; propter quod quidem διόπερ 45rB propterea quod: διὰ τό 12vF N<sup>1,2</sup>, 34vD S, 35vH X, 40vT, 42rJ, 44vD, 50rU; διότι 14rD, 15vE, 29rN, 46rR, 47vG O, 48rD K, 51rL, 54rP

protraho: ἄγω 36vQ, 42rD, 45rJ, 46vV, 47rL; ἀνάγω 41vB<sup>2</sup>; βαίνω 34vW; διάγω 12rM, 16rD, 27rD, 38rP, 38vL, 39rB, 46vK; ἐκβάλλω 32rA; έπιζεύγνυμι 34νΧ; ἔρχομαι 40νΜ R, 41rA Ε; κατάγω 37vL  $R^{1-3}$  S, 40vK Q, 41rI, 41vB<sup>1</sup>, 42rI M, 42vJ; ποτιπίπτω 13vH; no gr text 51vGvar provenio:  $\gamma$ íγνομαι  $12vJ^{1,2}$ ,  $13rF^{1,2}$ . provoco: προάγω 34rB Ptolemeus: Πτολεμαΐος 38rG [rex], 53rB<sup>1,2</sup> [astronomus] punctum: σημεῖον (σαμεῖον) 11vR, 12vE,  $13vC^{1-3}$  D  $E^{1-3}$ , et passim; no gr equivalent 12rX, 20v0 puta: otov 26vE, 36vD, 38rM, 41vP; no gr equivalent 34rL; ut puta olov 53rD, οξον άς 35rN puto: νομίζω 40rQ, 53rB C; οἴομαι 41rS; δπολαμβάνω 23vG pyramis:  $\pi \nu \rho \alpha \mu i \varsigma = 20 v J^{1,2}, 23 v E^{1,2}$ 24rQ R S<sup>1,2</sup> T<sup>1,2</sup>, W<sup>1,2</sup>, 26rE, 35rF Y, 35vC D,  $55vM^2$  N<sup>1,2</sup> P, et passim; πυραμοειδής 55νΜ [pyriis], de: περὶ πυρίων 37rA, 40rQ,

quadraginta quinque: τεσσεράκοντα πέντε 55rA B

[quadratum]: no gr text 44rB
quadratura: τετραγωνισμός 20νΕ, 22νΗ
quadrilatus (!): τετράπλευρον 21νS<sup>1,2</sup>
quadro: τετραγωνίζω 20νG Η
quadruplus: δ 54νA Β; τετραπλάσιος
11νF T, 12νN, 16rN, 19rQ<sup>1</sup> U, 22rB<sup>1,2</sup>
R, 22νD<sup>2,3</sup> N, 23νΒ, 27νΙ J N<sup>1,2</sup>, 28rF, 38rH, 39rO P, 42νΚ, 52rO, 53νΜ<sup>1,2</sup>, 54rH<sup>1,2</sup> I<sup>1,3</sup> J<sup>1</sup>, et passim;
τετραπλασίων 19rQ<sup>2,3</sup> R, 22rT<sup>1,2</sup>, 22νD<sup>1</sup>, 53rT, 54rI<sup>2</sup> J<sup>2</sup>; no gr text

 $19vD^{1,2}E^{1-4}E^{1-3}G$ 

qualis: olog 11vL, 14vP, 22rH, 31rB, 34rN, 36vG O, 45rX, 48vD, 53vL, 56vA, et passim

qualiscunque: ὁποιοσοῦν 12rN, 13rW, 13v⊕, 14vG, 46rB, et passim; ono los τις 35rG

qualiter: ὅπως 35rP; πῶς 25vK, 39vP, 53vF; &ς 20vK, 42vH

qualitercunque: ὁπωσοῦν 11v0, 34rG, 45rG, 46rD, 49vO; ὅπως ποτέ 40rI; no ar text 57rL

quam: ~ 15vG<sup>2</sup> M<sup>2</sup>, 21rG<sup>1-3</sup> J<sup>1</sup>, 22vP<sup>1-4</sup>. 23vS. 34rC. 45vH. 54rA<sup>2</sup>, et passim; περ 23vU<sup>3-5</sup>, 54rA<sup>1</sup> B<sup>1</sup> S T; no gr text11vA; no gr equivalent (i.e. to translate ar genitive of comparison) 15vG1  $M^{1}$  U,  $21rG^{4}$  J<sup>2</sup>,  $23vU^{1,2}$ , 34rK L, 53rO, 54rA B ; quam ad ava 34vM; et vide

quam plures: no gr text 11vA quam quidem:  $\eta \pi \epsilon \rho$  25vO, 29rM P  $q^{1,2}$ , 34v0<sup>1,2</sup> 0<sup>1,2</sup> R<sup>1-3</sup> S<sup>1,2</sup>, 35rW<sup>1,2</sup> X, 36rK, 53rT, et passim

quamvis: no gr equivalent 34rJ quando: ἐπειδάν 23vK<sup>1,2</sup> M, 39rL; οπόταν 56vL, 57rE, 57vS; όταν 30rK, 34r0, 39vP, 42rB, 42v0, 54rD, 56vK, 57rA, 57vK R, 58rQ S, 58vJ; no gr text 57rP, 57vB

quandoque: ένίοτε 34vH; ὅτε 58vK<sup>1,2</sup>; ποτέ 58vK<sup>3</sup> L<sup>1,2</sup>

quantitas:  $\pi\eta\lambda\iota\kappa\delta\tau\eta\varsigma$   $39vP^{1,2}Q^{1,2}R$  $S^{1,2}$  T U W<sup>1-3</sup>, 40rA<sup>1,2</sup> B C<sup>1,2</sup>, et

quantus:  $\delta \lambda i \times 0$  56rB D H<sup>1,2</sup> (?) I<sup>1</sup> I<sup>2</sup> J<sup>2</sup>; 8005 12rD<sup>1,2</sup> H<sup>1,2</sup>, 40rI, (?)56rE F  $J^1 O^1 (?)O^2$  P;  $\pi\delta \infty \circ 38rM$ ; quanto or in quanto ἀλίκφ 49rD L Y, 50rF S, 50vF 0 T, 51rS U, 51vB R, 52rI J; quanto...tanto &ow...43rW or

δω...τοσούτω 12rC-D, 44vC, 54rC quare: ἄστε 12rE, 12vA<sup>1,2</sup>, 13vD Z. 17rF, 20vQ, 22vQ, 34rM, 34vI, 47rD, 53rI<sup>1,2</sup>, et passim

quartus: τέταρτος 11vG T, 16rN 0, 23vZ, 40rc<sup>1-3</sup>, 43rc<sup>1-3</sup> D, 44rJ, 44vI<sup>1,2</sup>, 55rJ, M; δ' 40rD, 53vT; quarta pars τεταρτημόριον  $34vW^{1,2}$ ; τέταρτον μέρος 22rU, 42vK

quater: τετράκις 23rB, 27vM<sup>1,2</sup>, 54rW quaternarius: τετράς 27rL, 27vB I, 28rJ, 28vI, 29rK

quaternitas: τετράς 35vH<sup>1,2</sup> I quatuor: τέσσαρες 27vM<sup>1,2</sup>, 35vT, 41vD, 43rC, 43vC, 44rB I, 44vH, 53vN, et passim; \$ 57vL N S, 58rQ, 58vK N; no gr text 57vC E

quatuordecim: ιδ 22vM

-que: και 34rC; τε 13rV, 13vP, 15vK,

que ex centro [=radius]: ἡ ἐκ τοῦ  $χέντρου 22vI, 23vC, 41vM^{1-4}, N^{1,2} P,$ 44rL X, et passim

quemadmodum: καθά 40rI

querelo: διαμέμφομαι 38rJ

quero: ζητέω 33rT, 36vW, 38rH I J<sup>1</sup>,<sup>2</sup>, 40rR, 41rJ

qui, que, quod: 5 13rX<sup>2,3,5,8</sup> 34rH  $K^{1,2} L^{2-5}$ ,  $45rC^{1}$ ,  $53rB^{1} E$ ,  $55vJ^{2}$ , et passim; 85 11vE4, 12rQ3,4, 13rX1,7 21rg<sup>1,3</sup> J<sup>1</sup>, 22vP<sup>5,7</sup>, 23vG, 34rD E I,  $34vc^{1}$ ,  $40rc^{2}$ ,  $45rA^{1,2}$  B  $c^{2}$  D,  $53rB^{2}$  $c^{1,2}$ , et passim; ŏorıç  $34rF^{1}$ ,  $38vL^{2}$ 39rL<sup>2</sup>, 40rc<sup>1</sup>; (!) ὄσπερ 21vT; ποῖος  $11vE^{1,3}$ ;  $\pi6\infty$   $11vB^{1}$ ;  $\tau$   $(11vE^{2})$ 34rF<sup>3</sup>, 38rH, 53rK; no gr equivalent 34rL1; hic qui & 34vC, 51rF, 51vH, et passim; is qui  $\circ$  11vB F<sup>1,2</sup>, 12rQ<sup>1,2</sup>, 34rA<sup>1,2</sup> B<sup>1,2</sup> F O, 39rL, 46rP, 53rQ, 58rA, et passim; quo [=quanto] άλίκω 16rD J; quo no gr equivalent

49rG; quod utique ὅπερ 34vH; ὅπερ ลับ 36**v**V qui quidem: ὄσπερ 12rA, 20vG, 21vO. 22vK L, 23rD I, 24rA K, 25rT, 25vJ M 0<sup>2</sup>, 30vQ, 35rQ U W X, 35vG I, 36vB R, 40rA, 41rN, 44vK\*, 53rM, et passim; propter quod quidem διόπερ 45rB quia: διὰ τό 11vB, 35rG, 35vF, 40vD. 55vP, et passim; διότι 12r0, 20vJ; δτι 12rE, 24rK, 34rK, 35rT, 43vI, 55vQ quicunque: ὁποιοσοῦν 12rM, 15rC, 15vS. 16vJ, 23vI, 27rD, 34rI, 45vI K, 47rZ; όποτεροσοῦν  $48vc^{1,2} J^{1,2}$ ; ὅς κα [=δς αν] 55vR, 56rB;  $δσος 31r0^{1,2}$ ; όστισοῦν 12rB E, 47vW; τυχών 11vC, 34rE H L, 34vH, 36vE, 37rF, 40vU, 42vI quidam:  $\tau \iota \varsigma$  11vB D Q, 14rC,  $20vE^{1,2}$ .  $23vI^{1-3}$ ,  $34rFI^{1,2}$  J K,  $34vF^{1,2}$ , 35rLM, 36vD, 38vJ, 45vI J P, 53rK, 53vF. 55vM, 56rF, et passim; no gr equivalent 38vH; no gr text  $55vF^{1,2}$  G quidem: μέν 11vA C D I K, 13rW<sup>1,2</sup>,  $20vE^{1,2}F^{1-3}$ ,  $23vI^{1,2}$ , 34rD H I L,  $45\text{rB}^{1-3}$  C,  $55\text{vL}^{1-3}$ , et passim ubique; quidem...autem...vero...et μὲν...δὲ... δε...δε 34vL; vide quam quidem, qui quidem quilibet: ἕκαστος 12vH, 13rC F G, 15rL, et passim quincuplus: πενταπλάσιος 12vP S.  $20rE^{1,2} \Omega^{1,2}$ , 20vA;  $\tilde{\epsilon}$  54vA  $C^{1,2}$  D; no gr text  $19vG^{1-3}H^{1,2}$ ; 19rTvarquindecim: δεκαπέντε 54rm<sup>1,2</sup>; τε 57vL N R, 58rQ, 58vK N; no gr text 57vC E. 58vQ quinque: πέντε 20rF<sup>1,2</sup> 0 P<sup>1,2</sup>, 53vQ, 54rm<sup>1,2</sup>, 54vD<sup>1-4</sup>, 58vR<sup>1,3</sup>, et passim;  $\bar{\epsilon}$  58vQ<sup>1,2</sup> R<sup>2</sup>; no gr text 19vH<sup>1,2</sup> I

 $R^{1-4}$ 

55rA

quintus: πέμπτος 11vG T, 16rN 0, 20r0,  $42vQ^{1}$ ,  $54vU^{1-3}W^{1,2}$ ,  $55rP^{1}$ , et passim:  $\varepsilon'$  42vQ<sup>2</sup>, 43rB, 53vU V;  $\bar{\varepsilon}$  53rO; no gr text 19vN 0<sup>1,2</sup> P Q<sup>1,2</sup> R; quinta [pars] πεμπταμόριον 20rQ; quinta pars πεμπτημόριον  $55rP^{1,2}Q$ quis: τῆνος 23vG; τις 34rC, 38rH, 38vJ, 41rJ; propter quid δια τί 45rF<sup>1,2</sup> L S U quod (conj.): St. 11vF<sup>1</sup> J K M, 17rH J, 20vH I Q, 21vQ T U, 22vJ, 23vA B  $C^{1,2}$  $E^{1,2}$ , 34rG  $L^{1,2}$ , 53rE, et passim ubique; &s 11vF<sup>2</sup>, 34vE, 51vN quomodo: ὅπως 41r0<sup>1</sup>; ὡς 20vK, 34rC, 38vC D, 39rC, 42vE, 43rL, 48rV; no gr equivalent 41r0<sup>2</sup>; quo...modo τίνα... τρόπον 38rH; [quomodocunque] καὶ πῶς (?) 55vI\* quoniam: εἴπερ 43rU; ἐπεί 12rC D<sup>2</sup>  $S^{1,2}U^2X$ ,  $17rT^{1,2}U^2$ , 18rN,  $19rAR^{1,3}$ , 32rI<sup>2</sup>, 34vH I, 53rH, et passim ubique; έπειδή 12rD<sup>1</sup> U<sup>1</sup>, 34rG, 42vH, 55vJ, 57vQ, *et passim*; ἐπειδήπερ 18vW<sup>2</sup>, 19rS, 53rZ; no gr text 18vW¹; quoniam enim ἐπείπερ 23vY; quoniam itaque ἐπειδή 25vH; ἐπειδήπερ 18rM<sup>1,2</sup> Τ; quoniam quidem ἐπειδήπερ 17rU, 19rR; έπείπερ 32rI, 49rC quotcunque: ὁπόσος κα 17rQ; ὁποσοῦν 12rI, 12vH I, 13rC W, 16rO, 21rV, 45vG HOR, et passim; 8000 38rL quotiens: (!) ἰσάκις 17rV; δσάκις 12rc<sup>1,2</sup> K quotienscunque: ὁσακισοῦν 13rS quotuplus: ὁσαπλάσιος 23vT; ὁσαπλασίων 17rV quotus: ὄσος 13vN quousque: ἄχρις ἄν 36vS

quinque et decuplum: πεντεχαιδεχαπλάσιον ratio: λόγος 12rF, 17vB C D F G, 19rE, 24rM, 40rI Q, et passim; eiusdem

rationis ομόλογος 17vS ratiocinationem facio: διανοούμαι 34rC ratiocinativus: λογιστικός rationaliter: εὐλόγως 44rJ recisio: άνατομή 38vI J K reclino: no gr text 59rL M [recognosco]: 44vP\*var rectangulus: ὁρθογώνιος 22vI, 36vI. 39rH, 39vB, 43rO, 44vD J, 45rc<sup>1,2</sup> p<sup>3,4</sup> F<sup>1,2</sup> K, et passim; rectanguli coni sectio (or portio) [=parabola] όρθογωνίου κώνου τομά (τομή) 18νΑ F H J O, 20vG H L M N O, 23vB, 40rS [definitur], 45rD<sup>1,2</sup>, 46rE F, 53vD F, 54rK, 57rG, et passim; et cf. parabola rectilineus: εὐθύγραμμος 18vH I J<sup>1,2</sup>  $K^{1-3} N P^{1,2}$ , 20vG, 22vJ  $K^{1,2} L$  $25rJ^{1,2}$ ,  $25vG^{1,2}H^{1,2}IJ^{1,2}$ , 35rRS, 36rF,  $46rQ^{1-3}R^{1,2}$ , 53vE,  $54rB^{1,2}$ , et rectus: ὁρθός 11vP, 20vY, 23rB<sup>1,2</sup> C  $E^{1,2}$ ,  $34vW^{1,2}$   $Y^{1,2}$ ,  $35rE^{1}$ ,  $38rD^{1,2}$ , 41vA<sup>1</sup>, 45rF, 46vI<sup>2</sup> J<sup>1,2</sup>, 47rM<sup>1,3</sup>, 56rQ<sup>1,2</sup>, 56vB<sup>2</sup> K L<sup>1,2</sup> M<sup>1,2</sup>, 57rG<sup>1,2</sup>, et passim; recta [linea] εὐθεῖα  $11vR^{1-4} s^{1-3} v^{1,2} w^{1-3}$ ,  $12rI s^{1,2}$ , 17vI L<sup>1,2</sup>, 20vG H 0<sup>1-3</sup>, 21rU Y, 21vF, 23rC, 23vA C H L<sup>1,2</sup> X, 34rF G H<sup>1,2</sup>. 34vW, 45rH I, 46vI<sup>1,3</sup>, 56vB E<sup>1,2</sup>, et passim; no gr text 55vE F G rectus angulus: ὀρθή 22vI, 35vL, et passim; όρθη γωνία 20vW, 21rD I 0. et passim; ad rectos ποτ' ὁρθάς (or πρὸς ὀρθάς) 11vJ L N, 12rR, 34vL, 48r0; ad rectos angulos  $\pi o \tau$   $\dot{o} \rho \theta \dot{\alpha} \varsigma$ (or πρὸς ὁρθάς) 11vS, 14rA B M N,  $15rA^{1-4}$ , 20vX, 21rU, 21vF, 23vX<sup>1,2</sup>, 24rD, 29rL, 30vM, 32vC, 34vK<sup>1,2</sup>, 35rE F, 41vA, 45rP, et passim recuso: παραιτέω 36vA redeo: έπανάγω 39vS; έπαναφέρω 38vE

refero: ἀναφέρω 56rF 0; φέρω (?) 56rI; sursum [re]fero ἀναφέρω 56rEvar, vide fero, sursum regalis: βασιλεικός (! βασιλικός) 38rG regula: κανόνιον 36vV, 37rJ L<sup>1,2</sup>; κανών 36vD  $F^{1-3}$  N  $S^{1,2}$   $T^1$ , 37rE  $R^{1,2}$ , 38vH I<sup>1-3</sup> J<sup>1-3</sup> K<sup>1-3</sup> L<sup>1,2</sup> M<sup>1,2</sup> S; (!) καρκίνος [=compass] 36vT<sup>2</sup> regulariter: ὁμαλῶς 38vB relativus: 57vLvar relinquo: ἀπολείπω 24rM; καταλείπω 17vK, 18rE, 25rH<sup>1,2</sup>, 48vF<sup>1,2</sup>; λείπω 23vY<sup>1,2</sup>, 24rK, 35rL; περιλείπω 21vT<sup>1,2</sup>, 25vA, 53vT, 54vI reliquus: ἐπίλοιπος 33vK; καταλειπόμενος 14vJ, 15rA F, 18vF<sup>1,2</sup>; λειπόμενος  $18vQ^1$ ; λοιπός  $12vBG^{1,2}$ P S, 13rA, 17vR V, 18rA R S. 18vR<sup>2</sup>. 22rV<sup>1,2</sup>, 22vK, 24vG K Q, 25rE, 28rO, 30vU, 34vN, 35rD  $K^{1,2}$ , 45rA B, 45vG, 53rS, 55vP<sup>1,2</sup>, 56rI, et passim; περιλειπόμενος  $18vQ^2 R^3 S^{1,2} T. 22rQ$ ; no gr equivalent 18vR<sup>1</sup>; reliqua τὰ **ξξής** 36rA rememoratio, rememoracio: δπόμνημα 34rA, 44vP, 53rA, 55rV rememoro: bπομιμνήσκω 39vP remotior: ἀπώτερος 41rK, 43rX, 44vC repo: ρέπω 17rC G<sup>2,5</sup> I<sup>2,3,5</sup>, 53rD<sup>2</sup> M W; et vide equaliter repo, equerepens, equerepo repono: ἀνατίθημι 34rD; ἀποτίθημι 34v0 reptio: ῥοπή 53rB 0<sup>2</sup>; vide equalis reptio requiro: πυνθάνομαι 38rG res: πρᾶγμα 40rS rescribo: ἀναγράφω 25vQ, 26rA reseco: resecatum διαλημμα (Moerbeke's false reading of διὰ λῆμμα) 23vU residuus: ἐπίλοιπος 44rK;

καταλειπόμενος 18rH, 22vC; λειπόμενος  $22rK^2L^1$ ; λοιπός 17rF,  $18rI J^2$ , 25rG M, 26rS, 27rD,  $53rP^{1,2}$ ; περιλειπόμενος  $18rJ^{1,3}$ ,  $22rK^1L^2$ 24rK; residuum ἀπόλειμμα 24rP<sup>1,2</sup>. 24**v**S resolutio: ἀνάλυσις 32r0 S, 33rA, 36rY<sup>1,2</sup>, 40r0, 40vG P R<sup>1,2</sup>, 41r0, 42vN. 43rG resolvo: ἀναλίω 32rP, 40rP T, 41rL 0, restituo: ἀποχαθίστημι 11vQ R S T, 13rS, 30rG, 45rD H N O, 56rQ, 56vL M, 57rA G, 57vS, 58rK; no gr text 57rP Q resto: restans λοιπός 39rT; restat λοιπόν έστι 48νΗ S resumo: ἐπαναλαμβάνω 41rP retraho: ἀνέλκω 56rN revolutio: ἔλιξ 11vP, 13rT<sup>1,2</sup>, 13vE<sup>1-3</sup>  $F^{1-3}$   $C^{1,2}$ revolvo: ἀνακλίνω 57vJ (cf. var.), 57vM; κλίνω 58r0 rex: βασιλεύς 38rG rideo: γελάω 38rG (and see the Commentary, 38rG) rombus: Þó $\mu\beta$ o $\varsigma$  23vK, 26vH<sup>1,2</sup> I J K<sup>1,2</sup> M<sup>1,2</sup>, 34rI, et passim rope: ροπή 53rB<sup>1,2</sup>; De ropis [Ptolemei] 53rB; centrum ropes κέντρον ροπής  $53rc^{1,2}$ rotundus: στρογγύλος 38vJ rursum: πάλιν 12rI, 19rA C, 20vT, 24rA B, 34rL R, 34vA, 35v0, 56vC, et passim

sagitta: artes sagittarum τὰ
Βελοποιικά 36vG
salvo: ἀποσώζω 40rS; σώζω 36r0 R
scema: σχήμα 18vG
scientificus: ἐπιστημονικός 34rC
scilicet: τε 12rJ, 12vP, 24vP, 31vA,

45rN, 51vN 0 P, 52vC<sup>1,2</sup>, 55rM, et passim; δ 12rQ, 21vA, 24vG Q<sup>1,2</sup> U, 33vA<sup>1,2</sup>, 34rK L, 35vS, 53vH, et passim ubique scindo: τέμνω 13vD S scio: ἐπίσταμαι 11vC; οἶδα 34rG, 36vR, 39rK, 41rQ scolium: σχόλιον 55rH scribo: ἀναγράφω 23vG; ἀπογράφω 41rR<sup>1</sup>; γράφω 11vA B<sup>1,2</sup> Q, 20vF<sup>1-3</sup> J, 23vA H, 25vO, 31rL<sup>1,2</sup>, 36vA, 37vH T, 38rK, 41rR<sup>2</sup>, 45rA, et passim scriptura: γραφή 36vA<sup>1,2</sup>; γράμμα 34rD

se: vide sui
seco: ἀποτέμνω 36vI<sup>1,2</sup>, 48vE<sup>1,2</sup> L,
 49rB<sup>2</sup> 50rY<sup>2,3</sup>; τέμνω 12rP U, 13vE W,
 14rJ P V, 17vH, 18vG K, 20vO R Y<sup>1,2</sup>,
 21rK<sup>1,2</sup>, 23vK X, 36vJ<sup>1,2</sup> N U, 49rB<sup>1</sup>,
 50rY<sup>1</sup>, 55vB<sup>1</sup>, et passim; no gr text
 55vB<sup>2,3</sup>; seco in tria equa τέμνω
 τρίχα 35vR; seco in duo equa
 διχοτομέω 53vW<sup>1,2</sup>, 55rC; δίχα τέμνω
 18vG, 20vS Y, 22vJ K, 24vE H, 34vH-I
 K<sup>1-3</sup>, 55rD, et passim; δίχα 23rE;
 seco in duo τέμνω δίχα 17rK, 17vN,
 24rD, 54rG

sectio: τμῆμα (τμᾶμα) 17νΗ<sup>1</sup>, 18νΒ

F<sup>1,3-6</sup> G<sup>1-3</sup>, et passim; τομή (τομά)
17νΗ<sup>2</sup>, 20νL<sup>1,2</sup> N R<sup>2</sup>, 26rP, 26νU, 32rQ,
32νP, 34νW, 35rE, 38rC, 44νC, 45rE,
55νΒ I, et passim; equa sectio
διχοτομία 53rZ<sup>1,2</sup>; equalis sectio
διχοτομία 36νS; in duo equa sectio
διχοτομία 17νΑ, 35rH, 42νΥ, 43rW X,
44νΒ C; vide ambligonii coni sectio
[=hyperbola], oxygonii coni sectio
[=ellipse], rectanguli coni sectio
[=parabola]

sector: τομεύς 22vL, 23vK, 24rB<sup>1,2</sup> c<sup>1,2</sup> J<sup>1,2</sup> K<sup>1-3</sup> L<sup>1,2</sup>, 34rI, 36rL<sup>1,2</sup>

39rK, et passim; τομεύς (! gr MS A τόμος Heib. sive ed.) 20rx, 20vc<sup>1,2</sup>  $D^{1,2}$  55rU  $V^{1}$ ; (!)  $\tau \acute{o}\mu o \varsigma$  20rP  $Q^{1-3}$ R S, 20vB,  $(?)55rV^2$ secundum: xatá 17vH<sup>1,2</sup> I, 20rH, 20vL<sup>1,2</sup>, 25rR, 34rB F N, 38rB<sup>1,2</sup> 45rJ, 53rL O, 55vA, et passim ubique secundus: δεύτερος 19rU V, 31rP, 37rJ, 53rL,  $53vC^2$  V;  $\beta'$  18vA, 31rL, 33vV, 34vM, 53rM,  $53vC^1$ , et passim [securiclatus]: 36vE\*var, 38vH\*var J\*var secus: παρά 18vD, 45rF, 46rF, 50vX, 51ve kmntuv<sup>1,2</sup> w<sup>2</sup> secuscado: παραπίπτω 46rH secusiectum: παράβλημα 45vU secuspono: παράκειμαι 36vN sed: d\\\\\alpha 17rB<sup>1</sup>,<sup>2</sup> C, 23rC, 30rJ, 34rg<sup>1,2</sup>, 53r0, et passim; δέ 40rE Q; vero sed δὲ...δὲ 17rD; δὲ...καί 53rF; sed et si καν...δὲ 34vC sedulus: ἀκριβής 34rB semel: anag 54rW, 54vS semicirculus: †μικύκλιον 27rP, 29vQ, 30rF, 30vD, 36vN, 37rJ N, 37vD,  $38rA^{1-3}$  B, 46vR, 53rL, et passim semicylindrium (!): ἡμικύλινδρος 38rK semicylindrus: ἡμικυλίνδριον 38rA<sup>1,2</sup> semis (?): 23rCvar semper: ἀεί (αίεί) 11vA, 17vJ,  $22rK^{1,2}$ , 23vY, 36vE,  $38vK^{1-3}$ , 40rI, 48vF, 55vB, et passim; πάντως 38vM, 41rI, 53r0, 53vH, 54rB sensum: ἔννοια 40rT sensus: atothous 34rJ sententia: γνώμη 34rD seorsum: χωρίς 35rD S, 35vA, 39rN V, 42vQ, 43rΦ separo: χωρίζω 11vD I J K sepe: πολλάκις 45rB

septem: ἐπτά 53vP; ζ 15vB

September: no gr text 33vV septimus: ἕβδομος 11vI, 23rD¹; ζ΄ 22v0, 43rJ, 54rD; no gr text 58rF; septima pars ἔβδομον 22vN; ἔβδομον μέρος 22vP, 23rD<sup>1,2</sup> I septuagesimus primus: ἑβδομηκοστόμονος 22vP; [septuagesimunus]: oa' 23rI\* sepulcrum: τάφος 38rG<sup>1,2</sup> H sequor: ἀκολουθέω 34vP, 35rG, 36vT, 40rB, 53rB, et passim; ἔπομαι 12v0 P S, 13rV, 13vR, 22rQ, 22vD, 39vQ S, 51vF, et passim; (1) πενταπλασία (?) 20rΦ sermo: λόγος 39v0, 40rE servo: τηρέω 34rE, 36vT sex:  $\xi\xi$  54rM<sup>1,2</sup>; no gr text 58vQ sexcies [=sexies]: ἐξάκις 54rW sexcuplus, sextuplus: ἐξαπλάσιος 12vN, 19vA, 20rC, 29rT, 39vX, 54rM, 54vX<sup>3</sup>;  $\frac{1}{5}$  40rA, 54rW X, 54vC P<sup>1,2</sup> Q X<sup>1,2</sup>, 55rS; no gr text 19vF L Q<sup>1,2</sup>; 19rTvar sexdecim:  $\delta \epsilon \times \alpha \epsilon \xi = 53 \text{vP}^{1-3}$ sextus: ἔκτος 11vH, 53vR; ς' 35rC, 43rD G, 53vI, 54rB; (1)  $\frac{1}{5}$  54vB (cf. sexcuplus); sexta pars ἔκτον μέρος 11vu, 16rN; ς' 16rQ, ς' μέρος 16r0 P si: αν 21rQ, 23vJ, 34vG<sup>2</sup>; ἐάν 23vI, 43rU, 58vV;  $\epsilon i$  11vB, 22vJ, 34rC  $D^{1-3}$ F, 53rm<sup>1,2</sup>; εζ κα 11vK, 17rD, 20vL M N. 45rC D F<sup>1,2</sup> 55vB. et passim: είπερ 17rF; ἐπήν 58vU; ήν 21rK; no gr equivalent 34vG1; et si xãv 20vL, 34rG M; etsi εί καί 12rP; sed et si καν...δὲ 34vC si quidem: no gr text 18vD sic: οὖν 36νΕ; οὕτως (raro οὕτω) 12rU, 13rV, 13vR, 21rP, 31rT, 34vF P, et passim; ὧδε 16rP siccus: ξηρός 38rM sicut: καθά 39vS; καθάπερ 38rP,

57νΜ; καθώς 24rH; ὡς 11νX, 32rL<sup>1,2</sup> Q<sup>1,2</sup>, 36vF, 40rG, 43rT (false reading for  $\tilde{\omega}_{\sigma l}$ ), 53rL; no gr equivalent 18rK signum: σαμεῖον (σημεῖον) [=point] 11vL N R<sup>1-3</sup> T V<sup>1,2</sup>, 17rL N 0<sup>1,2</sup>, 21rB J, 22vK, 23vI<sup>1,2</sup> J<sup>1,2</sup>, 27r0<sup>1,2</sup>, 28rB<sup>1</sup>,<sup>2</sup>, 34rH I, 45rD E, 53rD, 55vB<sup>1</sup>, et passim; σημεΐον [=sign] 44rY; no ar equivalent (e.g. signum G τὸ Γ) 20vT, 23v $\odot$ , 28rB $^3$ ; no gr text 55vB $^2$ ; et of. punctum sillogizo: συλλογίζομαι 35rN similis: ὅμοιος (ὁμοῖος) 11vH, 12rR,  $13rB^{1,2}$  Q R, 17rC D,  $17vK^{1,2}$  O  $R^{1,2}$ , 22vL, 23v⊕, 24rE I J M, 34vS Z, 45rK<sup>1,2</sup> L, et passim similiter: ὁμοίως 12rE H, 12vL N Q, 17rc D X, 17vB R<sup>1,2</sup> S, 20vJ, 23vI N R, 24rD J, 34rL M, 53rD, 55vI, et passim; utique similiter αν όμοίως (false reading of ανομοίως) 51vD similitudo: ὁμοιότης 38rF L, 39rJ, 41vW, 42rE, 43rE, 53rI simpliciter:  $\dot{\alpha}\pi\lambda\tilde{\omega}\varsigma$  32r0, 34rG<sup>1,2</sup>, 40rN, 41rM simul: aµa 11vQ, 13rS, 34rC, 38rB, 38vG simul ambo: συναμφότερος 15vB I K P S, 16rQ R, 19rD Q V, 31vA, 45rU W<sup>1</sup>, <sup>2</sup>,et passim; no gr text  $19vC^{1-3}$ simul duo: σύνδυο 43vG, 55rM simul omnis: σύμπας 22rP U<sup>1,2</sup> V, 22vD G, 45vU, 51vN simul progredior: συμπορεύομυι 38vL simul trado: συνεκδίδωμι 45rB simul uterque: συναμφότερος 13rJ, 16v0 P<sup>1,2</sup> Q R<sup>1,2</sup> T, 23vQ, 39vE F, et passim ubique; simuluterque 22vQ, 35rC<sup>1-4</sup>, 35vF, 41vQ S, 45rL M T, et passim sine: χωρίς 13rG, 16rF<sup>1,2</sup> K L, 46rB.

56rD<sup>1,2</sup>, et passim; ανευ 20vJ. 45vQ T V sine defectu: ἀνελλειπής 38vG sine inclinatione: ἀκλινής 58vI singulus: ἕκαστος 38vA, 58vL; καθ' εν εκαστον 11vD; unumquodque singulis έκαστον ξκάσταις 17ν0 situs (noun): θέσις 34vF; situs (participle) κείμενος 20rQ, 34vF sive: εἴτε 17rI<sup>1,2</sup>, 32vN<sup>1,2</sup>, 37rR<sup>1,2</sup>, 50vR, 55rD<sup>1,2</sup> Socraticus: Σωχρατικός 34rC solidus: στερεός 23vK<sup>1</sup>,<sup>2</sup> L, 31rE<sup>1</sup>,<sup>2</sup> H<sup>1,2</sup>, 34rI<sup>1,2</sup>, 35rH, 36rK L<sup>1,2</sup>, 48vF<sup>1,2</sup>, 55vJ, et passim; solidum τὸ στερέον 20rQ R S T X Y  $z^{1,2}$   $\Theta$  $\Pi^{1-3}$ , 23vE 0, 38rH<sup>1,2</sup>, 40vE<sup>1,2</sup>, et solus: μόνος 13vB C, 14v0, 45rQ, 48rB E I K,  $54rR^{1-3}$ , et passim; solum μόνον 34rH O, 34vD J, 36vS, 37rQ solvo: λύω 20vZ, 21rL Q sortio: τυγχάνω 34rD spatium:  $\chi \omega \rho$  (ov 11vE F R T U<sup>1-3</sup>, 18vB<sup>1,2</sup> C, 20vG<sup>1,2</sup> I X<sup>1,2</sup> Z, 21rA<sup>2,3</sup>,  $24rK^{1,2}L^{1,2}$ , 35rD, 53vD, et passim ubique; no gr equivalent (e.g. spatium G τὸ Γ) 18vQ, 19rH<sup>1</sup>,<sup>2</sup>, 21rA<sup>1</sup>; no gr text 19vRvar(?) species: εἴδος 11vL, 13rB<sup>1-4</sup> 0<sup>1,2</sup>  $R^{1,2}$ , 25vL M, 37vL, 42vK X, 45vP R, 50rI L O, 50vK, 51vG<sup>1,2</sup> M W speculabilis difficulter: δυσθεώρητος 34rB speculatio: θεωρία 34rC speculo: θεωρέω 20vF, 23vA E<sup>1,2</sup> [speculum comburens]: πυρίον 37rA spera:  $\phi \alpha \tilde{i} \rho \alpha = 11 \text{vE}^{1,2} \text{ F}^{1-5} \text{ G}^{1-4}$ , 20vI, 23vB C<sup>1,2</sup>, 27rL, 27vI<sup>1,2</sup>, 36rG H, 55vB, et passim; [Liber] de spera et c(h)ylindro 23vA, 34rA<sup>1,2</sup>, 36rM N,

41v0 U, 44vP, 53rK, 53vD U, 55rH spericus: σφαιριχός 32v0, 39rL M<sup>1,2</sup> Q: sperica Theodosii Θεοδοσίου Σφαιρικά 53rQ speroydalis: σφαιροειδής 45rA C N<sup>1</sup>,<sup>2</sup>  $0^{1-3}$ , 47rY, 52vO, et passim in De conoudalibus spissitudo: πάχος 38rM spondeo: ἐπαγγέλλω 36vA sponsio: ἐπάγγελμα 40rP Sporus: Σπόρος 37vC statuo: ἐπιτάττω 38vF; καθίστημι 20νΖ, 56νΒ; παρίστημι 39νΝ; τάσσω (τάττω) 12rP T W, 12vC statutum: ἐπίταγμα 23vV stilus: γραφείον 38vK sto:  $4vi\sigma t \eta \mu \iota 46vH^{1,2} I^2 T^{1,2}$ , 47rE, 49rU; ίστημι 38rD; καθίστημι 57vL; no gr text 57vC; erecta stans άνεστάκουσα 46vI studeo: ἀναστρέφω 23vD G studiosius: σπουδαιότερον 40rS studium: οπουδή 34rC D, 36rN suadeo: πείθω 38vA sub: δπό 13vW, 23rH, 23vY<sup>1-5</sup> Θ<sup>1-5</sup>, 30rQ,  $30\text{vF}^1$ ,  $34\text{vX}^{1-3}$ ,  $55\text{vV}^{1,2}$ , et passim;  $12vA^{1-4}var E^{1-3}var$ ; bποκάτω 55vU, 56rK; no gr equivalent 30vF<sup>2</sup> subemiolius:  $b\phi\eta\mu\iota\delta\lambda\iota\circ\varsigma$   $40rD^{1,2}$ subepitritus: ὁπεπίτριτος 40rB subiaceo: κείμαι 23vT, 25vE; bπόκειμαι 34rR subilcio: δπόκειμαι 23vW, 53rG submemoratio: ὁπόμνημα 36rM N subpono: δπόκειμαι 23vQ, 26vL, 39rF,

40vS, 44vG; δποτίθημι 45rN; no gr

text 19v0; et vide suppono subscribo: bπογράφω 38rN, 38vC

subsistentia: bπόστασις 40rR

subtendo: bποτείνω 27rD E F, 27vB,

30rK, 34vW, et passim subterfugio: ὀκνέω 34rC subtilissimus: λεπτότατος 38vA subtus: ὁποκάτω 38rP sufficiens: ἴκανός 11vC sufficio: ἀρκέω 20vK, 34r0 sui, sibi, se: αὐτοῦ etc. 21vA<sup>1</sup> B<sup>1</sup>, 34rJ K, 35vH I, 41rB, 46rT, 51rB<sup>1,2</sup> 51vJ, 53vE; sui ipsius etc. ξαυτοῦ etc. 21vM, 34vM, 35rN, 39vP, 43rJ, 53rD; sibi invicem άλλήλοις 39rH; de se αυτόθεν 34rD; ex se αυτόθεν 34v0; per se ἀυτόθεν 34vZ, 37rJ, pro se ξαυτούς 38vA; et vide habet sum:  $\gamma$ íγνομαι 11vE $^3$ , 30vA $^1$ ; είμί  $11vE^{1,2}E^{1,2}$   $F^{1,2}$   $17rE^{1,2}E^{1,3}$   $20vE^{2,4}$  $L^{1-4}$ ,  $23vB^{1,3,4}$ ,  $30vA^{3}$ ,  $34rF^{2-4}$   $H^{2,3}$  $N^{1-4}$   $Q^{1,3-5}$ , 35rJ, 41vT<sup>1-3</sup>, 45rB<sup>2</sup> C<sup>2</sup> R, 52vO, 53rB C D  $E^{1-3}$ , et passim ubique; no gr equivalent  $17rF^2$ ,  $34rN^5$  $Q^2$ ,  $45rB^1$   $C^1$ , et passim; est  $\xi \in C_1$ sumo: λαμβάνω 11vX, 20vG, 23vL, 29vF, 34rJ M O, 34vC, 36rY, 37rD Q, 46rF, 52rE G, 53vH, 55vN; (!) λείπω 24vH; no gr text 55vF<sup>1,2</sup>; prius sumo προλαμβάνω 43vJ sumptio: λήμμα 24v0, 31vG, 35vB, 40rQ, 43vC P; λήψις 38rK sumptum: λῆμμα 29rM; no gr text 57vG super: ἀπό (?) 58vP; είς 39vQ; ἐπί 12rP, 16vJ, 17vC<sup>1,2</sup> E<sup>1,2</sup>, 21rN, 27rJ,  $33vE^{1-4*,5,6}F^{1-3}$ , 35rD E F,  $41rF^{1-4}$ ,  $48vA^{1-4}$ ,  $53rI^{1-3}$ ; no gr equivalent (gr dat.) 57vN super invicem: ἐπ' ἀλλάλας 48vA superadiectum: δπέρβλημα 50rI V superadiicio: ἐπισυντίθημι 23vT, 34vM

superaugeo: ἐπαύξω 38rL

superficies:  $\xi \pi \iota \varphi \acute{a} v \varepsilon \iota a$  11vE F<sup>1,2</sup> G H<sup>1,2</sup>, 23vB C I J<sup>1,2</sup> K<sup>1,2</sup>, 34rI, 34vM<sup>1,2</sup>, 55vB<sup>1</sup>, et passim; no gr text 55vB<sup>2,3</sup>

supergredior: bπερέχω 38vI supergressio: bπεροχή 38vK superiaceo: επιβάλλω 40rP superiectum: παράβλημα 50rP<sup>1,2</sup>, 50vM; bπέρβλημα 45vP Q<sup>1,2</sup> R, 50rJ U, 51vG M

superior (adj.): ἄνω (adv.) 58vI; ἄνωθεν (adv.) 36vE, 38vI; no gr text 57rT, 59rP, 59vP; in superioribus έν τοῖς ἄνω 31rG; έν τοῖς ἀνωτέρω 54vE; έν τοῖς ἐπάνω 13r0, 33rQ superius: ἄνω 42vO; ἀνωτέρω 34rG 0, 39vS, 40rF, 41rI, 43rP, 43rZ, 44rJ, 44vB, 53rN, 54rA, 55rS; ad superius ές τὸ ἄνω 56rE I; ές τὸ ἐπάνω 56rF superlatus: ἐπιπλατύς 45rC 0, 47vU superparticularis: ἐπιμόριος 34vN¹, 39vQ; multiplex superparticularis πολλαπλασιεπιμόριος 34vN

superpartiens: ἐπιμερής 34vN<sup>1</sup>, 39vQ; multiplex superpartiens πολλαπλασι – επιμερής 34vN

supervenio: γίγνομαι 45rB; ἐπεξέρχομαι 53vC; ἐπιγίγνομαι 11vD
supleo (1): (no gr text) 41vMvar,
52vNvar, 56rDvar

suppono: ἀποτίθημι 42vL; κεῖμαι 23vT; bπόκειμαι 12rC, 13vE, 17rE, 17vI, 20vX, 21rJ, 22vI, 23vP, 31vN, 34vE, 36rO, 45rC, 46vR, 53rH M O, 55vA, et passim; bποτίθημι 38rH, 45rG

suppositio: bπόθεσις 39vK, 54vR supra: ἄνω 56rI<sup>2</sup>; ἀνωτέρω 41rQ; ἐπάνω 38rP; bπεράνω 55vA; desuper supra bπέρ (?) 56rI supremus: ἀνώτατος (false reading of

ἀνάθημα) 38vB C
sursum: ἄνω 20vW, 56rN 0<sup>2</sup> P<sup>1</sup>,
56vE<sup>1,2</sup>, 57rD E, 58rK; εἰς τὸ ἄνω
56r0<sup>1</sup>; no gr text 57r0, 57vB I; et
vide duco, fero, refero
susceptivus: δεκτικός 38rM
suspendo: ἀπαρτάω 53rD<sup>2</sup>; ἀρτάω
53rC<sup>1,2</sup> D<sup>1,3</sup> M N; κρεμάννυμι
20vW<sup>1,2</sup> X Z<sup>1-3</sup>, 21rA B<sup>1,2</sup> C<sup>1,2</sup>, et
passim in De quadratura parabole
suspensio: ἄρτησις 53rE
suus: ἴδιος 26vF K L
symptoma: σύμπτωμα 47v0
Syracusanus: Συρακόσιος (?) 56vF;
no gr equivalent 22vIvar

[tabellula]: πινακίσκος 38νΑ\*var

Β\*var F\*var; πίναξ 38νD\*var

tactus: ἀφή (ἀφά) 12νC, 28rK, 35rK,

45rQ

talis: τηλικοῦτος 30vQ, 31rG K; τοιόσδε 34rK; τοιοῦτος 11vL, 23vI J M N O, 32rP, 34rN, 35rR, 36vR, 37rI, 39rL M, 40rO, 41rP, 46vW, 53vD E M N<sup>1</sup> O P<sup>1-3</sup>, 55vA J, 56vL, et passim; no gr equivalent 53vN<sup>2</sup>, 54rF; no gr text 55vD

tamen: μέντοι 36vV, 40rR<sup>1,2</sup>
tango: ἀπολαμβάνω (?) 58vP; ἄπτω
28rN, 30rH, 37vP Q<sup>1,2</sup>, 40vC D, 42rI
K<sup>1,2</sup>, 45rD I J O Q, 48rB J, 56rQ<sup>1,2</sup>,
56vL, 57vL<sup>1,2</sup> M<sup>1,2</sup> Q S, 58vK<sup>1,2</sup> S V
W, 59rA<sup>1,2</sup> B<sup>1,2</sup> T W, 59vD I K N<sup>1,2</sup> O;
έφάπτομαι 40vU; θιγγάνω (?) 59vH;
no gr text 57vJ, 59rG<sup>1,3</sup> M<sup>1,2</sup> O X<sup>1,2</sup>,
59vT

tamquam: δς 20vE, 34rC, 36vB, 38vG, 53rO; tanquam confitentes ἀποθωμο-λογηκότες (?) 11vD

tantus:  $\tau\eta\lambda$ ικοῦτος ( $\tau\alpha\lambda$ ικοῦτος) 28rE,  $56rB^2$  D  $G^2$  H  $J^2$ , 58rP;  $\tau$ 0 $\sigma$ 0 $\tau$ 0 $\varsigma$ 

12rD, 36vF V,  $56rB^{1}$  E F  $G^{1}$   $I^{2}$   $J^{1}$  N o<sup>1,2</sup> P; no gr text 56r1<sup>1</sup>; quanto... tanto δοφ 43rW or δοφ...τοσούτφ 12rC-D, 44vC, 54rC; usque in tantum μέχρι τοσούτου 36vS

Tarentinus: Ταραντΐνος 38rJ

templum: ναός 38rL

tempto: πειράζω 37rL; πειράομαι 34rE

tempus:  $\chi \rho \delta v \circ \varsigma = 11 \text{vB C}^{1,2}$ ,  $12 \text{rA B}^{1-3}$  $C^{1-5}$ , 38rI J, et passim

tendo: νεύω 21r0, 21vA

ter: τρίς 33rH, 54rW

terminus:  $\delta \rho o \varsigma$  39v0 Q S,  $40 \text{rE}^{1,2}$  F, 43rX, 43vC J, 44rI; πέρας 11vQ R S, 12rP V, 13rS  $T^{1,2}$ , 13vJ N U Z  $\Theta$ , 14rA L S T, 14vF G, 15rD, 15vU<sup>1,2</sup>, 16vJ K, 17vF, 19rD E, 25rD<sup>1,2</sup> I N  $s^{1,2}$  T, 36vI, 38rA, 38vI, 39vK terra:  $\gamma \tilde{\eta} (\gamma \tilde{a})$  55vI<sup>1,2</sup> J L<sup>1,2</sup> M S T, 56vB C; no gr text 55vD E<sup>1,2</sup>

tertius: γ' 35rQ, 39vB, 53vR; τρίτος 11vG T, 19rU<sup>1,2</sup> V, 22vP, 23rE<sup>1,2</sup> F. 25vL, 34v0, 37rJ Q, 53rQ, et passim; tertius decimus (y' 35rP, 53rY; vicesimus tertius κγ΄ 35vH; tertia pars τριτημόριον (τριταμόριον) 11vW X, 13r1<sup>2</sup>, 51v0<sup>2</sup> P<sup>1,2</sup> X; τρίτον  $22rT^2$ , 23rB; τρίτον μέρος 11vR, 13rD G H<sup>1,2</sup> I<sup>1</sup>, 15rJ, 18rT, 19rR<sup>1-3</sup> 20vJ<sup>1,2</sup> X, 21rC<sup>1,2</sup>, 21vE L, 22rT<sup>1</sup>, 23vE F, 36rU, 40vG, 45vQ, 49rX, 51vC  $0^{1}$ , 53rZ, 54rK

tetragonalis: τετράγωνος 45vP R, 50rI N O, 50vK L, 51vG<sup>1,2</sup> M W tetragonum: τετράγωνον 11vL<sup>1,2</sup>, 12vH<sup>1,2</sup> I J K<sup>1-4</sup>, 20rT<sup>1,2</sup> X Y Z<sup>1,2</sup> 22vJ K  $M^{1,2}$  O, 26rM, 36rS  $T^{1,2}$  U V, 43rA,  $45vA^{1,2}W^{1-3}$ ,  $46rBC^2G^{1,2}$ , 57rF<sup>1,2</sup>, et passim; no gr equivalent 46rC<sup>1</sup>

textus: pntov 35vA, 39rH, 39vB, 40rG S, 41rL, 55rT

Theodosius: Θεοδόσιος 53rQ

Theon: Θέων 39vN

theorema: θεώρημα 11vA<sup>2</sup> B M, 20vF J, 23vB, 31rL 0<sup>1,2</sup> P, 34rB E, 34vM, 35rN Q, 35vB G V,  $36\text{rN}^{1-3}$ , 39rH T U, 40rR T, 40vC L R S U, 41vD, 45rA B  $X^{1,2}$ , 45vB, 53vD E F T, 54rN: no ar equivalent (e.g. είς τὸ γ' in tertium theorema) 34vV, 35rC, 39vB; no gr text 11vA<sup>1</sup>, 57rU, 58rF, 59vS

theoria: θεωρία 31r0

theorizo: θεωρέω 20vF

Timeus: Tímacos 53rB C

tomos: τόμος 45vF<sup>1,2</sup>, 47rU<sup>1,2</sup>, 48vK 0  $P^{1,2}$   $R^{1,2}$  S.  $49rV^{1,2}$  W  $X^{1,2}$   $Y^{1,2}$  $49vA^{1-4}C^{1-4}D^{1,2}E$ , 50vD  $EG^{1-5}H$   $J^{1-6}K^{1-3}L^{1-4}NO^{1,2}$ , 51rQ S T  $U^{1,2}$ , 52rF H I J K, 55rC D

tot: τοσούτος 12rK, 28rE

totiens: ἰσάκις 12vQ; τοσαυτάκις 12rc<sup>1</sup>,<sup>2</sup> D, 13vN

totuplus: τοσαυταπλάσιος 23vT; τοσαυταπλασίων 17rV

totus:  $\delta \lambda \circ \varsigma = 13 \text{ vK L}^{1-3} \text{ M}^{1,2} \text{ N}^{1,2}$ , 17vF<sup>1,2</sup>, 19rA<sup>1,2</sup> D, 20vD, 26vN V, 27rR, 28rP, 29vC<sup>1,2</sup>, 34rO P, 34vF L Q, 35rP, 46rQ<sup>1,2</sup> R, 46vS, 49rC F, 53vJ, 54rK, 55rV, 55vR, et passim; πας 54rA

tractatus: πραγματεία 53rC; no gr equivalent 31rL

tracto artificiose: φιλοτεχνέω 38vB traditio: ἔκδοσις 34rA, 36rM, 44vP trado: ἐκδίδωμι 11vB E X, 23vG<sup>1</sup>, 45vW, 51rF; μεταδίδωμι  $23vG^2$ ; παραδίδωμι 24rK; simul trado συνεκδίδωμι 45rB traduco: μετάγω 24rM, 37rL

tragodicus: τραγωδοποιός 38rG

traho: ἕλκω 56rQ

transeo: ἔρχομαι 41rI, 53vA; ήκω 36vI P, 41rA E, 41vB, 42rI J; πορεύομαι 18r0, 45rR transfero: μεταφέρω 36vF transfiguro: μετασχηματίζω 38rL transigo: μεταλλάττω 11vC translatio: no gr text 16vT, 22vH, 33vV, 44vP, 52vO, 55rW, 60rA trapezale: τραπέζιον 18rQ R  $s^{1,2}$   $v^{2}$ . 21rI L<sup>1-4</sup> M, 24vP, 25rS, 46rP<sup>1-3</sup>, et passim; trapezalis [figura] τραπέζιον 18rU V<sup>⊥</sup>, et passim trecesimus: \(\lambda'\) 35vL tres:  $\overline{\gamma}$  16rQ; τρεῖς 11vI, 13rF, 17rm N, 19vA, 25vL, 34rC, 37vJ, 38rO, 53vM P<sup>1,2</sup>, et passim; no gr text  $19vN o^{1,2}$ tria equa, in: τρίχα 35vR triangulus: τρίγωνον 12rR; no gr equivalent 21rI triginta: τριάκοντα 55rA<sup>1,2</sup> trigonum:  $\tau \rho i \gamma \omega v \circ v = 13 vD$ ,  $17 vP^{1-3} R^{1-4}$  $s^{1-4}$ , 20vH  $w^{1,2}$   $y^{1,2}$   $z^{1,2}$ , 21rA<sup>2-4</sup>  $H^{1,2}$ ,  $22vI^{1,2}$   $J^{1-3}$   $K^{1,2}$ , 23vB, 24rR $s^{1-4}$ , 35rB E, 46rD E  $J^{1-5}$ , 51rL(!), 53rD G H<sup>1-4</sup>, et passim; no gr equivalent (i.e. τὸ ΒΔΓ trigonum BDG) 21rA 1 triplus: τριπλάσιος 11vL T, 12vI N O S, 19rR<sup>1</sup> S<sup>1,2</sup> T<sup>1,2</sup>, 21rA<sup>1-3</sup> D, 21vE, 23rD<sup>1,2</sup>, 36rV<sup>1,2</sup>, 45rM N, 45vS, 53vO, et passim;  $trindaciw 15rn^{1,2}$ ,  $19rR^2$ , 22v0<sup>1,2</sup>, 23rD<sup>3</sup> I<sup>1-4</sup>, 28vH R<sup>1,2</sup>, 35vS U<sup>1,2</sup>, 36rL<sup>1,2</sup>, 45vA, 47rU, et passim; τριπλούς 53vN, 54rJ M tu: ơ 23vA G, 31rM O, 34rD<sup>1,2</sup>, 38rN, 38vC; τύ 11vB E P, 45rA, 45vB tum: γε 38rG tunc: τότε 42rB turbatus: τεταραγμένος 20rD G I, 32rU, 42vo<sup>1,2</sup>, 50rH, 54rX, 54vG N W; (!) τεταγμένος 51vD; no gr text 19vG

tuus: σός 34rC; δμέτερος 34rD

ubi: καθ' ἄ 14vL, 21vH 0; οὖ 54rF ubicunque: ὅπου ἄν 20rU ultimus: ἔσχατος 11vS, 22vE; τελευταΐος 20rΘ, 39rT; ultimum πέρας 11vW, 12rT<sup>1,2</sup>, 13vF<sup>1,2</sup> G, 15rD F, 15vU V<sup>1</sup>,<sup>2</sup>, 23vH J<sup>1</sup>,<sup>2</sup> L<sup>1</sup>,<sup>2</sup> M  $N^{1-5}$  R, 24vF Q, 25rA O P, 27rQ $^{1-3}$ ,  $28rN^{1,2}$  O.  $34rF K^{1,2}$  O  $P^{1,2}$ , 46rH K. 46vH. et passim unde: ὅθεν 11vQ R T, 13rS, 40rP S, 45rD H N O undecim: La 22vM undecimus: at (! ta?) 53rQ; ta 53rX undique: πανταχοῦ 38rG unitas:  $\mu o v \acute{a} \varsigma 39 v R^{1-5} s^{1,2}$ , 40rC, 53v0 universaliter: καθόλου 31vM, 38rL, 40rT, 41rL O P, 43rC R X, 53vB unus:  $\bar{a}$  40rC, 58vR<sup>1,3</sup>;  $\epsilon \tilde{i} \zeta$  11vR V X, 12rK<sup>1,2</sup>, 13rC, 17vR V, 22vN, 24rR, 25vR, 26rC H, 26vD, 34rG Q R, 34vI,  $36rE^{1,2}$  T, 40rD E F\*, 45rQ, 45vO  $Q^{1,2}$ 50r0, 51rC, 51vK L, 53rT, 53vL, 54rB, 57vL, 58vR<sup>2</sup>, et passim; no gr text 57vC D J, 58vR<sup>4</sup> unusquisque: ἔκαστος 12rD J, 12vQ, 14vM N, 15rG, 16rK, 17rW X, 20vJ,  $35vC^{1-3}$ , 36vC, 38rH,  $45vG^{1,2}$   $P^{1,2}$  R s<sup>1-4</sup> u, 53rI<sup>1,2</sup>, 55vA, 58vP, et passim; unumquodque singulis Exactov ξκάσταις 17ν0 usque: ἄχρι 34vX; *pro* ἔστε *et* μέχρι vide usque ad usque ad: ἔστε ποτί 48vG; ἔως 25rQ; μέχρι 46rF, 56vL, 57rA F<sup>1,2</sup>, 57vK L  $0^{1,2}$  R S T, 58rA Q R S T, 58vK N<sup>1</sup> S T<sup>1,2</sup>, 59rC D; μέχρι ἐπί 11vP; no gr text 57r1<sup>1,2</sup> K P Q T, 57vA C E<sup>1,2</sup> I; et vide ad usque in: μέχρι 36vS usus: χρεία 38rK; χρῆσις 36vT ut: α 58rS; εως κα 22vE; ίνα 24rG,

36vB, 38rR<sup>4</sup>, 41rL, 53vA, et passim;  $\delta \pi \omega \varsigma$  11vD;  $\delta \varsigma$  34rB D  $G^2$  R, 34vF<sup>1,2</sup>  $g N^1 P^{2,3}$ , 35rQ S, 36vG, 38rR<sup>1-3</sup>, 46vP<sup>1,2</sup>, 53rG H<sup>1,2</sup>, 56rK, 58rB<sup>1</sup>, 58vC, et passim ubique; ὥστε 11vG<sup>1,2</sup> I M S, 12rB E, 17vH,  $34rG^1$ ,  $34vN^2$ , 36vD, 39vN, 40vB, 53rO  $P^2$ , 55vA J, 56rB, 57vL<sup>1</sup>, 58rB<sup>2</sup>, et passim; no gr equivalent 11vA, 34vP<sup>1</sup>: vide ita ut ut puta: οἶον 53rD; οἶον ὡς 35rN uter: ὁπότερος 34vE utercunque: ὁπότερος 40rV, 41rJ; δποτεροσοῦν 45rP, 47rY, 48rI Q uterlibet: ἐκάτερος 18vJ, 22rL, 23vL (?); ὁπότερος 34vF uterque: ἀμφότερος 17rT<sup>1</sup>, 17vH, 34vC,  $56rF G^{1,2}$ ; εκάτερος  $12rF^{1,2}$ , 12vM, 13rM, 13vI L N,  $17rT^2 U^{1-3}$ , 17vK L,  $23rg^{1-2}$ , 34vE, 35rO, 36rJ, 40rV, 45rOT V, 52vK<sup>1,2</sup>, et passim; vide simul uterque

utile: χρήσιμος 35vI, 41rR; et vide inutile

utique: av 21rY, 21vJ, 34rD H, 36rB Y, 37rR, 38rH L, 39vQ, 42vW, 43rL Q, 52rY, 56vN; δ' ἄν 34rF, 54rC; δή 11vE, 20vH, 30rO, 30vU, 37vC, 38rB, 48vF, 54rE; quod utique ὅπερ 34vH, ὄπερ ἄν 36vV; utique similiter αν όμοίως (false reading of ανομοίως) 51vD; vide donec utique utor: χράομαι 20vI<sup>1,2</sup>, 34rF, 36vB<sup>1,2</sup>

vaco: 20r Tvar, 57r Fvar vacuus: 56rQvar, 56vNvar vado: βαδίζω 41rS valde: πάνυ 53rP, 54rN; 17rAvar vale: έρρωμένως 23vG; έρρωσο 20vK valentissimus: χράτιστος 34rD vasum: ἀγγεῖον 38rM vel: ~ 17rA, 20vL M, 24rP, 34rG<sup>1,2</sup>  $34vC^{1-3}$  F H, 39rC, 39vR, 45vA B<sup>1,2</sup>,

46vW, et passim; Yro. 39v0, 40rE; no gr equivalent 42v0<sup>1,2</sup>; no gr text 11vP; vel...vel ἤτοι...ἤ 34vN<sup>1,2</sup> velut: οἶον 45vA; ὥσπερ 11v0 veluti: oໂov 34vC venio: ἔρχομαι 34rD; ἔχω 40vB C  $L^{1,2}$  M O R. 47r0 ventalis: ventalis ac frivolus άνεμιαΐος 34rD verbum: λόγος 23vB; ἡῆμα 41rL R; δητόν 53r0; verba λέξις 37rJ vereor: ἀκνέω 23vE vergo: νείω 12vE, 21rJ M verisimilis: είκός 34rC vero: δέ 17rD, 21vE, 34vL, 37rD, 42vA, 47rY, 50rL, 53rF, 53vP, 58vH W, et passim; μέντοι 40rQ; no gr text 58vC; at vero άλλὰ δή 25rG, 38vQ, 41rC; ἀλλὰ μήν 35vK, 42vV W; δέ 16vS versor: άναστρέφω 36vB versus: ἐπί 21rS, 27rQ, 37rE<sup>2</sup>; ποτί 20vs<sup>1,2</sup>, 21r0; πρός 37rE<sup>1</sup>  $F^{1,2}$ , 37vL, 38vJ K; no gr equivalent (ar dat, case)  $48vR^{1,2}$ vertex: κορυφή (κορυφά) 11vN P, 18vG H T X,  $21vV^{1,2}$ ,  $22rc^{1,2}$  E I M, 23vKL, 24rR U, 35rD<sup>1,2</sup> F G, 39rL, 45rD  $E^{1,2}$  H  $I^{1-3}$  J  $K^{1-3}$  O, 53vB, 55vM T, et passim verus: ἀληθής 34rL, 34vE; vere άληθῶς 53vK; et vide vero via: ὁδός 40rQ, 41rS vicesimus tertius: κγ΄ 35vH videlicet: δηλαδή 34vN, 43vL, 53rY;

δηλονότι 20vW, 38vM, 39vP, 53rM W;  $\tau \epsilon$  30vN videor: δοκέω 23vE, 34rD, 36rB, 38rH, 42vX, 53rE; φαίνομαι 38vG, 39rL vir: ἀνήρ 20νΕ, 36νΑ Β vis:  $\beta$ ia  $56rE F^2 N O^{1,2}$ ; no gr text 56rI; vi premo βιάζω 56rF

## 698 ARCHIMEDES IN THE MIDDLE AGES

vita: βίος 11vC vivo: ζάω 23vG

voco: καλέω 11vM N P, 13rT U<sup>1-3</sup> V<sup>1-3</sup> W<sup>1,2</sup>, 22rB, 23vI J K<sup>1,2</sup>, 34rF G H I, 38rH K, 38vL, 39rL<sup>1,2</sup>, 45rC D<sup>1,2</sup> E I<sup>1,2</sup> J<sup>1,2</sup> K<sup>1,2</sup>N O<sup>1,2</sup>, 53rK, 53vG, et passim

volo: ἀξιώω 38rJ; βούλομαι 11vB D, 34rF, 35vH, 38rM, 41rJ; ἐπιτάττω 38rL; θέλω 54rU

volutio: circa elicas, quas latini

volutiones vel revolutiones vocant  $\pi\epsilon\rho \ \ \tau \tilde{\alpha}\varsigma \ \ \tilde{\epsilon}\lambda \ \ \ \ \ \ \ 11vP$ 

volvo: κλίνω 60rA

yperbola: bπερβολή 37vK M, 40rS, 40vC D L M R T<sup>1,2</sup> U<sup>1-3</sup>, 41rA D<sup>1,2</sup> I K, 41vC<sup>1,2</sup>, 42rJ K N O, 42vH I J<sup>1,2</sup> K, 53rL; et cf. ambligonii coni sectio

ypothenusa:  $b\pi o \tau \epsilon i \nu o \upsilon \sigma a 27 v J$  ypothesis:  $b\pi o \theta \epsilon \sigma \iota \varsigma 34 r F^{1,2}$