2023, February 10-11 ORESME Reading Group Meeting

Ohio River Early Sources in Mathematical Exposition (ORESME) Reading Group

1968

Nicole Oresme and the Medieval Geometry of Qualities and Motions: a treatise on the uniformity and difformity of intensities known as Tractatus de configurationibus qualitatum et motuum (Questiones super geometriam Euclidis, Questio X)

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Questiones super geometriam Euclidis per Magistrum Nicholaum Oresme

⟨Questio 10⟩

27r, c. 1   Consequenter queritur utrum aliqua superficies quadrangula sit uniformiter difformis in altitudine.

   Arguitur quod non, quia nulla altitudo est uniformis difformiter, igitur nulla altitudo est difformis uniformiter. Consequentia tenet per simile. An-

5 tecedens patet, quia in eo quod est uniforme vel equale nulla est difformitas sive inequalitas.

   Oppositum arguitur: aliqua est altitudo uniformis, igitur aliqua est uniformiter difformis.

   Primo videndum est de quesito, 2° applicandum est ad materiam dictam

10 de qualitatibus mediis.

   De primo sciendum est quod altitudo superficiei attenditur penes lineam perpendicularem super basim recte iacentem, ut posset patere in figura [Fig. 1]. Notandum 2° quod superficies dicitur uniformiter et equaliter alta

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Questio 10

1 quadrangulis *v*
2 altitudine *c* latitudine *sv*
3 Arguitur *cv* arguo *s* / altitudo *c* latitudo *s* alteratio *v* / uniformis difformiter *c* uniformiter difformis *s* uniformis *v*
4 nulla…uniformiter *c* nulla est difformis *s* nullam latam *v*
5 quod: in quocunque *v* / uniforme vel equale *c* equalle et uniforme *s* uniformiter vel equale *v*
6 sive *c* vel *v* seu *s*
7 arguitur *v om. s* argueretur *c* (*vide alteras quaestiones*) / *post* arguitur *add. v* quia / aliqua est *c tr. v* quia est aliqua *s* / altitudo uniformis *c* latitudo uniformiter difformis *s* alterius uniformiter difformis *v*

7–8 igitur…difformis *cv* ergo *s*
8 *post* difformis *add. v* in hac genere
9 Primo *cv* primo ergo *s* / de *sv* de in *c*
9–10 2°…mediis *om. s*
9 applicandum est ad *c* applicando *v* / materiam *v* mechanicam *c*
9–10 dictam…mediis *om. v*
9 dictam *corr. Ed(1) ex* deinde *in c*
10 de *corr. Ed(1) ex* de qua *in c*
11 De primo *c om. s* quantum ad propositum *v* / est *v om. cs* / lineam: lunem (*l*) *v*
12 posset patere *cv* patet *s*
13 Notandum 2° *c* 2° notandum est *v* 2° scienddum *s* / uniformiter et equaliter *c* equaliter et uniformiter *s* mū et equaliter *v* / alta *sv* alia *c*

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Questions on the Geometry of Euclid by Master Nicholas Oresme[1]

Question 10

Consequently it is sought whether some quadrangular surface is uniformly difform in altitude.

It is argued in the negative: for no altitude is difformly uniform, therefore no altitude is uniformly difform. The consequence holds by analogy. The antecedent is evident, for in that which is uniform or equal there is no difformity or inequality.

The opposite is argued: there is some uniform altitude, therefore there is some uniformly difform altitude.

In the first place we must consider the question under inquiry. Then secondly we must apply it to the matter as concerned with mean qualities.

In connection with the first, it is to be known that the altitude of a surface is measured by a perpendicular line lying directly upon the base, as can be evident in a figure [see Fig. 1]. Secondly, it is to be noted that a surface is said to be uniformly
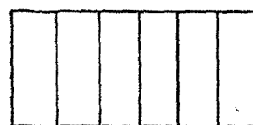
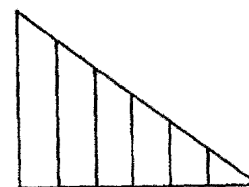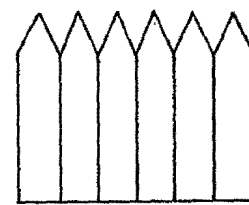| Fig. 1	Fig. 2	Fig. 3
In *c* here and in *s* on f. 107, c. 2 and labelled there *uniformiter unifformis*.	In *c* here and in *s* on f. 107, c. 2 and labelled there *uniformiter difformis*.	In *s* on f. 107r, c. 2 and labelled *difformiter difformis*.

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quando omnes linee penes quas attenditur altitudo sunt equales, et dicitur
alta difformiter quando sunt inequales et attingunt ad lineam non eque
distantem basi. Notandum 3° quod altitudo dicitur uniformiter difformis
quando quelibet tres linee vel plures equaliter distantes inter se excedunt
secundum proportionem arismeticam, hoc est, ita quod quanta una excedat
alteram tanta alia immediate etiam excedat alteram [Fig. 2]; ex quo patet
quod altissima linea que transit per istas est recta non eque distans basi.
Notandum 4° quod altitudo dicitur difformiter difformis quando linee se non
excedunt isto modo et tunc linea transiens per summitates earum non est
recta [Fig. 3]. Et secundum variationem talis linee variatur difformitas in
altitudine.

Quantum ad secundum principale, scilicet de mathematica media que est
in qualitatibus et velocitatibus, notandum est primo quod in qualitate
ymaginantur duo, scilicet intensio secundum gradus et extensio per subiec-
tum, et ideo talis qualitas ymaginatur habere duas dimensiones. Propter hoc
aliquando dicimus quod habet latitudinem intelligendo intensionem acsi per
longitudinem intelligeremus extensionem. [Quare omnis latitudo presup-
ponit longitudinem.] Notandum 2° quod qualitas potest ymaginari in
puncto, vel in subiecto indivisibili sicud in anima; potest etiam ymaginari in
linea atque / etiam in superficie et in corpore.

Sit ergo prima conclusio quod qualitas puncti sive subiecti indivisibilis
ymaginanda est sicud una linea, quia ipsa non habet nisi unam dimensionem,
scilicet intensionem. Ex quo sequitur quod talis qualitas, sicud scientia vel
virtus, non debet dici uniformis neque difformis sicud linea non dicitur
uniformis nec difformis proprie. Sequitur etiam quod improprie dictum est
latitudo scientie vel virtutis, cum non sit ibi aliqua longitudo ymaginanda et
omnis latitudo presupponit longitudinem.

Secunda conclusio est quod qualitas linee ymaginanda est sicud super-

and equally high when all the lines by which the altitude is measured are equal; it is said to be difformly high when they are unequal and they rise to a line which is not parallel to the base. Thirdly, it is to be noted that an altitude is said to be uniformly difform when any three or more of the lines which are at equal distances apart exceed one another according to arithmetic proportion, i.e., by the amount that one line exceeds the second, so the second exceeds the third [see Fig. 2]. From this it is evident that the upper line limiting them [i.e., the perpendiculars] is a straight line not parallel to the base. Fourthly, it is to be noted that an altitude is said to be difformly difform when the [perpendicular] lines do not exceed one another in this manner; and in such a case the line crossing through their summits is not a straight line [see Fig. 3]. And the difformity in altitude varies according to the variation of such a [summit] line.

As for the second part, namely the mathematical mean which is in qualities and velocities, it is to be noted firstly that in quality two things are to be imagined, namely intensity according to degrees and extension through the subject; and therefore such a quality is imagined to have two dimensions.[2] Accordingly we sometimes say that it has "latitude," understanding by this, "intensity," on the ground that we understand its "extension" by the term "longitude." [Hence every latitude presupposes longitude.][3] Secondly it is to be noted that a quality can be imagined to reside in a point, or in an indivisible subject like a soul. It can also be imagined to be in a line, as well as in a surface or in a body.

1. Hence let this be the first conclusion, that the quality of a point or an indivisible subject is to be imagined as a line, for it has only one dimension, namely intensity. From this it follows that such a quality, like knowledge or virtue, ought not to be described as either "uniform" or "difform," just as a line is not properly said to be "uniform" or "difform." It follows also that one speaks improperly of a latitude of knowledge or virtue since no longitude is to be imagined there and every latitude presupposes longitude.

2. The second conclusion is that the quality of a line is to be imagined as a sur-

14 dicuntur *v*

15 difformiter: diffinitione *v* / quando *sv* quoniam *c* / et *cv* ut *s*

16 distantem *s*, *?v* distantes ea inter se excedunt secundum proportionem *c* / Notandum 3° *c tr. sv* / altitudo: alter *v* / uniformiter: numerus *v*

17 se *bis s*

18 arismetica *v* / hoc est *v* realiter *c* inequaliter *s*

18–19 ita...alteram *c om. sv*

19 quo: hoc *v*

21 Notandum 4° *c* ultimo notandum *v* iterum notandum *s* / difformiter *cv om. s*

21–22 se non excedunt *c* excedunt non *s* non se excedunt *v*

22 isto modo *sv* istos *c* / earum: istarum *v*

22–23 est....Et *om. v*

23 Et *c om. sv* / difformiter *v*

25 Quantum...principale *c* in 2° (?) articulo *s* in secundo quantum *v* / scilicet de *cs* ad *v* / mathematica *c* mo^ta *v* meth^ea *s* / post est *scr. et del. s* quelibet

26 in qualitate *cv om. s*

27 secundum gradus et *s* secundum generis (?) *c* et *v* / extensionem *c*

28 talis qualitas *sv tr. c*

29 dicimus *c* dicitur *v* diccemus *s*

30 intelligeremus *c* intelligo (?) *s* intelligemus *v*

30–31 [Quare...longitudinem] *s om. cv*

31 Notandum 2° *c tr. sv*

32 in^1 *om. c* / indivisibili *cv* divisibili *s* / in^3 *om. v*

33 atque *c* ac *v s* / etiam in *s om. v* etiam *c*

34 sive *c* seu *s* sunt *v*

35 quia *cv* quare *s* / non *cv om. s*

37 debet *sv* debent *c* / neque *c* nec *v* et sic *s*

38 proprie *v om. c* alliqualiter *s* / est *v supra, c om. s*

39 virtutis *cv* latitudo virtutis *s*

41 linee *sv om. c* / ymaginanda est *cv* ymaginande *s*

2 This description of qualities as having two dimensions should be compared with Oresme's brief statement in the *Questiones super libros de generatione et corruptione* quoted above in Introduction II.A, fn. 18.

3 The bracketed phrase added from *s* seems to complete the thought of the preceding phrase, but it may have crept in here from its clearly genuine place in line 40.

ficies cuius longitudo est extensio subiecti rectilinea et latitudo est ipsa intensio, que ymaginatur per lineas perpendiculares super lineam que est subiectum.

45   Tertia conclusio est quod per consimilem ymaginationem qualitas superficiei est ymaginanda ad modum corporis cuius longitudo et latitudo est extensio superficiei et profunditas est intensio eius qualitatis. Et pari ratione qualitas totius corporis ymaginanda esset sicud unum corpus cuius longitudo et latitudo esset extensio totius corporis et profunditas eius intensio.

50   Sed dubitaret aliquis: si qualitas puncti ymaginatur ut linea, qualitas linee ut superficies, et superficiei ut corpus habens tres dimensiones, ergo qualitas corporis ymaginabitur habere quattuor dimensiones et in alio genere quantitatis. Dico quod non oportet, quia sicud punctus fluens ymaginative causat lineam, linea superficiem, superficies corpus, non oportet, si corpus ymaginaretur fluere, quod causet quartum genus quantitatis sed solum corpus, et

55 propter hoc dicit Aristoteles primo celi quod ex hoc, scilicet ex corpore, non fit transitus in aliud genus quantitatis per illum modum ymaginandi, et ita dicendum est in proposito. Dicendum est ergo de qualitate ipsius linee et proportionaliter dicendum de qualitate superficiei vel corporis.

60   Et est quarta conclusio quod qualitas linearis uniformis ymaginanda est sicud superficies quadrangula rectangula uniformiter alta, ita quod extensio

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42 *ante* longitudo *scr. et del. c* latitudo / subiecti…et *c* sub qua *s* sub materia et *v*

43–44 *post* subiectum *add. s* ut hic

45 conclusio *sv om. c* / consimilem *c* eandem *v* eandem vel consimilem *s*

46 est[1] *cv om. s* / ad modum *bis s*

47 profunditas *cv* profunditatis *s* / est *c om. sv* / eius qualitatis *c* qualitatis eiusdem *s* eiusdem qualitatis *v*

48 ymaginande *s* / esset *c* est *sv* / unum *cv om. s*

49 esset *c* est *sv* / totius: eiusdem *s* / et profunditas *v* sive *c* et profunditatis *s*

50 si *cs* utrum *v* / puncti…qualitas *s om. cv* / *post* linee *add. c* ymaginatur hic / *post* linee *add. v* ymaginatur / ut[2] *sc* ac *v*

51 superficiei *cs* superficies *v* / habens *del. c et supra scr.* habere

51–52 ergo…dimensiones *bis c*

52 et *s om. cv*

52–53 quantitatis *s* corporeitatis *v* qualitatis (?)*c*

53 Dico *c* et respondeo *s* respondeo *v*

53 fluens *cv om. s*

54–55 ymaginaretur *c* ymaginatur *s* ymagi[e] *v*

55 quartum *c* 4[or] *v* 3[m] *s*

56 primo *cv* in primo *s*

57 genus *cv* ergo *s* / quantitatis *c* quantum *v* quantitas *s* / ymaginandi *cv* ymaginanda *s*

58 est[1] *sv om. c* / ipsius linee *c* illius linee *v* ymaginata in linea *s*

59 dicendum (?)*v* dicendum erit *s* consideratur dicendum *c* / superficiei vel corporis *c* ipsius superficiei ac ipsius corporis *s* superficiei ante corpis (!)*v*

61 rectangula *cv* et rectangulla *s*

face whose longitude is the rectilinear extension of the subject and whose latitude is its intensity which is imagined by lines perpendicular to the line which is the subject.

3. The third conclusion is that the quality of a surface is to be imagined, using a similar imagery, by means of a body whose longitude and latitude constitute the extension of the subject and whose depth is the intensity of the quality. And by like reasoning the quality of a whole body would have to be imagined as a body whose longitude and latitude would be the extent of the whole body and the depth its intensity.[4] But someone may raise a doubt: if the quality of a point is imagined as a line, the quality of a line as a surface, and that of a surface as a body having three dimensions, therefore the quality of a body will be imagined to have four dimensions and be in another genus of quantity. I answer that such is not necessary, for just as a flowing point imaginatively produces a line, a line a surface, a surface a body, so if a body were imagined to flow it is not necessary for it to produce a fourth kind of quantity but in fact only a body. And it is on this account that Aristotle says in the first book of the *On the Heaven*[5] that from this, i.e., from a body, no passage to another genus of quantity takes place by this method of imagining. One ought to speak similarly in the matter at hand. Hence one ought to speak [thus] of the quality of this line and similarly of the quality of a surface and of a body.

4. The fourth conclusion is that a uniform linear quality is to be imagined by a rectangle[6] that is uniformly high, so that the extension is imagined by the base[6] and

[4] Cf. *De configurationibus*, I.iv, where this is treated much more clearly. Here in the *Questiones* he seems to say that the volume of the subject can somehow be reduced to the longitude and latitude of the imaginative body used to represent the quality of the original body, thus leaving the depth of the imaginative body to represent intensity. In the *De configurationibus*, it is clear that each of the infinite parallel planes making up the body can be imagined to have a body erected on it, so that we have a forest of interlacing bodies that represent the quantity of the quality. Here again we see evidence of a more mature consideration of a subject in the *De configurationibus*.

[5] *De caelo*, Bk. I, 268a 30—b 3. In the Moerbeke translation accompanying Thomas Aquinas' *Expositio* (Turin, Rome, 1952), 8, Text No. 4, the passage reads: "Sed illud quidem palam, quoniam non est in aliud genus transitio, quemadmodum ex longitudine in superficiem, in corpus autem ex superficie: non enim adhuc talis perfecta erit magnitudo." Thomas' commentary is even more instructive for Oresme's treatment (*ibid.*, 11): "Tertium est manifestum ex praemissis, scilicet quod non fit transitus a corpore in aliud genus magnitudinis, sicut fit transitus ex longitudine in superficiem, et ex superficie in corpus. Et utitur modo loquendi quo utuntur geometrae, imaginantes quod punctus motus facit lineam, linea vero mota facit superficiem, superficies autem corpus. A corpore autem non fit transitus ad aliam magnitudinem: quia talis exitus, sive processus, ad aliud genus magnitudinis, est secundum defectum eius a quo transitur (unde etiam motus naturalis est actus imperfecti). Non est autem possibile quod corpus, quod est perfecta magnitudo, deficiat secundum hanc rationem, quia est continuum secundum omnem modum: et ideo non potest fieri transitus a corpore in aliud genus magnitudinis."

[6] In Introduction II, I have already remarked that for Oresme the base line, as well as the intensity line, was an *ymaginatio*, but, of course, the base line as an extension is abstracted from the extension of the subject, while the intensity perpendicular as a line is not abstracted from the intensity of the quality since intensity is

27v, c. 1 ymaginatur per basim et intensio mensuratur per lineam illi / eque distantem, sicud patet in figura [Fig. 4], [et patet, quia sic quelibet linea que erigeretur super lineam datam esset equalis alteri ita et punctus quilibet ibi ymaginatus

65 esset eque intensus.] Sed qualitas uniformiter difformis ymaginanda est per unam superficiem que esset uniformiter difformiter alta, ita quod linea altitudinis non esset eque distans basi, sicud patet in figura [Fig. 5], tamen esset recta. Hoc potest probari: sicud proportio punctorum in intensione esset sicud proportio linearum perpendicularum super istos in altitudine. Et hoc

70 potest esse dupliciter sicud etiam superficies potest esse uniformiter difformis in altitudine dupliciter. Uno modo ut [/ vel?] talis qualitas terminetur ad non gradum et tunc est sicud superficies uniformiter difformiter alta ad non gradum et tunc esset sicud triangulus; vel [terminetur] utrobique ad gradum et tunc illa esset sicud quadrangulus cuius altitudo esset linea recta non eque

75 distans basi [Fig. 6].

Fig. 4
In *c* and *s* (in *s* the figure is that already given
earlier with altitude lines drawn).

Fig. 5
In *c* and *s*.

the intensity is measured by a [summit] line parallel to it, as is evident in the figure [see Fig. 4] [and it is obvious, for just as any line which would be erected on the given [base] line would be equal to another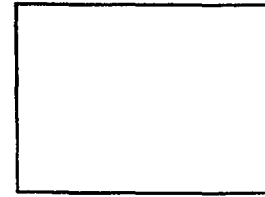, so any point there would be ima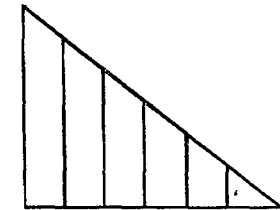gined as equally intense]. But a quality uniformly difform is to be imagined by a surface which would be uniformly difformly high, so that the line of altitude [i.e., the summit line,] would not be parallel to the base, as is evident in the figure [see Fig. 5]; still it would be a straight line. This can be proved. The ratio in intensity of [any] points would be as the ratio in altitude of the perpendicular lines on these points. And this can be in two ways just as a surface uniformly difform in altitude can exist in two ways. In one way such a quality is terminated at no degree [i.e., zero] and then it is like a surface uniformly difformly high [terminated in one extreme] at no degree, i.e., like a triangle. Or [it is terminated] on both sides at a degree; in this case it is like a quadrangle whose [line of] altitude [i.e., summit line] would be a straight line not parallel to the base [see Fig. 6].

5. The penultimate [conclusion] is that from this latter together with the aforesaid it can be proved that a quality uniformly difform is equal to the middle degree,
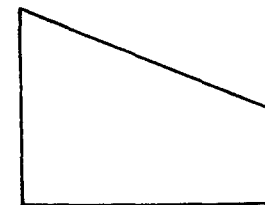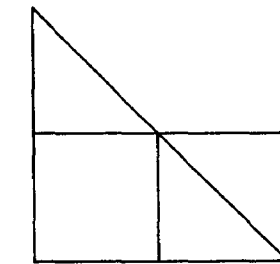

Fig. 6
Not in *s* or *c*. I have added the figure.

Fig. 7
Neither *c* nor *s* has it here, but *s* has it for essentially the same proposition in Q. 15, *q.v.*; *c* does have a right triangle and below a confused figure which perhaps had its source in a figure like this.

not essentially extended. This is why Oresme often calls the base line the subject, as if the

two were identical. See Introduction II.B, pp. 97–98.

62 per basim *c* sicut basis *v* per bassim vel sicud bassis *s* / mensuratur *sv* ymaginatur *c*

63 sicud...figura *om. v*

63–65 [et...intensus] *s om. cv*; *sed in lineis 64–65 correxi* equalis *ex* equallis *et* intensus *ex* intenssus

65 *post* qualitas *scr. et del. c* per lineam

65–66 ymaginanda...esset *om. v*

65 ymaginanda est *c* esset ymaginanda *s*

66 difformiter alta *c* difformis alta *v* difformiter difformis *s* / ita...altitudinis *c* in linea altitudinis ut transiens per altitudinem *v* ita quod linea latitudinis vel linea longitudinis *s*

67 sicud: sit *s*

67–68 tamen...recta *om. c sed corr. ex* cum esset rectta *in s et* tḡ linea in altitudine esset recta *in v*

68 Hoc...sicud *c* hoc patet quia *v* Probo per partem dicente quod *s* / in intensione: intensive *s*

69 proportio *v om. cs* / super istos *om. sv sed corr. ex* super istam *in c* / altitudine *cv* latitudine *s*

71 altitudine *cv* latitudine *s* / dupliciter *sv om. c* / ut...terminetur *sv et* de² *c*

72 sicud *c om. s* sicut *v*

73 esset *cv* est *s* / [terminetur] *Ed (1)*

74 tunc illa esset *c* tunc esset *s* tunc *v* / altitudo *cv* latitudo *s* / esset² *sv* esset sicut *c*

Penultima est quod ex hoc cum precedentibus potest probari quod quali-
tas uniformiter difformis est equalis gradui medio, hoc est, esset tanta quanta
esset si esset uniformis gradu medio, et hoc posset probari sicud de super-
ficie [Fig. 7].

80   Ultima conclusio est quod qualitas difformiter difformis ymaginanda est
ut superficies cuius linea que est subiectum esset basis et altitudo eius esset
una linea non recta nec eque distans basi. Et ex hoc patet quod quasi infinitis
modis potest ymaginari talis difformitas secundum hoc quod ista linea alti-
tudinis potest multipliciter variari, ut patet in figura [Fig. 8].

85   Sed aliquis diceret: domine, non oportet sic ymaginari. Dico quod ymagi-
natio est bona, et hoc patet per Aristotelem qui ymaginatur tempus per
modum linee. Similiter in perspectiva expresse ymaginatur quod virtus
activa ymaginanda est ad modum superficierum triangularum. Iterum secun-
dum istam ymaginationem possum facilius intelligere ista que dicuntur de
90   qualitatibus uniformiter difformibus etc. Ergo dico quod ymaginatio est
bona.

76 Penultima *v* alia particula *c* alia *s* / quod...
   probari *om. v* / *post* potest *add. s* facilliter
76–77 qualitas *cs* quantitas *v*
77–79 difformis...superficie: difformiter est
   ymaginanda sicud quadrangullus, tunc
   linea dyametralis dividens quadrangullum
   in duo media faccit unum quadrangullum
   qui est medietas quadrati et alia medietas
   triangulli qui dividitur per rectam (?) est
   et allia medietas est quadrangulli que yma-
   ginatur sicud gradus medius, ergo etc. *s*
77 medio *v* meo *c* / esset *om. v*
78 gradu medio *c* gradus per totum in medio
   gradu *v*
78–79 et...superficie *v om. c*
80 Ultima conclusio est *v* ultima est *c* alia
   conclusio *s* / qualitas *s* quantitas *cv* / diffor-
   miter *cv* unifformiter
81 ut *s om. c* sicut *v* / superficies *bis c* / cuius *c*
   tantum (?)*v* cum *s* / est *c om. s* esset *v* /
   subiectum¹ *cv* sollum *s* / esset¹ *cs om. v* / *supra*
   basis *scr. c* ut
82 nec *vs* non *c* / patet quod quasi *v* quasi *c*
   patet quod *s*
83 secundum hoc *s* secundum *v* hoc *c*

84 potest...variari *c* variatur multipliciter *s*
   potest multipliciter curvari (?)*v*
84–91 ut....bona *c* Rationes autem solute
   sunt etc. *v* Si aliquis diceret quod illa yma-
   ginatio vel non est naturallis vel multum
   rudis, respondeo quod ymo est naturallis
   et bona. Unde quodlibet continuum ymagi-
   nari potest secundum quamlibet divisio-
   nem sicud Aristoteles 4° physicorum yma-
   ginatur tempus ad modum linee. Similiter
   in *s (del.)* perspectiva vitellās (*! Vitellonis)*
   ille actor ymaginatur ita intensionem lumi-
   nis sicud superficiem. Similiter etiam diccit
   quod virtus alicuius agentis intellectualis
   continue habet ymaginari intendi sicud
   triangullus. Confirmatur quia per ymagina-
   tionem secundam (*! illam?*) possum omnes
   propositiones quas adduccere poteris sal-
   vare et etiam veritatem manifestare et fac-
   cimus antequam illa ymaginatio debeat
   dici bona et utilis ita est questio (ergo
   etc. ?). *s*
86 *mg. c* est bona
89 *ante* que dicuntur *add. c* que dicunt *quod
   delevi*

---

i.e., that it would be just as great in quantity as if it were uniform at the middle de-
gree. And this can be proved as for a surface [see Fig. 7].[7]

6. The last conclusion is that a quality difformly difform is to be imagined as a
surface whose subject line would be the base and whose altitude [i.e., summit line,]
would be a line which is neither straight nor parallel to the base. From this it is
evident that such difformity can be imagined in almost an infinitude of ways accor-
ding as this line of altitude [i.e., summit line,] can be multiply varied, as is evident
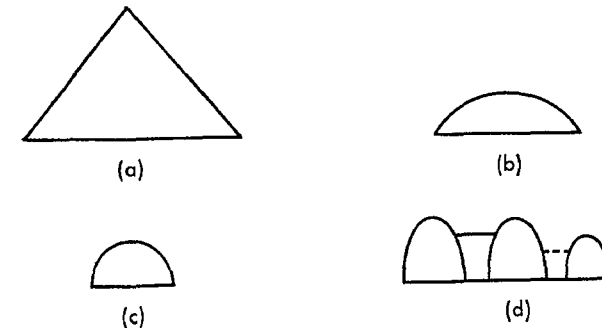in the figure [see Fig. 8].

Fig. 8

(a), (b), and (c) are in *s* (along with three rectangular figures). (d) is in *c* (along with a rectangular figure).

But one might say: "Master, it is not necessary for it to be so imagined." I
answer that the imagination [i.e., imagery,] is a good one. This is evident by
Aristotle who imagines time by means of a line. Similarly in perspective it is ex-
pressly imagined that active force is to be imagined by means of triangular surfaces.
Further, following this imagination I can more easily understand those things
which are said about qualities uniformly difform and so on. Therefore, I say that
the imagination is a good one.[8]

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[7] Note that a corrupt proof appears in
manuscript *s* and is included in the variant
readings. This proof was not, I believe, in the
original text, which seems to have said that
the proposition "can (i.e., will be able to) be
proved as of a surface." Although the addi-
tion in *s* appears hopelessly corrupt, I believe
that it means to divide the combined triangle
and rectangle into five equal triangles so that
the four small triangles of the right triangle
are equal to the four small triangles of the
rectangle, as in the accompanying figure.
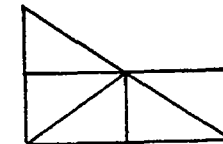
[8] This paragraph has been discussed above
in the beginning of Introduction II.A.