José Higuera*

De syllogismo falsigrapho: The Colonial Reception of Deceptive Arguments (From 13th to 18th Centuries)

Abstract
In the Dominican Archive San Luis Beltran (Bogotá) there is a manuscript of an unknown *cursus philosophicus* signed by the Franciscan master Pedro Ceballos y Tena, dated in 1741, Quito. The last section of this *cursus* is entitled *Articulus utilis de syllogismo falsigrapho*. For the first time, we can reconstruct the long transition of the vocabulary and the conception of deceptive arguments called *falsigraphi*. Pseudo-Scotus showed the fallacies behind this sort of defective argumentation, despite the geometrical origin of this expression. In the Aristotelian texts, *falsigraphus* was a philosophical character who wrongly "drew" the geometrical principles in order to induce a demonstration about a specific problem (e.g. circle quadrature). However, Pseudo-Scotus preferred to highlight the opposition between the demonstrative syllogisms - and their immediate principles - and the sophistic arguments configured by linguistic ambiguities or fallacies. These types of fallacies appear in the *Cursus philosophicus dictatus Limae* (1701) under the name of *syllogismum pse[u]dographum*. The question is how the later readers of Pseudo-Scotus assumed the linguistic perspective on deceptive arguments focused on categorical mistakes, while neglecting the geometrical character of those arguments that involved the use of a "graphical reasoning". The contrast between *pse[u]dographum* and *falsigraphus* will show how the linguistic perspective on deceptive arguments was embraced by the later Scholastic. This linguistic emphasis achieves an interesting point, however, in Ceballos y Tena, who recovers the Pseudo-Scotus' view of the term *falsigraphus* to note the ambiguity of logical terms. The hypothesis of this work is the historical oscillation of deceptive arguments between the linguistic perspective and the graphical reasoning involved in geometrical demonstrations.

* Resarcher at the Faculdade de Letras da Universidade do Porto. This article is part of the project «From Data to Wisdom. Philosophizing Data Visualizations in the Middle Ages and Early Modernity (XIIIth-XVIIth century)» (POCI-01-0145-FEDER-029717), Instituto de Filosofia da Universidade do Porto. jrub0io@letras.up.pt.

Mediaevalia. Textos e estudos, 39-40 (2020-21) 273-295.
DOI: http://doi.org/10.21747/21836884/med40a10

Keywords: Falsigraphus, Demonstration, Squaring the Circle, Syllogistic, Colonial late scholasticism.
Authors: Aristotle, Robert Grosseteste, Nicolas of Cusa, Pseudo-Scotus, Pedro Ceballos y Tena, Jose de Aguilar.

***De syllogismo falsigrapho*: a receção colonial das demonstrações enganosas (do século XIII ao XVIII)**
No Arquivo Dominicano San Luis Beltrán (Bogotá) encontra-se um manuscrito de um cursus philosophicus inédito, assinado pelo mestre franciscano Pedro Ceballos y Tena, datado de 1741, Quito (Equador). A última secção deste cursus intitula-se *Articulus utilis de syllogismo falsigrapho*. Pela primeira vez, é possível reconstruir a longa transição do vocabulário e do processo de elaboração dos argumentos enganosos chamados *falsigraphi*. O pseudo-Escoto mostrou as falácias por detrás deste tipo de argumentação defeituosa, não obstante a origem geométrica desta expressão. Nos textos aristotélicos o *falsigraphus* é um personagem filosófico que "desenhava" erradamente os princípios geométricos para induzir demonstrações sobre um problema específico (por exemplo, a quadratura do círculo). Contudo, o pseudo-Escoto preferiu destacar a oposição entre os silogismos demonstrativos – e os seus princípios imediatos – e os argumentos sofísticos configurados por ambiguidades linguísticas ou falácias. Os tipos de falácias surgem no *Cursus philosophicus dictatus Limae* (1701) com o nome de *syllogismum pse[u]dographum*. A questão que se coloca é a de saber como os leitores posteriores ao pseudo-Escoto assumiram a perspetiva linguística sobre argumentos falaciosos centrados em erros categóricos, ao mesmo tempo que negligenciavam o carácter geométrico dos argumentos que envolviam o uso de um "raciocínio gráfico". O contraste entre *pse[u]dographum* e *falsigraphus* mostrará como a perspetiva linguística acerca dos argumentos enganosos foi abraçada pela Escolástica tardia. No entanto, esta ênfase linguística atinge um ponto interessante em Ceballos y Tena, que recupera a visão do pseudo-Escoto sobre o termo *falsigraphus* a fim de estar ciente da ambiguidade dos termos lógicos. A hipótese deste trabalho assenta na oscilação histórica dos argumentos enganosos, entre a perspetiva linguística e o raciocínio gráfico que está envolvido nas demonstrações geométricas.

Palavras-chave: Falsigraphus, demonstração, quadratura do círculo, silogística, Escolástica Colonial.
Autores: Aristóteles, Roberto Grosseteste, Nicolau de Cusa, pseudo-Escoto, Pedro Ceballos y Tena, Jose de Aguilar.

Introduction

Could a deduction called *falsigrapha* be described as *res ficta*? Or could this quality extend to its author, who would then be called *falsigraphus*, thus placing a person under the same species of falsehood? Although there is a formal identification[1], I will deal with the structure of this type of deduction, and its ways of

1 «This word ought to mean simply, 'the liar' […] *falsigraphus* becomes the advocate of the false hypothesis», W. Knorr, «Falsigraphus vs. adversarius: Robert Grosseteste, John of Tynemouth, and geometry in 13th-century Oxford», in Menso Folkerts (ed.), *Mathematische Probleme im Mittelalter: der Lateinische und arabische Sprachbereich,* Harrassowitz, Wiesbaden, 1996, p.

circulation from Medieval Europe to the late colonial Scholastic. In some sense, the *translatio studiorum* left behind Gibraltar and reached the Pacific.

Among Aristotelian forms of argumentation, introduced in the *Topica*, there is a deduction called *falsigrapha*. The starting point of deductions is a general principle that would be logical, scientific - e.g. geometry, physics -, or a generally accepted assumption. At first glance, it is easy to include *falsigrapha* in the sophistical deductions as a type of fallacious argument. However, when looking at the different forms of deductions in Peter of Spain's *Tractatus*, the *falsigraphus* syllogism appears as the deduction which makes an inappropriate use of principles in the context of the scientific discussion (*disputatione doctrinalis*):

> Demonstrativus sillogismus est quando ex veris et primis est sillogizatus aut ex talibus que per aliqua vera et prima sue cognitionis principium sumpserunt. Et contra istum sumitur alius, qui nominatur falsigrafus et est ex eisdem principiis falso modo sumptis[2].

In the Boethian translation of *Topica*, the erroneous way of deploying specific science principles happens when a deduction has the appearance of probability. In this case, the principles are accepted as accurate assumptions. Still, principles' definitions are subverted by those who mishandle its use trying to resolve a specific demonstration. An element of that demonstration contradicts or misinterprets the principles' definitions, making the conclusion probable. In some sense, the deductive operation is correct but the way in which the terms of principles' definitions are employed is not. In the context of geometrical demonstrations, this wrong deduction is a sort of paralogism because the principles are very acceptable but conclusion is not:

> Amplius autem praeter omnes qui dicti sunt syllogismos ex his quae sunt circa aliquas disciplinas convenientia fiunt paralogismi, quemadmodum in geometria et huic cognatis accidit haberi. Videtur autem modus hic differre praedictis syllogismis; nam neque ex veris et primis syllogizat falsigraphus neque ex probabilibus[3].

In the *De sophistici elenchi*, the wrong deductive connection is a paralogism

338; R. Podkoński, «Thomas Bradwardine's Critique of *Falsigraphus*'s Concept of Actual Infinity», *Studia Antyczne i Mediewistyczne*, 36 (2003), 147.

2 Petrus Hispanus, *Tractatus: Called Afterwards Summulae Logicales*, ed. L. M. De Rijk, Van Gorcum & Comp., 1972, p. 91.

3 Aristoteles, *Topica: translatio Boethii*, ed. L. Minio-Paluello (Aristoteles latinus V), Leiden, Brill, 1969, p. 5 (101a 5-10).

in dialectic syllogism but is *falsigraphus* for geometry demonstrations. Therefore, the improper uses of demonstrative principles have different instances according to each field. Aristotle cites an example of the wrong deduction regarding Bryson's proof of circle squaring[4]. In *Analytica Posteriora*, Bryson's quadrature illustrates how geometry principles' improper use reveals an accidental knowledge that would not have an application in other geometrical issues[5]. In *De sophistici elenchi*, Aristotle said about this proof «that it has no relation to the matter in hand». Thus, Bryson's reasoning lacks generality, and it is aimed at people who are not familiar with what is or is not possible in geometrical deductions[6]. The Aristotelian allusions about Bryson's proof have been remarked by Philoponus, who said that Aristotle did not expand on it enough. According to Philoponus, this proof postulates a circle with an inscribed polygon of a smaller area than circle's and another circumscribed polygon which is larger than the circle. This circle is more extensive than any of the polygons inscribed and smaller than any polygons circumscribed. Then it is possible to find one intermediate polygon that would be equal to the circle, since that polygon is not larger or smaller than the circle area[7]. Aristotle rejects this proof because it is not a straight deduction from geometrical principles. It otherwise assumes the equality of two geometrical figures, a circle and a polygon, inferred from tree different polygons: one smaller, another larger, and one intermediate which is just a supposition. This third figure is possible under the assumption of the equality between curves, and straight lines should

---

4 «Litigiosus autem est qui quodammodo sic se habet ad dialecticum ut falsigraphus ad geometricum; nam ex eisdem dialecticae paralogizat velut et falsigraphus geometriae; sed hic quidem non litigiosus, quoniam ex principiis et conclusionibus quae sunt sub arte falso describit qui autem ex his est quae sunt sub dialectica circa alia quidem quoniam litigiosus erit manifestum», Aristoteles, *De Sophisticis elenchis*, ed. B. G. Dod (Aristóteles latinus VI), Leiden, Brill, p. 25 (171b).

5 «Est enim sic monstrare, sicut Briso tetragonismon, id est quadrangulatum; secundum communeque enim demonstrant huiusmodi rationes, quod et alteri inest; unde et in aliis conveniunt rationes non proximis. Non itaque secundum quod illud est scit, secundum accidens non enim convenit demonstratio et in aliud genus», Aristoteles, *Analytica Posteriora*, eds. B. G. Dod, L. Minio-Paluello (Aristóteles latinus IV), Leiden, Brill, p. 21 (76a).

6 «Ut quadratura quae est quidem per lunulas non litigiosa, Brissonis autem litigiosa; et hunc quidem non est transferre nisi ad geometriam tantum, eo quod ex propriis sit principiis, illum autem ad plures, quicumque non sciunt quid possibile est in unoquoque et quid impossibile; aptabitur enim», Aristoteles, *De Sophisticis elenchis*, op. cit. p. 25 (171b)

7 Philoponus, *On Aristotle Posterior Analytics 1.9–18*, ed. R. McKirahan, London, Bloomsbury, 2012, pp. 15-17.

be possible without an accurate geometrical diagram. The English translation of *Topica* (101a) points out that *falsigraphus,* as «the person who draws fake diagrams does not deduce from true or primary things […] he fakes a diagram by describing semicircles improperly, or by extending lines in ways in which they cannot extend»[8].

Once again, Philoponus'[9] description of Bryson's quadrature - quoting Proclus - coincides with the Aristotelian critic. Bryson departs from this assumption: if there are figures larger and smaller than others, hence there should be a figure that is equal to another one. To prove that a geometer draws straight lines AC and CB shaping a right angle, the CB line is the diameter of the semicircle CDB (Fig. 1). The exterior angle ACD is smaller than any acute angle, and the interior angle DCB is larger than any other acute angle. Thus, it is possible to find an angle that is equal to the right angle since it is enough to increase the interior angle and to decrease the exterior angle *ad infinitum* by drawing smaller (CGE) and larger (CFE) semicircles (Fig. 1).

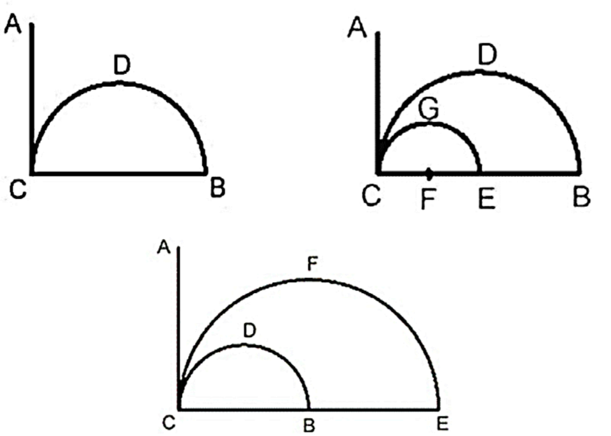

Fig. 1

8 Aristotle, *Topics Books I and VIII*, ed. R. Smith, Clarendon Aristotle Series, 1997, p. 2; «Nam in eo quod aut semicirculos describit non ut oportet aut lineas aliquas ducit non ut ducendae sunt, paralogismum facit», Aristoteles, *Topica: translatio Boethii*, op. cit., p. 5.

9 Philoponus, *On Aristotle Posterior Analytics 1.9–18*, op. cit., pp. 17-18.

In both demonstrations, Bryson supposes an outcome which is not attested by diagrams. The Aristotelian objection shows that a *falsigraphus* draws geometrical constructions to deduce wrong conclusions trough an unorthodox way. This type of demonstration remarked in ancient geometry is an indirect proof - as Knorr or Clagett have claimed[10]. This proof has some geometrical patterns: a curve is equal to a straight line, in the case of squaring the circle; the equality of the angles that are at the base of the triangles[11]; as well as the proportional equality of third magnitude (C) regarding other two (A, B)[12]. These questions belong to the ancient geometric tradition, studied by Archimedes and his Arab fellows, and the 12th century Latin translators. Both applied the term *falsigraphus* to these examples and to the geometers who vindicate this sort of proof.

On the other hand, this indirect proof appears in the Aristotelian analysis of dialectical syllogisms constructed by the terms' ambiguity and described in the different fallacies. Aristotle introduced dialectical syllogisms in this demonstration[13] to show how it works within different knowledge practices: dialectical deductions and geometrical demonstrations. This indirect proof, obtained by deduction of the geometric definitions but also by supposition, indicates a wrong connection between geometrical principles and its spurious conclusions.

In the Boethian Latin translation of Aristotle's *Sophistici elenchi*, the Greek term *pseudographos* (ψευδογράφος) is translated as *falsigraphus*. Moeberke's translation[14] assumed the Boethian interpretation of this term which followed the distinction between false syllogism and the contradiction of geometrical demonstrations. However, in Pseudo-Scotus[15] there is a slight difference in the use of

---

10 W. Knorr, Ibid.; M. Clagett, *Archimedes in the Middle Ages. vol. 1, The Arabo-Latin Tradition*, University of Wisconsin Press, Madison, 1964, p. 442.

11 H. L. Busard, M. Folkerts, *Robert of Chester's Redaction of Euclid's Elements, the so-called Adelard II Version*. Volume I., Springer, Basel, 1992, pp. 364; 753.

12 H. L. Busard, *Johannes de Tinemue's redaction of Euclid's Elements, the so-called Adelard III*, Brill, Leiden, 2001, pp. 137-138; 238-239; 342-343.

13 «Si quidem ergo similiter se haberet omnino litigiosus ad dyaleticum ut falsigraphicus ad geometricum, non utique de illis litigiosus esset», Aristoteles, *De sophisticis elenchis*, op. cit., p. 78 (171b).

14 «Litigiosus autem est qui quodammodo sic se habet ad dyaleticum ut falsigraphus ad geometricum; nam ex eisdem dyaletice paralogizat veluti paralogizat et falsigraphus geometricum; sed hic quidem non litigiosus, quoniam ex principiis et conclusionibus que sunt sub arte falso describit; qui autem sub dyaletica circa alia quidem quoniam litigiosus erit manifestum est», Aristotelis, *De sophisticis elenchis*, Guillelmus de Morbeka reuisor translationis, op. cit., 171b.

15 Pseudo-Scotus, *Super Lib. posteriorum*, (Opera omnia I), LV, Paris, 1891, q. xliv, p. 317. Bos

this term. Such distinction occurred, in my opinion, because Pseudo-Scotus did not stress the specific character of the demonstration *falsigrapha*, restricted to a specific case of a geometric proof, unintentionally extending this character to the sophistical syllogisms and the fallacies. Moreover, it seems that Grosseteste had suggested this semantic change, as we will see.

Based on the semantic change framed by Pseudo-Scotus, the hypothesis of this paper is that Duns Scotus, and later other authors such as Nicolas of Cusa, outlined arguments about metaphysical questions with a similar structure of the geometrical proof called *falsigrapha*, for instance, Cusa's circle squaring, and above all, the Scotus allusion to the «hermetic» definition of God as an infinite sphere[16]. Perhaps those authors intended to avoid the negative connotation of *falsigraphus* through a semantic restriction of this term to sophistical syllogisms.

A later reception of this semantic change took place in Nueva Granada, in the 17th and 18th centuries, due to the Pseudo-Scotus's lack of insistence on the indirect geometric proof owed to the theological use of geometric principles. An example of this is Aguilar's *Cursus philosophicus Limensis*[17] and an undisclosed

identifies the author of this commentary as John of Cornwall: «Aus Ch. Lohrs Übersicht erfahren wir, dass eine der zwei Handschrfiten, nämlich Oxford, Magdalen College 162 (15 Jahrhundert), f. 183-(250) folgendes Explizit hat: *Explicunt questiones et tituli tam primi quam secundi Posteriorum Analyticorum datae a domino Johanne de Sancto Germano de Cornubia*», E. P. Bos, «Pseudo-Johannes Duns Scotus über Induktion», in B. Mojsisch, O Pluta (eds.), *Historia Philosophiae medii Aevi. Studien zur Geschichte der Philosophie des Mittelalters. Festschrift für Kurt Flasch zu seinem 60. Geburtstag*, vol. 1. Amsterdam, B.R. Grüner, 1991, p. 79. However, Read shows some doubts about this identification, see: S. Read, «Formal and Material Consequence, Disjunctive Syllogism and Gamma» in K. Jacobi (ed.), *Argumentationstheorie. Scholastische Forschungen zu den logischen und semantischen Regeln korrekten Folgerns*, Leiden, Brill, 1993, p 236, n. 10. Beyond this puzzling identification, Lagerlund prefers to stress the Pseudo-Scotus' prominence: «Contrary to the fact that so little is known about individual, Pseudo-Scotus is one of the best known medieval logicians», H. Lagerlund, *Modal Syllogistic in the Middle Ages*, Brill, Leiden, 2000, p. 166.

16 See Scotus' quotation in note 39; «Deus est sphaera infinita, cuius centrum est ubique, circumferentia nusquam», F. Hudry, (ed.), *Liber Viginti Quattuor Philosophorum*, (Hermes latinus III, 1; Corpus Christianorum, Continuatio Mediaevalis 143A), Turnhout, 1997, p. 7; K. Harries, «The Infinite Sphere: Comments on the History of a Metaphor» *Journal of the History of Philosophy* 13 (1975) 5-15.

17 José de Aguilar, *Cursus philosophicus dictatus Limae…tomus primus*, Joannis Francisci de Blas, 1701; W. Redmond, «Déjà vu en la metafisica de José de Aguilar. La posibilidad en el Curso de filosofía dictado en Lima», in A. Eichmman, M. Frias (eds.), *Clasica Boliviana* V, Plural, La Paz, 2010, pp. 163-176.

question that is preserved in a codex from the historical Archive of the Dominicans in Santa Fe de Bogotá, that was expounded by the Franciscan master Ceballos y Tena in his brief treatise entitled *De syllogismo falsigrapho*[18].

Those testimonies show the long connection that the Pseudo-Scotus's semantic change had regarding the demonstration *falsigrapha*, despite the noble fortune that geometrical arguments had in Scotus' angelology, in Cusa's theology, and on the teaching of the Aristotelian logic in Nueva Granada. However, I should note that the 14th century *calculatores* maintained the definition *falsigraphus* and its character restricted to geometry, which is mostly due to the reception of Grosseteste, Roger Bacon, and the almost unknown Ioannes Tinnemius[19]. In this way, a revisited tradition emerges advocating the correct use of geometric definitions and the exclusion of indirect proofs, especially concerning the geometric representation of quantifiable motion variations in the substantial nature and conception of infinity[20].

Returning to the issue proposed, I will start by presenting the type of deduction that Grosseteste described as *falsigraphica* in geometry, as well as his positive assessment of the «visible» aspect of mathematical proofs, meaning that «visible», in its appropriate use, makes a proof more understandable or demonstrable. Secondly, I will compare Albert the Great's comment about Bryson' squaring of the circle with Bacon and Grosseteste's introduction of the matter. Thirdly, I will deal with the Pseudo-Scotus' semantic change regarding the term *falsigraphus* and how it was omitted in the theological proofs using geometric arguments on the Scotus' *Ordinatio*, as well as in the quadrature postulated by Cusanus. Finally,

18 I must thank the San Luis Beltrán Dominican Archive of Bogotá - its director and staff - for allowing the consultation of this manuscript: Petrus Çeballos et Tena, *Brevis insummulas exaratio iuxta subtilis numen subtilioris...Joannis videlicet Duns Scoti*, dated 14.06.1744, (Archivo Histórico de la Provincia de San Luis Beltrán de Colombia. Fondo acumulado. Libros), without library signature; vid. description of this manuscript in: J. I. Saranyana, C. J. Alejos Grau, (eds.), *Teología en América Latina. Vol. II/1. Escolástica barroca, Ilustración y preparación de la Independencia*, Editorial Vervuert, 2005, pp. 352-353; W. Redmond, *Bibliography of the Philosophy in the Iberian Colonies of America*, Nijhoff, La Haya, 1972, pp. 26-27.

19 W. Knorr, *Falsigraphus vs. adversarius*…, op. cit., p. 351.

20 Those issues have been extensively investigated by IFLUP-GFM's researchers, and have been edited Thomas Bradwardine's work, that shows the different uses of *falsigraphicus*: vid. Tomás Bradwardine, *De continuo*, ed. L. Queiroz (ed.), Latin text by J. Murdoch (†), preface J. Meirinhos, Porto, Afrontamento, 2013; L. Queiroz, «A estrutura axiomática do *De continuo* de Tomás Bradwardine e a demonstração em Aristóteles e Euclides», *Mediaevalia. Textos e estudos*, 29 (2010), 124, n. 58.

I will briefly describe the way in which the *Cursus philosophicus limensis* receives the Pseudo-Scotus' perspective, reflected in the unpublished *Articulus* by the Franciscan master Ceballos y Tena, who was settled in Nueva Granada - Quito and Santa Fe de Bogotá - in the mid-18th century.

The structure of the *falsigrapha* proof according to Grosseteste

In Grosseteste's commentary on the *Analytica posteriora*, there are, at least, four different ways of exposing what a demonstration *falsigrapha* is. They all follow the Boethian translation of the term, and Grosseteste gathers both the syllogistic structures and the geometrical proof. Before analysing these approaches, it might be useful to briefly recall Grosseteste's account of what scientific demonstration means to Grosseteste. In Grosseteste's commentary, some scholars have seen the overlapping of syllogistic and mathematical demonstration based on *communia*, which are the principles that different disciplines share and apply to their specific subject matter[21]. It is not my intention to argue against this perspective, but I would like to observe that the deductive structure of the *Elementa* is present in this commentary in the form of geometrical inference. He coined an accurate syllogism on the Bryson's demonstration, and his source was perhaps Alexander of Aphrodisia[22]:

21 «As we just noted, due to Grosseteste's emphasis on mathematics as the key of scientific explanation, much use is made of Euclid's Elements […] Grosseteste is not simply giving a reading of Aristotle's *Posterior Analytics* alone. Indeed, it is reading of Aristotle-Euclid together», J. Hackett, «Robert Grosseteste and Roger Bacon on the Posterior Analytics», P. Antolic-Piper, A. Fidora, M. Lutz-Bachmann (eds.), *Erkenntnis und Wissenschaft/ Knowledge and Science: Probleme der Epistemologie in der Philosophie des Mittelalters/ Problems of Epistemology in Medieval Philosophy*, Akademic Verlag, Berlin, 2004, p. 166; « […] necesse est principia communia cum veniunt in demonstrationem fieri propria; et in hoc sermone docemur cognoscere quando demonstratio est ex propriis. Cum enim tria sunt que sumuntur in demonstratione: genus, scilicet, subiectum et passio probata de subiecto et ea ex quibus probatur, genus autem subiectum et passio semper sunt propria scientiae; ea autem ex quibus demonstrantur in se considerata quandoque sunt propria quandoque communia»; «Communia autem sunt ut si ab aequalibus aequalia demas et caetera; et hoc communia in speciali scientia debent appropriari generi subiecto, sicut in geometria magnitudinibus et in arithmetica numeris», Robert Grosseteste, *Commentarius in Posteriorum Analyticorum libros*, P. Rossi (ed.), Firenze, Olschki, 1981, pp. 154-155.

22 About the reception of Alexander's comentaries on Aristotle's logical Works in Oxford, see: S. Ebbesen, «Jacobus Veneticus on the *Posterior Analytics* and some early 13th-century Oxford Masters on the *Elenchi*», *Cahiers de l'Institut du Moyen-Âge Grec et Latin*, 21 (1977), pp. 1-9. Kilwardy quotes Bryson, but his source is Aristotle; Robert Kilwardby, *De ortu scientiarum* (Auctores Britannici Medii Aevi IV), A.G. Judy (ed.), Toronto, PIMS, 1976, pp. 174-175.

> Sillogismus autem Brisonis talis est. Circulus est maior omni figura rectilinea inscripta circulo et minor omni figura rectilinea circumscripta circulo, similiter quadratus aequalis triangulo rectangulo cuius unum latus continentium angulum rectum est aequale semidiametro circuli et reliquum est aequale circumferentie circuli est maior omni figura rectilinea inscripta illi circulo, et minor omni figura rectilinea circumscripta. Quaecumque autem eisdem sunt maiora et minora sibi invicem sunt aequalia, circulus igitur et quadratus sunt aequalia[23].

The inaccurate part of this syllogism, according to Grosseteste, is the middle term because equality is not shown by the mere comparison of smaller and larger magnitudes. In other words, the middle term does not express the connection between the extremes, but a mere accidental correlation. Hence, equality is not inherent to the subject of syllogism premises: circle and polygons, curves, and straight lines.

After formulating this syllogism, Grosseteste continues to introduce some patterns of deduction *falsigrapha* in which he stresses how science's principles are destabilized to frame contradictory demonstrations not only in geometry but also in logic:

1.a) The demonstration *falsigrapha* misuses *communia principia* (*per se nota*) since impossible conclusions are deducted from those principles, affirming and denying the same thing[24].

2.a) The deduction *falsigrapha* could have syllogistic forms. Once the general assumptions «All human is an animal» and «Nonhuman is not an animal» are accepted, we could frame syllogisms like: *Callias est animal et quod Callias non est animal, et etiam quod Callias non est non animal; et ex duobus sillogismis sequitur quod Callias non est Callias*[25]. In this case, the contradictory conclusion

---

23 Robert Grosseteste, *Commentarius in Posteriorum Analyticorum libros*, op. cit. p. 146.

24 «Et dicit etiam quae sunt illa communia quae accipiuntur in talibus demonstrationibus, quia illa communia sunt duo quorum alterum est necessarium, scilicet de quolibet affirmatio vel negatio, cui non potest falsigraphus contradicere, et reliquum est inpossibile, hoc scilicet: de aliquo eodem affirmatio et negativo. Et istud falsigrahus sponte sua, non tamen concedit istud sumptum communiter, sed propiis terminis, et deducitur et hoc ad conclusionem inpossibilem, que abnegat idem a se», Robert Grosseteste, *Commentarius in Posteriorum Analyticorum libros*, op. cit., p. 162.

25 «Assignetur secundum falsigraphum de quo verum est dicere hominem, vel converso. Sit hoc secundum falsigraphum et prius dictum secundum veritatem, et non solum supponatur quos aliquis idem sit homo et non homo, sed etiam secundum falsigraphum supponatur quod solus homo sit omne animal, id est, quod homo et animal convertantur, et etiam quod homo non sit non animal. His enim suppositis, verum erit dicere quod Callias est animal et quod Callias non

about the singular term, *Callias*, addresses the misappropriation of the general assumptions previously accepted. The contradictory meaning of the singular proposition implies a misunderstanding of general assumptions since the assertion «Callias is not an animal» leads to the conclusion «Callias is not a human», and thus the conclusion is «Callias is not Callias».

3.a) Contrary to Euclidian's proofs in which definitions are employed accurately in the syllogistic formulation. The definitions of general assumptions are mishandled, according to 2a.), to frame assertions which are simultaneously *esse* and *non esse*[26].

4.a) It is the case of the demonstration about the immovable principle of motion and its unity in *Physica* VIII, since, at the same time, *primus motus fuerit et non fuerit*[27].

Options 1a., 2.a link the *falsigrapha* deduction to the syllogism form, but in the sense that a universal demonstration depends on the use of general *communia* applied at some point in the proof to show the contradiction in 3.a., 4.a. However, there is a proper use of *communia* in geometry and astronomy, which shows their demonstrations *per bene visibile* beyond the graphic missteps[28]. Distortions used

---

est animal, et etiam quod Callias non est non animal; et ex duobus sillogismis sequitur quod Callias non est Callias», Ibid., p. 165.

26 «Et intelligo hic dici de communiter ad affirmationem et negationem, sicut in praescripto sillogismo V Euclidis [*due quantitates habentes ad quantitatem tertiam porportionem unam sunt equales*] accipitur primum de medio non quia illud dat falsigraphus, sed quia verum est et praedemonstratum, ideo negari non potest. Medium autem et etiam tertium simul sumptum cum medio, hoc est minor propositio quam dat falsigraphus cum assumpta est ad maiorem, nihil differt ab eo quod est accipere simul esse et non esse. Ipsa enim propositio minor, quam dat falsigraphus, habet in se implicitam contradictionem, et ipsa etiam cum maiori sunt affirmatio et negatio oppositae vel valent affirmationem et negationem oppositas.», Ibid., p. 164.

27 «In aliquibus demonstrationibus ducentibus ad inpossibile pervenit deductio ad oppositum alicuius principii vel presostensi in illa eadem scientia; quandoque vero fit deductio non ad oppositum alicuius principii vel praeostensi in illa eadem scientia, sed ad abnegationem alicuius a se, sicut facit Aristoteles in VIII Physicorum, posito quod primus motus fuerit, ostendit primum motum non fuisse primum motum», Ibid., p. 162.

28 «[…] quod in mathematicis rarus est error eo quod res mathematicae sunt bene visibiles ab intellectu; nec ei quod dicit Ptolemeus, scilicet, quod in mathematicis est scientia certissima et magis certa quam in metaphysicis, quia dicimus quod res divinae sunt magis visibiles ab aspectu mentis sano non obnubilato phantasmatibus, sicut res corporales clarissime et a lumine solis magis illuminate sunt magis visibiles ab oculo corporali sano assuefacto visioni rerum splendidarum», Ibid., p. 256.

to occur on the circle squaring proof, as we will see in the following point. The geometrical deduction cannot be verified because its subject cannot be shown by the geometric representations that should be *bene visibile ad intellectum*.

Squaring the circle

Like Grosseteste, Albert the Great knew Euclid's *Elementa* and wrote a commentary on it[29]. In his commentary on the *Physica*, Albert introduced a comparison between dialectical syllogisms and geometrical proofs that pointed out the different handling of geometrical principles. Albert addressed the first cause of motion issue and the statements drawn by metaphysics based on the conception of a unique and immovable principle of natural motion. Thus, the immovable principle of natural motion could not be compared to the geometer's contradictory proof since there is assumption by drawing a polygon that is not larger or smaller than circle, and semicircles that have the same qualities. Bryson's squaring method does not belong to the dialectical discussion, but rather to a contradiction in geometry principles. His purpose was to match the area of the circle with the polygon of virtual «infinite sides». In physics, this could happen with the rejection of the unmoving principle of motion[30].

Albert's conclusion conceals the idea that metaphysics could be a discipline, like geometry, in which some principles are not submitted to a discussion, but they bear an erroneous or contradictory usage[31]. Roger Bacon also criticized this wrong usage of a straight line's infinite division since such division's representation is impossible and contradicts the comprehension of geometrical proofs. Hence, this sort of geometrical proof lacks representation (*sine figuracione*). Al-

29 Albertus Magnus, *Super Euclidem* (Alberti Magni Operum Omnium 30), ed P. M. J. E. Tummers, Monasterii Westfalorum, Aschendorff, 2014.

30 «Quicumque enim dicit ens esse unum et immobile ipse negat principium esse rerum naturalium et negat pincipium cognitionis et esse omnium rerum naturalium [...] Et ideo cum eo qui negat hoc, non est habendus sermo in naturis, quoniam neganti principia non fit conclusio, eo quod quando ipse deductus est ad metam inconvenientis, non videtur ei esse inconveniens. Huius probatio est per simile in geometria, quia etiam geometrae non est disputatio cum eo qui negat principia», Albertus Magnus, *Physica*, P. Hossfeld ed., (Sancti Alberti Magni opera omnia 4), Münster, Aschendorff, 1987, p. 17.

31 «[...] sicut ratio disputativa geometrae non est amplius contra destruentem et negantem principia sua, sed aut est alterius scientiae aut scientiae omnibus communis. Alterius quidem scientiae dico, quae logica est, quae est altera a parte philosophiae essentiali, quia logica potius docet modum sciendi quam scientiam, quae sit pars essentials philosophiae», Albertus Magnus, *Physica*, op. cit., p. 16

bert insisted that Bryson had tried to display straight lines inscribed in a circle such as arcs[32], which assumes that geometrical representations cannot be proven. Therefore, those diagrams keep a *latentis deceptio*.

Roger Bacon introduced another syllogistic formulation of the dubious geometric proof in which the unlimited division of a straight line was assumed. From this assumption, he deduced the equivalence between straight and curved lines. In the syllogism proposed by Bacon: «All straight lines drawn from the circle's center are equal to the curved lines, from which it follows that there is a proportion between the polygon inscribed in the circle and the areas of both figures»[33]. This generalization, criticized by Albert the Great, was somewhat introduced by Grosseteste, who evidenced how syllogism premises show the contradictions in geometrical demonstration in his syllogistic formulations. This syllogism cannot be show through geometrical diagrams since it lacks the visible quality that geometric proofs must display.

The Pseudo-Scotus' variation

In Pseudo-Scotus' account of the differences between the litigious syllogism and the *falsigrapha* proof, there is no reference to a specific geometric demonstration, or mention of a contradiction between the geometrical principles and the indirect proof displayed in a fake diagram. However, Pseudo-Scotus states that a demonstration could have the form of a contentious syllogism[34]. Demonstrations make use of first and immediate principles which are suitable to the intellect by themselves, but some errors might occur when the mind is not well disposed and delivers a deceptive deduction - or *syllogismus falsigraphus* - epitomized by the fallacy of accident[35]. Those defective deductions appear owing to the assumption

32 «Est autem artificium Brissonis, quod ipse convertit cordas portionum in arcus et postea accepit lineas aequales arcubus et ex illis composuit quadratum et putavit esse probatum, quod ex quo latera illius quadrati sunt aequalia circunferentiae, quod totum quadratum esset aequale circulo toti», Albertus Magnus, Ibid., p. 17.

33 «Omnes lineae ductae ab eodem puncto, ad idem punctum sunt aequales, linea arcualis, et cordalis, sunt huiusmodi; quare sunt aequales; igitur quaelibet portio circuii aequalis est tribus lateribus quadrati; quare totum est aequale toti. Iste syllogismus est falsigraphicus, quia coaptat falso», Roger Bacon, «Les summulae dialectices III. De argumentatione», A. de Libera (ed.) *AHDLMA* 54 (1987) 219.

34 «Ad oppositum in demonstrativis fiunt syllogismi falsigraphi, et in illis est deceptio [...] Ad questionem dicitur, quod in demonstrativis non est tanta deceptio, quanta est in Dialectica», Pseudo-Scotus, *Super Lib. Posteriorum*, op. cit., p 317.

35 «Ad primum argumentum dicitur, quod principia Demonstrativa de se sunt nota intellectui, unde

that properties and accidents would be the predicate of the same subject. This fallacy applying to a specific science such as geometry shows extra-linguistic issues regarding the attribution and subsequent verification of properties. Aristotle's example is «all triangles have two right angles, and all triangles are figures, therefore all figures have two right angles»[36]. Perhaps Aristotle thought of Bryson's quadrature in which a property of polygons - smaller or larger - could bring an accident that becomes property of a pretended polygon that is equal to a circle. Pseudo-Scotus begins his reflection with a paralogism that alludes to the ambiguity of language and the geometrical objects in another Aristotelian example from *Sophistici elenchi*: «Homeric poetry is a circle (it means cycle), all circle is a geometric figure, then Homeric poetry is a geometric figure». However, he stresses that if the circle is depicted on the ground - as the ancients used to do - there is no misunderstanding[37]. In my opinion, Pseudo-Scotus carefully introduces Aristotle's concerns about ambiguities in predicating when they appear in a context of scientific demonstration. Moreover, his perspective is logical since he gathers the examples of geometric paralogism in sophistical structures.

The unidentified medieval logician seems to put aside the allusions about the ancient geometrical polemic - reviewed by Aristotle and his commentators - to introduce a semantic change on the sense of *falsigraphus*. In the *Ordinatio* (I, 2, pars

in illis secundum se non accidit deceptio, tamen ex alia circumstantia potest esse deceptio, ut forte ex hoc quod intellectus non est bene dispositus. Ad aliud dicitur, quod in Demonstratione potissima non accidit Consequens: tamen in Demonstratione non potissima potest accidere fallacia Accidentis, et Consequentis, ex ignorantia syllogizantis», Ibid.

36 «Nam eandem diffinitionem oportet et elenchi fieri, verum adiacere contradictionem; nam elenchus syllogismus contradictionis. Si ergo non est syllogismus accidentis, non fit elenchus. Non enim si cum haec sint necesse est hoc esse, hoc autem est album, necesse est album esse per syllogismum.Neque si triangulus duobus rectis aequales habet, accidit autem ei figuram esse vel primum vel principium, quoniam figura vel principium vel primum hoc. Non enim in eo quod figura vel primum, sed in eo quod triangulus demonstratio», Aristoteles, *De sophisticis elenchis*, ed. B. G. Dod, Leiden, Brill, 1975, p. 15 (168b).

37 «Confirmatur ratio, quia dicit Aristoteles, circulus est figura, hic potest esse deceptio: sed si describatur in pulvere, non est deceptio, sic enim manifestum est, quod circulus est figura, et poema Homeri non est circulus: eodem modo principia Demonstrationis de se sunt nota intellectui, igitur in illis non potest esse deceptio aequivocationis, nec aliqua alia in dictione est», Pseudo-Scotus, *Super Lib. Posteriorum*, op. cit., p 317; «Est autem de eo quidem quod est tacentem dicere in contradictione, non in syllogismo, de eo autem quod est, quae non habet aliquis, dare in utrisque, de eo vero quod est quoniam Homeri poema figura est per circulum in syllogismo, Aristoteles», *De sophisticis elenchis*, op. cit., p. 23 (170b).

1, q. 1-2)[38] Duns Scotus discusses how metaphysical and geometrical principles could be taken *per se*. In metaphysical principles, there is no distinction between voice and meaning, between definition and that which is defined. Therefore, those principles are *quid quod est*, the principle - *quid* - and the subject that this principle explains - *quod* -, or, that which knows and that which is known.

This fact is not found in the geometric principles, for instance, in the case of the definition of the line that cannot give a reason for its latitude, since its quantity is longitude. The distinction between the principles of a specific discipline versus most general principles, e.g. metaphysical notions, is explained by Scotus in the *Ordinatio* (II, dist. 1, q. 4-5). Mathematics deals with relations external to the intellect, such as measurement relations on objects, and this discipline cannot give a reason for goodness or beauty as a primary cause. Despite this subordination between metaphysical and geometrical principles, Scotus uses geometrical examples to show how those principles enhance an explanatory dimension.

The hermetic definition of divine infinity - as the sphere whose centre is everywhere and whose circumference has no limit - distinguishes the approaching of every natural desire to pure good, a desire that can occur in unlimited ways[39]. Thus, the divine will be the centre of all-natural desire, and the manifestations of its participation are infinite. Something similar occurs in the explanation of the place conception regarding separate intellects, in which Scotus uses a continuous

38 «Similiter, alias quaelibet propositio esset per se nota in scientiis specialibus quam metaphysicus posset habere per se notam ex definitionibus extremorum, quod non est verum, quia geometer non utitur aliquibus principiis tamquam per se notis nisi quae habent evidentem veritatem ex terminis confuse conceptis, puta concipiendo lineam confuse; evidens verum est quod linea longitudo est sine latitudine, non concipiendo adhuc distincte ad quod genus pertinet linea, sicut considerat metaphysicus. Alias autem propositiones quas metaphysicus posset concipere, puta quod linea est quanta, et huiusmodi, tales propositiones non habet geometer per se notas». Ioannes Duns Scotus, *Ordinatio: Liber primus, Distinctio prima et secunda* (Ioannis Duns Scoti...Opera omnia 2), C. Balic (ed), Civitas Vaticana, Typis Polyglottis Vaticanis, 1950, p. 134.

39 «Ad propositum applicando, ponderi corporis correspondet voluntas in spiritualibus, quia ‘sicut pondere corpus, sic animus amore fertur quocumque fertur’, secundum Augustinum V De civitate cap. 28. Centrum quod ex natura sua est ultimate quietativum, est finis ultimus; unde ait ille sapiens quod «Deus est sphaera intellectualis, cuius centrum ubique et circumferentia nusquam — secundum veritatem. Huic centro voluntas divina primo et per se, quia non participatione cuiuscumque alterius a se, immobiliter et necessario adhaeret, quia ista voluntas, non per habitum, nec per actum differentem, nec in virtute alicuius causae superioris, perfectissime et necessario amat illud bonum summum», Ioannes Duns Scotus, *Ordinatio: Liber primus*, op. cit., p. 114-115.

configuration of space to justify the discrete succession of place, explained as the geometric relationship between the successive points that can be drawn in two circles, one inscribed within the other[40].

Simultaneously, perpendicular lines can be drawn to conform right angles on both circumferences in which an alleged opponent, which could be a *falsigraphus*, could not draw another line to obtain a third angle equal among the others. Therefore, drawing a line implies another geometric relationship different from the Scotus' equality between the points drawn on the two circles. In this case, it is «manifest» that the geometric diagram shows the continuity of the place and its manifestation in the sequence of lines drawn on the circumferences and the unlimited possibility of choosing points on which to draw more lines. The right angles equality demonstrates the diameters proportion of the two circumferences[41].

Despite the limitation of geometric principles, they can show some flexibility when used in proofs involving the divine will or the spatial relationships of separate intellects. Endeavouring to square the circle, Cusanus[42] does not differ in general terms from the proportion between straight lines and curves to obtain the equivalence of the circle's area and a square inscribed in the circumference (Fig. 2). The explanation advanced by Cusanus is close to Scotus's statement, since the infinite nature of the divinity is better understood if one considers that there is a geometric continuity between curves and straight lines, as well as between circular and polygonal figures[43]. This argument implies an understanding that exceeds the limits of a specific discipline, as geometry and its principles, to show that a metaphysical principle underscores the overlapping between that which knows

---

40 Ioannes Duns Scotus, *Ordinatio: Liber secundus, Distinctio prima ad tertiam* (Ioannis Duns Scoti...Opera omnia 7), C. Koser (ed), Civitas Vaticana, Typis Polyglottis Vaticanis, 1973, p. 292.

41 Ioannes Duns Scotus, *Ordinatio: Liber secundus*, ibid., p. 294.

42 «Post haec advertimus, quod cum omnes polygoniae figuare sint ex peripheria polygoniae sit cadens a peripheria circuli, et omnis capacitas polygoniae improportionabiliter deficiens a capacitate circuli [...]», Nicolas of Cusa, *De Circuli quadratura* (Opera omnia XX - Scripta Mathematica), M. Folkerts (ed.), Hamburg, Meiner, 2010, p. 63.

43 See also Raimundus Lullus, *Liber de quadratura et triangulatura circuli seu de principiïs theologiae* (1299): «Comme les mesures des lignes droites et celles des lignes courbes ne se font pas de la même façon, on ne peut mesurer les courbes avec un compas, comme les droites. Cest donc avec l'imagination qu'il faut mesurer mathématiquement les droites et les courbes perçues dans le sujet concret»; A. Llinarès, «Version française de la première partie de la quadrature et triangulature du cercle», *Studia Lulliana*, 30 (1990) 122.

and that which is known (*quid quod est*). However, in none of the passages of Cusanus or Scotus quoted is considered that their arguments bear any resemblance to the *falsigrapha* demonstration[44].

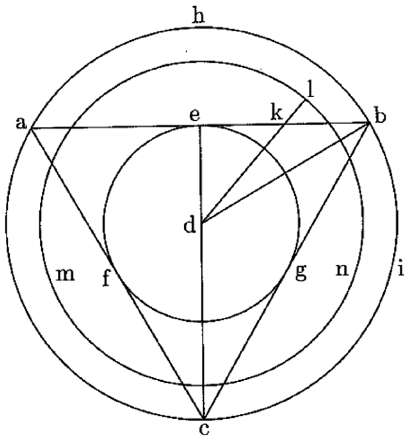

Fig. 2[45]
Tali quidem modo dici potest dato circulo dari quadratum, quod fuerit maius circulo, non tamen aliqua parte aliquota eius, scilicet quadrato […]
Circulus ***efg*** inscribitur ***hide*** punctus medius ***ab*** = linea ***db***
Linea ***d*** ad punctum medium
eb = **dk**
dl semidiameter circuli describatur circulo ***lmn***

The colonial question – Nueva Granada

In the *Cursus philosophicus dictatus Limae* taught by José de Aguilar (1652-1708) in 1684 and published in Sevilla in 1701, there is a passage of the *Sophistici elenchi* that comprises a very brief description of the syllogism *falsigraphus*, in which the use of the original term *pseudographus* captures our attention[46]. Agui-

44 Oresme criticizes the bizarre use of logical and mathematical terms in theological demonstrations that seek to impress while their conclusions are *consequentiae falsigraphicae*, see: Ph. Böhner, «Eine Quaestio aus dem Sentenzenkommentar des Magisters Nikolaus Oresme», *Recherches de théologie ancienne et médiévale*, 14 (1947), 327.

45 Nicolas of Cusa, *De Circuli quadratura*, op. cit., p. 55.

46 «Elencum diuisit in syllogismum pseudographum et sophisticum proprie dictum; pseudographus est, qui latius, quam par est, usurpat principa alicuius scientie ut incautos decipiat», José de Aguilar, *Cursus philosophicus dictatus Limae*, op. cit., p. 576.

lar stated that this syllogism usurps the disciplines' principles, although he failed to mention a specific example. He then proceeded to set in detail each of the fallacies, *in dictione et extra dictione*, which constituted the litigious syllogistic form, in which an appearance of probability is observed that can be recognized by the ambiguity and confusion in comprehending the terms.

Aguilar reproduces the Pseudo-Scotus' distinction between apparently plausible reasoning according to geometrical principles and the litigious syllogism's fallacies. Aguilar's source was probably Pseudo-Scotus[47]. Furthermore, this distinction appears in other philosophical courses such as *Conimbricensis*[48] in which the syllogistic form of squaring the circle that we find in Roger Bacon's *Summulae* is quoted.

The term *falsigrapho* also appears in a brief question found in the last three pages of a codex collecting the courses taught by Pedro Ceballos y Tena in Quito between 1741 and 1743. The codex gathers five different courses dating to those years, independent and numbered differently. I am interested in the last question of Ceballos' course, dedicated to this probable argument and its relation to the Medieval tradition. The article, compounded by three folia, is *De syllogismo falsigrapho* and can be divided into the classification of the three forms of syllogism *falsigrapho* and the current exposition of the fallacies *in dictione et extra dictione*. The three ways of *syllogismo falsigrapho* are:

a.1) Probability
a.2) Contradiction

47 The Peruvian teaching of logic *in via Scoti* - between the 17th and 18th centuries - had an essential source in the edition of *Commentarii ac quaestiones in universam Aristotelis ac subtilissimi Doctoris Ioannis Duns Scoti logicam* by Jeónimo de Valera (1610); R. Hofmeister, «Notas sobre Jerónimo Valera e suas obras sobre lógica», *Ideas sin fronteras en los límites de las ideas. Scholastica Colonialis: Status quaestionis*, eds. R. Hofmeister, M. Lázaro, A. Culleton, Cáceres, Instituto Teológico San Pedro de Alcántara, 2012, pp. 179-212; J. Ch. Egoávil, «Las condiciones para el desarrollo de la 'filosofía virreinal' en el Perú como fundamento del pensamiento peruano. El caso de la 'Logica via Scoti' (Lima, 1610) de Jerónimo de Valera (1568-1625)», *La escritura del territorio americano*, eds. C. Mata, A. Sánchez, M. Vinatea, Instituto de Estudios Auriseculares-SUNY, New York, 2019, pp. 65-92.

48 «[...] exemplum vero adhibet materiae alicuius scientiae propriae, velti Geometriae, ubi genus syllogismi sic construes: omnes lineae ductae ab eodem punto ad idem punctum sunt aequales; sed diameter, et semicirculus sunt lineae ductae ab eodem puncto ad idem, igitur sunt aequales [marg. *Explicat seudographum*]», *Commentariorum Collegii Conimbricensis* [...] *Topicorum I, De utilitate dialecticae*, II, Coimbra, Adream Baba, 1616, p. 899.

a.3) The claim of truth or probability[49]

While the first form is related to the Aristotelian tradition, the following two seem to be a reflection developed by Ceballos, since the contradiction in terms and the claim of truth result from this author's perspective, although the contradiction found in the terms seems like a *sophisma* in which it is simultaneously stated that a subject is and is not. The claim of truth demands an action, an assertion, in which it is taken as accurate what is merely probable. In this sense, Walter Redmond states that the development of the late scholastic philosophy - in the Hispanic colonies - had been accomplished in 18th century[50], and thus it is possible to trace the ways by which the tradition reaches the knowledge of the Hispanic masters, as well as the innovations that they introduced in logic. An individual who suggests the truth with the use of a probable proposition is not called *falsigraphus*, as happened in the geometric tradition, we have other ways of proposing a speaker, not just a dialectician, whose claim of truth refers to an ordinary object whose relation with the speaker is supposed and generates a belief according to a syllogistic form. Undoubtedly, there are similar cases in the Medieval tradition. Furthermore, Ceballos underlines that speakers could embody a *falsigraphus* through the ability to merge in their assertions the probability and the appearance of truth.

Final Remarks

Ceballos y Tena introduces a new element in the *falsigrapho* syllogism. This innovation is a logical - in some sense, technical - concept of probability and

49 «Prima quod illi gerat syllogismi falsigraphi: est cuiuslibet syllogismus quod mostrat extremitas probabilis quod prima factus uideat huius magis probabilis [...] Secundum quod est syllogismi falsigraphus seu erronei est quod quibus habeat uera nec quod et videat huius vera figura caret, et, vera praecepta cuius iuxta praecepta logicalia. hoc clarissime mostrat quod hoc syllogismo: Nullum non est planta, quod nullum equus est non equus, quod nullus equus est planta [...] Tertium quod est sillogismus falsigraphus est illud quod sic mostrat magis probabilis aut verum, quod huius nequam et verum hoc clarissime mostrat hoc syllogismo: prius hoc aliquid quod deperdite corona, perditum est aliquod quid sit deperditis, quod primum est nunquam perdit: hoc mostrat quod syllogismum est falsigraphi[...]», Pedro Ceballos y Tena, *Articulus de syllogismo falsigrapho*, op. cit., 1r-1v.

50 «In the 16th century, the concerns of university professors in America tended to be pedagogical, as they were in the Mother Country. In the 17th, a sense of American intellectual identity took shape, and in the 18th, a new consciousness of the relation of America to Europe emerged which is more characteristic of later Latin American philosophy», W. Redmond, «Self-Awareness in Colonial Latin American Philosophy», *Jahrbuch für Geschichte Lateinamerikas*, 41, 2004, 354.

it is different regarding the truth assertion of syllogistic conclusion. Probability, introduced by Aguilar in his *cursus philosophicus*, is an essential condition of premises that could be *comprobabiles* and *compossibiles*, for instance: *Omnem animal habet sanguinem informatum anima; nullus homo habet sanguinem informatum anima; ergo nullus homo est animal*[51]. The first premise is probable, and the conclusion is *comprobabile*; if one can find a human being that accomplishes this condition, then the second premise is not probable. Meanwhile, the first premise is *compossibile* with the conclusion. Aguilar quotes his probability sources on syllogistic premises: Juan de Cardenas and Ioannes Caramuel[52]. Both were baroque scholars who tried to renew the Aristotelian logic in an in-depth analysis of logical terms.

Probability brings a modal perspective to syllogistic premises, going further than pointing out contradictions between logical premises. Undoubtedly, the emergence of a probabilistic analysis of logical premises in the American colonies deserves a discussion which however goes beyond the aim of this paper. Nevertheless, Ceballos y Tena shows us the long-term journey of a logical classification that, although considered contradictory and false by Medieval masters, became the source of another sort of analysis for colonial scholars: *ex probabilibus sequitur probabile*.

References

1. Sources

Albertus Magnus, *Physica*, ed. P. Hossfeld, (Sancti Alberti Magni opera omnia 4), Münster, Aschendorff, 1987.

— *Super Euclidem* (Alberti Magni Operum Omnium 30), ed P. M. J. E. Tummers, Monasterii Westfalorum, Aschendorff, 2014.

Aristoteles, *Analytica Posteriora*, eds. B. G. Dod, L. Minio-Paluello (Aristóteles latinus IV), Leiden, Brill, 1970.

— *De Sophistici elenchis*, ed. B. G. Dod (Aristóteles latinus VI), Leiden, Brill, 1975.

— *Topica: translatio Boethii*, ed. L. Minio-Paluello (Aristóteles latinus V), Leiden, Brill, 1969.

51 José de Aguilar, *Cursus philosophicus*, op. cit. pp. 92b-93a.

52 José de Aguilar, *Cursus philosophicus*, Ibid.

Commentariorum Collegii Conimbricensis, Topicorum I, De utilitate dialecticae, II, Coimbra, Adream Baba, 1616.

Ioannes Duns Scotus, *Ordinatio: Liber primus, Distinctio prima et secunda* (Ioannis Duns Scoti...Opera omnia 2), ed. C. Balic, Civitas Vaticana, Typis Polyglottis Vaticanis, 1950.

— *Ordinatio: Liber secundus, Distinctio prima ad tertiam* (Ioannis Duns Scoti... Opera omnia 7), ed. C. Koser, Civitas Vaticana, Typis Polyglottis Vaticanis, 1973.

Johannes de Tinemue, *Johannes de Tinemue's redaction of Euclid's Elements*, the so-called Adelard III, ed. H. L. Busard, Brill, Leiden, 2001.

José de Aguilar, *Cursus philosophicus dictatus Limae…tomus primus*, Joannis Francisci de Blas, 1701.

Liber Viginti Quattuor Philosophorum, ed. F. Hudry, (Hermes latinus III, 1; Corpus Christianorum, Continuatio Mediaevalis 143A), Turnhout, Brepols, 1997.

Nicholas of Cusa, *De Circuli quadratura* (Opera omnia XX - Scripta Mathematica), M. Folkerts (ed.), Hamburgi, Meiner, 2010.

Petrus Çeballos et Tena, *Brevis insummulas exaratio iuxta subtilis numen subtilioris...Joannis videlicet Duns Scoti*, dated 14.06.1744, Archivo Histórico de la Provincia de San Luis Beltrán de Colombia. Fondo acumulado. Libros. Sin referencia.

Petrus Hispanus, *Tractatus: Called Afterwards Summulae Logicales*, ed. L. M. De Rijk, Van Gorcum & Comp., 1972.

Philoponus, *On Aristotle Posterior Analytics* 1.9–18, ed. R. McKirahan, London, Bloomsbury, 2012.

Pseudo-Scotus, *Super Lib. posteriorum*, (Opera omnia I), LV, Paris, 1891.

Robert Grosseteste, *Commentarius in Posteriorum Analyticorum libros*, ed. P. Rossi, Firenze, Olschki, 1981.

Robert Kilwardby, *De ortu scientiarum* (Auctores Britannici Medii Aevi IV), ed. A.G. Judy, Toronto, PIMS, 1976.

Robertus Castrensis, *Robert of Chester's Redaction of Euclid's Elements, the so-called Adelard II Version*, Volume eds. I., H. L. Busard, M. Folkerts, Springer, Basel, 1992.

Roger Bacon, «Les summulae dialectices III. De argumentatione», ed. A. de Libera, *AHDLMA* 54 (1987) 219.

Tomás Bradwardine, *De continuo*, ed. L. Queiroz, Latin text by J. Murdoch (†), Porto, Afrontamento, 2013.

2. Studies

Böhner, Ph., «Eine Quaestio aus dem Sentenzenkommentar des Magisters Nikolaus Oresme», *Recherches de théologie ancienne et médiévale*, 14 (1947) 305-328.

Bos, E. P., «Pseudo-Johannes Duns Scotus über Induktion», in B. Mojsisch, O Pluta (eds.), *Historia Philosophiae medii Aevi. Studien zur Geschichte der Philosophie des Mittelalters. Festschrift für Kurt Flasch zu seinem 60. Geburtstag*, vol. 1. Amsterdam, B.R. Grüner, 1991, pp. 171-103.

Clagett, M., *Archimedes in the Middle Ages vol. 1, The Arabo-Latin Tradition*, University of Wisconsin Press, Madison, 1964.

Ebbesen, S., «Jacobus Veneticus on the Posterior Analytics and some early 13th-century Oxford Masters on the Elenchi», *Cahiers de l'Institut du Moyen-Âge Grec et Latin*, 21 (1977) 1-9.

Egoávil, J. Ch., «Las condiciones para el desarrollo de la 'filosofía virreinal' en el Perú como fundamento del pensamiento peruano. El caso de la 'Logica via Scoti' (Lima, 1610) de Jerónimo de Valera (1568-1625)», in C. Mata, A. Sánchez, M. Vinatea (eds.), La escritura del territorio americano, Instituto de Estudios Auriseculares-SUNY, New York, 2019, pp. 65-92.

Hackett, J., «Robert Grosseteste and Roger Bacon on the Posterior Analytics», P. Antolic-Piper – A. Fidora – M. Lutz-Bachmann (eds.), *Erkenntnis Und Wissenschaft/ Knowledge and Science: Probleme der Epistemologie in der Philosophie des Mittelalters/ Problems of Epistemology in Medieval Philosophy*, Akademic Verlag, Berlin, 2004, pp. 161-212.

Harries, K., «The Infinite Sphere: Comments on the History of a Metaphor», *Journal of the History of Philosophy* 13 (1975) 5-15.

Hofmeister, R., «Notas sobre Jerónimo Valera e suas obras sobre lógica», in R. Hofmeister, M. Lázaro, A. Culleton (eds.), *Ideas sin fronteras en los límites de las ideas. Scholastica Colonialis: Status quaestionis*, Cáceres, Instituto Teológico San Pedro de Alcántara, 2012, pp. 179-212.

Knorr, W., «Falsigraphus vs. adversarius: Robert Grosseteste, John of Tynemouth, and geometry in 13th-century Oxford», in Menso Folkerts (ed.), *Mathematische Probleme im Mittelalter: der Lateinische und arabische Sprachbereich*, Harrassowitz, Wiesbaden, 1996, pp. 333-359.

Lagerlund, H., *Modal Syllogistic in the Middle Ages*, Brill, Leiden, 2000

Llinarès, A., «Version française de la première partie de la quadrature et triangulature du cercle», *Studia Lulliana*, 30 (1990) 121-138.

Podkonski, R., «Thomas Bradwardine's Critique of Falsigraphus's Concept of Actual Infinity», *Studia Antyczne i Mediewistyczne*, 36 (2003) 141-153.

Queiroz, L., «A estrutura axiomática do *De continuo* de Tomás Bradwardine e a demonstração em Aristóteles e Euclides», *Mediaevalia. Textos e estudos*, 29 (2010) 111-127.

Read, S., «Formal and Material Consequence, Disjunctive Syllogism and Gamma» in K. Jacobi (ed.), *Argumentationstheorie. Scholastische Forschungen zu den logischen und semantischen Regeln korrekten Folgerns*, Leiden, Brill, 1993, pp. 233-259.

Redmond, W., «Déjà vu en la metafisica de José de Aguilar. La posibilidad en el Curso de filosofía dictado en Lima», in A. Eichmman, M. Frias (eds.), *Clasica Boliviana V*, Plural, La Paz, 2010, pp. 163-176.

— «Self-Awareness in Colonial Latin American Philosophy», *Jahrbuch für Geschichte Lateinamerikas*, 41, 2004, 353-371.

— *Bibliography of the Philosophy in the Iberian Colonies of America*, Nijhoff, La Haya, 1972.

Saranyana, J. I. / C. J. Alejos Grau, (eds.), *Teología en América Latina. Vol. II/1. Escolástica barroca, Ilustración y preparación de la Independencia*, Editorial Vervuert, 2005.