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A RAY OF LIGHT ON PRIVATE MATHEMATICAL CULTURE IN COIMBRA IN THE MID-17TH CENTURY: FRANCISCO PEREIRA DE LA CERDA (†1656)

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**Abstract:** *A closer consideration of some former Jesuit books in the National Library of Peking (Beitang collection) with the owner's name Francisco Pereira de la Cerda, brings us back to the milieu of the Coimbra college in 1654-1656, and proves that 'foreign' mathematical books were circulating in the margin of the College instruction, occasionally even among young Jesuit novices. At the same time, this study not only unravels the identity of the Angra do Heroísmo born Francisco Pereira de la Cerda; it evokes also the profile of Luis de Brito (born 1604, Abrantes) - and indirectly also his namesake (born 1613, Alvito); the former - later removed to the Domus Probationis in Lisbon - had also relations with the 'Mathematical library' of the Colégio Santo Antão (Lisbon), Athanasius Kircher (Rome) and some Jesuits in China; all this sheds some new light on the mathematical (book) culture in and around Coimbra and Lisbon, with less expected connections outside Portugal, almost precisely in the year F. Verbiest taught in Coimbra mathematics and took contact with Kircher.*

**Keywords:** *mathematics in Portugal; Francisco Pereira; Coimbra College; Luis de Brito, SJ; Ferdinand Verbiest, SJ; China mission.*

**Resumo:** Um exame atento a alguns livros jesuítas, existentes, após 1949, na Biblioteca Nacional de Pequim (na coleção conhecida por 'Beitang'), e que têm como nome de proprietário Francisco Pereira de la Cerda, levou-nos até ao Colégio das Artes de Coimbra, nos seus

**Résumé:** *En considérant de plus près quelques livres des Jésuites, présents depuis 1949 dans la bibliothèque Nationale de Peking (dans la collection dite 'Beitang') et ayant le nom du propriétaire Francisco Pereira de la Cerda, nous sommes conduits vers le milieu du*

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anos 1654-56, onde alguns livros de matemática “estrangeiros” circulavam à margem da instrução que era dada no referido Colégio, e isto mesmo até entre os jovens noviços jesuítas. Em conjunto, a análise do caso não nos permitiu apenas precisar a identidade de Francisco Pereira de la Cerda (natural de Angra do Heroísmo), mas revelou também o perfil do jesuíta Luís de Brito (nascido em Abrantes, em 1604) e, indiretamente, de um seu homónimo (natural do Alvito, 1613). Havendo posteriormente ido para a Casa da Provação de Lisboa, o abrantino teve relações diretas com o Colégio de Santo Antão, e a sua biblioteca matemática; com Athanasius Kircher, em Roma; e com alguns jesuítas na China. Reunidos todos estes dados, uma nova luz passa a incidir sobre a cultura matemática dos colégios de Coimbra e de Lisboa, e as suas inesperadas relações com o exterior, mais ou menos no próprio ano da chegada de Ferdinand Verbiest a Coimbra na qualidade de professor temporário de ciências matemáticas, e em que contactou com Kircher.

**Palavras-chave:** Ciências matemáticas em Portugal; Francisco Pereira; Colégio de Coimbra; Luís de Brito, S.J.; Ferdinand Verbiest, S.J.; Missão na China.

*Colégio das Artes à Coimbra dans les années 1654-56, où des livres mathématiques ‘étrangers’ circulaient dans la marge de l’instruction donnée au même college, même parmi de jeunes novices jésuites. Au même temps, l’analyse du cas n’aide pas seulement à préciser l’identité de Francisco Pereira (né à Angra do Heroísmo), mais il révèle aussi le profil du Jésuite Luis de Brito (né 1604, Abrantes) – et indirectement celui de son homologue (né 1613, Alvito); le premier – après son mutation vers la Domus Probationis à Lisbonne - avait entretenu aussi des relations directes avec le Colégio de Santo Antão et sa bibliothèque mathématique à Lisbonne, avec Athanasius Kircher à Rome et avec quelques Jésuites en Chine. Tout ça jette quelque lumière nouvelle sur la culture mathématique au college de Coimbra et de Lisbonne, et leurs relations plutôt inattendues hors du Portugal, à peu près dans l’année même de l’arrivée de Ferdinand Verbiest comme professeur temporaire de mathématiques.*

**Mots-clefs:** Sciences mathématiques au Portugal; Francisco Pereira; Collège de Coimbra; Luís de Brito, S.J.; Ferdinand Verbiest, S.J.; Mission en Chine.

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In the actual National Library of Beijing is a small series of 8 Western precious books, which all have in common the fact that they once belonged to the same European owner, before having been offered, or arrived in the Jesuit mission of China. Following the list and the description of H. Verhaeren, in his *Catalogue de la Bibliothèque du Pé-t’ang* (Pékin: Impr. Des Lazaristes), 1949, these titles are:

- Christophorus Clavius, *Algebra C(hristophori) Clavii*, Aureliae All(obrogum) [i.e. Geneva], 1609 (no. 1290: “*Ir(mão) Francisco Pereira. Coimbra 1636*”, obviously to be corrected into 1656);

- Adrianus Metius, *Arithmeticae et Geometriae Practica*, Franequerae [i.e. Franeker], 1611 (no. 2239: “*Ir(mão) Francisco Pereira. Coimbra 1656*”);
- William Oughtred, *Arithmeticae in Numeris et Speciebus Institutio*, Londini, 1631 (no. 2357: “*Ir(mão) Francisco Pereira. Coimbra 1656*”);
- Nicola Cabeo, *In 4 Libros Meteorologicorum Aristotelis Commentaria et Quaestiones*, Romae, 1646 (no. 1170: “*Ir(mão) Francisco Pereira. Coimbra 1656*”);
- Girolamo Lunadoro, *Relatione della corte di Roma, e de’ riti da osservarsi in esta (...)*, Roma, 1654 (no. 3342: “*Fr(ater) Francisco Pereira Coimbra 20 Agosto 1656*”).
- Girolamo Savonarolo, *Triumphus Crucis*, Leiden, 1633 (no. 2677: “*Francisco Pereira de la Cerda faleceo na Comp(anhia) Coimbra. 1656*”).
- Famiani Strada, *De Bello Belgico*, Romae, 1648 (n° 2879: “*Ir(mão) Francisco Pereira. 1656. Ao P(adr)e Pr(ocurato)re Martim Martinez*”)
- Henry More, *Vita et doctrina Christi Domini (...)*, Antwerp, 1649 (n° 2283: “*Ir(mão) Francisco Pereira Coimbra 1656*”);

All of them have at least one book inscription, which indicates one (Jesuit) brother (*Ir(mão)*), called Francisco Pereira as their original (or 1<sup>st</sup>) owner, referring him to Coimbra, where he died (“*faleceo*”) in 1656. All these inscriptions are uniform and were entered in 1656 – i.e. the year of his death – app. all at once; the photographs show indeed that his name was (except in n.º 1170) written by the same hand, and represent a real owner’s mark; therefore we should accept Pereira acquired all these books in the 1<sup>st</sup> half of 1656, i.e. during his stay in Coimbra and before he died in August of that year. In 2 cases his name is combined to a reference to his death, obviously these additions (in another ink) were introduced after his death, when his private room was emptied, and his books were distributed, acc. to the normal rules.

These biographical details suffice to identify the original owner, as Francisco Pereira de la Cerda, a Jesuit, who was born in Angra do Heroísmo (Terceira, Açores) in 1637<sup>1</sup>, entered the SJ in his 14<sup>th</sup> on the 14.XII.1652 in Lisbon, and after one year of novitiate in Lisbon - in those days in Cotovia (Lisbon)<sup>2</sup> – he was sent to Coimbra, where he finished the 2<sup>nd</sup> year in 1654

<sup>1</sup> From a noble ancestry: his father was Domingos Pereira Sarmentos.

<sup>2</sup> A. Lopes, *Roteiro Histórico dos Jesuítas em Lisboa*, Braga: Livraria A.I. : Editorial A.O., [1985], pp. 31 – 33.

(“*in fine biennii*”) and continued the following year 1655 to study ‘literature’. His presence in this College is indeed confirmed by the *Catalogi* of the Portuguese Province, viz.:

– Cat. Lus. 45, f° 79r. (“Cat. 1us [i.e. primus] Collegii Conimbricens(is) A° 1654”), s.v. Novitii (n° 174):

“*Fr(ater) Pereira – Angra – (aetas) 15 – (Vires) bonae – in fine biennii*”

– Cat. Lus. 45, f° 180r. (“Cat. 1us Collegii Conimbric(ensis) Anno 1655”), s.v. *Fratres philosophi vel Humanistae* (n° 104):

“*Fr(ater) Franciscus Pereira Insulae 3ae (= the Latin form of Terceira) - ann(i) 17 – Anni Societ(at)is 2 – Vires: Bonae – Ministeria: Rhetoricae auditor*”.

Acc. to HS 48, f° 42v., he died in Coimbra on 20 August 1656.

These and some other details correspond to the information given by Antonio Franco, *Ano santo da Companhia de Jesus em Portugal*, 1a ed., Porto: Editora, 1930, pp. 468 – 469. More important, however, is, that the date of decease mentioned in HS and by Franco matches with the date of 20 August, mentioned in one of the Chinese book inscriptions, viz. the copy of Lunadoro, *Relatione della Corte di Roma* (Verhaeren, n° 3342) and that of Girolamo Savonarola (ibid., n° 2277): “*faleceo na Companhia*”. It is, by consequence, clear that both persons, called Francisco Pereira, are indeed identical, and no homonyms; the additional information can by consequence also be transferred from the one source to the other.

With this personality, we trace a young Jesuit novice, of 17 years old, who was apparently the ‘owner’ of 4 mathematical books, all four published outside Portugal, viz. in Switzerland, Italy, Holland and England (3 of the 4 printed in non-Catholic cities as Franeker [Frisonia], Geneva and London), and which were in the year of his death, 1656, between 50 and 10 years old,<sup>3</sup> i.e. according to contemporary standards rather recent. I could not find any information on the way he acquired them, nor whether this happened when he was in Coimbra, or already before, during his one year stay in the novitiate of Lisbon; the latter is possibly the most probable hypothesis, as already in the early 17<sup>th</sup> century mathematical books from other countries could be

<sup>3</sup> The other, not-mathematical books were even slightly ‘younger’, published between 1633 and 1654.

acquired and circulated in Lisbon, through ‘foreign’ book shops, or book sellers of foreign origin<sup>4</sup>.

On the other hand, at least one book he may have acquired in Coimbra, viz. n° 2283, in which appears also the name of Luis de Brito, in a different handwriting. Acc. to the *Defuncti* lists and the *Catalogi*, this should be Luis (*al. Ludovico*) de Brit(t)o, sj (1604 - 1691), Jesuit, born in Abrantes (Estremadura) on 4.11.1604; he entered the Society on 3 May 1618; was professed on 1 Nov. 1640; in 1649 “*comes / socius*” – or secretary – of the Provincial (Lus. 45, *Catalogus* 1649, f° 30, n° 493), and in 1652 ‘*Visitor Insularum*’<sup>5</sup>; in 1654 he is mentioned in the Coimbra college as a preacher (Lus. 45, *Cat(alogus) Patrum & Fratrum Coll(egii) Conimbr(icensis)*, f°85r./v.: “*P. Ludovicus concionator*”), and his presence there is confirmed in 1655 (Lus., 45, f° 175: *Cat(alogus) Ius (i.e. primus) Coll(egii) Conimbricensis*, n° 40<sup>6</sup>) and again in 1658 (Lus. 45, f° 252, n° 29 of the *Index Alph(abeticus) Patrum Coll(egii) Conimbr(icensis)*.<sup>7</sup>

<sup>4</sup> See for instance the copy of Thomas Finck, *Geometriae rotundi libri XIII*, Basel, 1583, and offered in 1617 in Lisbon (“*Olyssipone*”) by a Coimbra *irmão*, called Nogueira to Pantaleon Kirwitzer (H. Verhaeren, *Catalogue*, n° 1608); another example is no. 3063 of the same catalogue, a copy of Adriaen Vlack, *Trigonometria artificialis*, Gouda, 1653, app. since 1668 in Lisbon, as property of a further unidentified \*Estevão Soares (“*Ex libris Stephani Suarez a° 1668 – Orent R(everen)di Patres Deum, pro peccatore Joanne Engeler sacerdote Germano 1672 13 Martii Ulyssobena [better: Ulyssobona?]- V(ice) Prov(inciae) Sinensis*”); the most convincing and impressive evidence, however, are the mathematical books now in the BNP, which were published in the 16th century all over Europe, even when in these cases we mostly don’t know when they arrived in Lisbon (see: H. Leitão, *Livros de ciências XVI s. in BNP, passim [see Indices]*).

<sup>5</sup> This indication in the *catalogi* is confirmed by Lus. 54, f° 47v. (15.10.1652), where the Provincial is mentioned by name, viz. Jeronimo Vogado (1645 – 1648 [sic]).

<sup>6</sup> No longer as a preacher: “*P(ater) Lodovicus de Britto. Docuit Latinitatem per 4 annos, rector Collegii Brigantini, Provincialis comes, Insularum visitor, Prof(essus) 4 votorum*”; in 1655 the preacher was José de Britto (ibid., n° 30).

<sup>7</sup> In these *Catalogi* (especially the one of 1661) he is described with the following ‘ministeria’: “*Docuit gramm(aticam) 3 ann(os); Rect(or) 3 (annos) Collegii Brigantini; Soc(ius) Prov(incialis); Visitor insularum*”; cf. further F. Rodrigues, *História da Companhia de Jesus na assistência de Portugal, Tomo 3º. A provincia Portuguesa no século XVII, 1615 – 1700. Vol. I Nos colégios – Nas ciências e Letras – Na Côte*, p. 27 and 28; id., *Tomo Terceiro*, vol. II, p. 75 and 374 (quoting a document of an unknown date: among the “*Societatis Lusitaniae in Prov(incia) Extrematuria seu Ulyssiponensi Professi*” was: “*P(ater) Ludovicus de Brito, Artium Magister, Vice-Rector olim Collegii Brigantini, Minister Domus Professae Ulissiponensis, Socius Patris Provincialis, nunc Visitor Insularum*”). In fact, in the *Catalogi* wich I consulted, he appears not earlier than 1661 in the *Domus Probationis / Cotovia novitiate* of Lisbon (*Cat. Ius Prov(inciae) Transtaganae* 1661: JS 45, f° 297; in the short period between 1654 and 1661 Lisbon

This identification becomes the more probable, as his name appears also in some other extant books in the China mission, now in the Beitang<sup>8</sup>; finally as he was also a correspondent of François de Rougemont, who was in 1655-1656 also in the Coimbra college, together with the Dutch Jesuit Ignatius Hartoghvelt<sup>9</sup>. This identification can help to understand the relation between both names (de Brito; Pereira) within the same book: it may have been a former private book of De Brito, he offered as a present to the young Pereira, during their shared short period in Coimbra<sup>10</sup>.

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was part of the *Prov. Transtagana*). Therefore, the statement of Franco, *Ano Santo*, p. 14: “*O mais de sua vida, que foi dilatada, passou na casa de São Roque (...)*” should at least be modified. Another aspect in the curriculum of Luis de Brito may have brought him directly in contact with the young Pereira, viz. the fact that on 15 Oct. 1652 he was “*visitator insularum*” (JS 54, f<sup>o</sup> 44), incl. in Terceira, i.e. only two months before Pereira on 14 Dec. of the same year entered the noviciate; one can easily guess some (causal?) connection between both facts.

<sup>8</sup> De Brito, Luis, Padre (S.J.): no. 1121, a copy of Tycho Brahe, *Astronomiae Instauratae Progymnasmata*, Pragae, 1602 (“*dado al Provincia da China pello P(adre) Luis de Britto*”); cf. no. 1911 (in a copy of A. Kircher, *Iter Extaticum*, Rome, 1657, once offered by the author himself to L. de Brito: “*R(everendo) P(atri) Ludovico de Britto (donavit) author*”); 2283 (H. More, *Vita et Doctrina Christi*, Antwerp, 1649, in combination with Francisco Pereira); 3876 (F. de la Torre, *El peregrino atlante S. Francisco Xavier*, Lisboa 1674). These 4 titles demonstrate his interest in astronomy and preaching in the Far Eastern mission, but especially the personal donation by Athanasius Kircher of a copy of his *Iter Extaticum* appeals to the imagination; because his name is not in Kircher’s correspondence (see the list of W. Gramatowski & M. Rebernik, *Epistolae Kircherianae*, Rome, 2001) we can no longer reconstruct the character of this contact. Probably De Brito’s name appears in still another book (or rather: map) donation, viz. in a copy of [Mercator], *Las XVII Provincias de la Tierra Baxa (...)*, Duysburg, s.n., s.d., now in the Ajuda Library (14-XIII-30), with the inscription: “*Este mapa me deo o Pr. Luis de Brito p(er)a esta livraria da math(ematica) de S(anto) Antão*” (mentioned by L. Giurgevich, in: *As bibliotecas e o livro em instituições eclesiais. Actas do II e III encontro nacional*, 2013, p. 183; I thank Dr. Maria de Fátima Gomes for her verification and correction of the inscription on the ms).

<sup>9</sup> See my: *François de Rougemont*, p. 365: De Rougemont in a (lost) letter to Philippe Couplet, partially quoted in the *Elogium Fr(ancisci) de Rougemont* of Egidius Estrix (ARSI, Flandro-Belg., 70, II, p. 1031ff.), p. 1041, concerning the appointment of Charles de Noyelle as German assistant in 1661: “*Hoc certo mihi constat ex litteris P(atris) Ludovici de Brito*”; this implies, by consequence, that in or shortly after 1661 L. de Brito was a correspondent of F. de Rougemont, a correspondence which can have been started precisely when both were in 1655/6 in the *Colégio* of Coimbra. On Rougemont & Hartoghvelt between 6 May 1655 and early 1656 in the *Colégio*, see my presentation on the Conference organized by the *Museu da Ciência* in Coimbra in May, 2017 (Dir. Carlota Simões) and the Proceedings (forthcoming).

<sup>10</sup> For the sake of completeness, we should mention a namesake ‘Pater Luis de Britto’, born in 1613 in Alvito (Beja; Alentejo), mentioned in the Cat. of 1649 (Lus. 45, f<sup>o</sup> 4r.)

At any rate, these 4 mathematical books were in Pereira's property in Coimbra in 1656, almost certainly not as a bibliographical curiosity or a collector's item, but as the instruments for mathematical reading and training<sup>11</sup>. This we should most probably locate within the framework of a private mathematical "*studium privatum*" of the owner, as the catalogues of the Coimbra Jesuit college do not mention any curricular mathematical teacher for 1654-1655 (Cat. Lus. 45);<sup>12</sup> only shortly after Pereira's death Verbiest arrived in Coimbra, to teach mathematics (cf. infra). Learning mathematics through "*studium privatum*" was, within the Society of Jesus, not exceptional, and it is, for instance, explicitly mentioned as the source of the mathematical fame of other contemporary Jesuits such as Ferdinand Verbiest (attributed to him by his friend François de Rougemont<sup>13</sup>), his later successor Antoine Thomas (in an auto-testimony)<sup>14</sup>, Egidius (al. Gilles) Estrix, the later secretary of

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in the college of Porto; in that of 1655 (Lus., 45, f<sup>o</sup> 110v., n<sup>o</sup> 25) he was in the *Domus Professa*, i.e. São Roque of Lisbon; this Luis de Brito is in all probability mentioned as Aloy de Britto, who died in Evora on 30.02.1686.

<sup>11</sup> It may be relevant also that, of these 4 titles, only A. Metius's *Arithmetica* was in the 'general library' of the Coimbra College: see the catalogue of mathematical and medical books in ANTT, Ministério dos Negócios Eclesiásticos e Justiça, caixa 50, maço 61 (2.08.1766): L. Giurgevich & H. Leitão, *Clavis Bibliothecarum*, n<sup>o</sup> 710.

<sup>12</sup> The mathematical culture in Coimbra in these years was described by Rodrigues, III, 1, p. 213 as follows: 'desceu o ensino e estudo da matematica na Universidade a lastimosa decadencia por todo o século XVII. Durante muitos anos totalmente faltou a frequencia dos estudantes e por muitos outros faltaram estudantes e lentes. Nas cortes de 1654 pediu-se ao rei D(on) João, que restaurasse aquelles estudos, porque havendo cadeira da matematica, não havia quem a estudasse. Depois de João Turriano que obteve a cargo de professor em 1653..até 1682 quasi sempre vagou a cadeira, sem mestres e sem discipulos' (T. Braga, *Historia da Universidade de Coimbra*, II, 824). A lack of appropriate mathematical books in the Coimbra area was explicitly mentioned on 28.03.1678 by Antoine Thomas in a letter to Maria de Guadalupe, the Duchess of Aveiro (*Far Eastern Catholic Missions, 1663-1671: the Original Papers of the Duchess d'Aveiro*, Tenri: Tenri Univ., 1975, II, p. 157): "*Pervenit Conimbricam vigesima quinta huius, a R[everen]do Patre Provinciali missus ad docendas scientias mathematicas hoc anno. Quare intra paucos dies illas inchoabimus, omni quidem fere librorum subsidio destituti, eo quod in his regionibus vix ulli mathematici libri reperiantur*". Mathematical books were to be found in other private collections, such as that of Andre de Almada, SJ († 1642) and Francisco Rodrigues Cassão († 1666).

<sup>13</sup> F. de Rougemont, in a letter of 27.07.1661 to Philippe Couplet: "*ob admirabilem peritiam rerum mathematicarum et, quod admirationem augeat, privato studio acquisitam*" (C.F. Waldack, in: *Analectes pour servir à l'histoire ecclésiastique de Belgique*, 9, 1872, p. 19).

<sup>14</sup> A. Thomas, on 27.01.1671 and 24.05.1672 from Douai selected for himself an entire "*suite*" of mathematical sciences, explicitly in preparation of being sent to the China mission. According to his own information, this included the study of: (1) Euclid's'



Tyrus Gonzales (in his obituary)<sup>15</sup>, etc. Yet, as far as I know, it is the first explicit testimony from the mid-17<sup>th</sup> century Coimbra Jesuit context (but see *infra*).

The contents of these 4 books - not necessarily the only mathematical ones in his property, others probably having been lost later, either in Coimbra or in China - have to do with arithmetic and algebra (3 volumes), and Aristotelian meteorology (1 title). Despite Clavius's textbook of algebra (1<sup>st</sup> issue 1608)<sup>16</sup>, this discipline was apparently not a central matter in Jesuit mathematics<sup>17</sup>, and still in his *Synopsis Mathematica* (red. ca. 1677-78) – a textbook for Jesuit 'tyrones' who prepared themselves for the China mission, and prepared during his term as a mathematical teacher in the Coimbra *Colégio das Artes* - Antoine Thomas excluded algebra from his overview of 15 mathematical disciplines, or postponed it until the last chapter, which was never printed<sup>18</sup>; still, in spite of Thomas's conviction that algebra was 'not adapted for early beginners ("tyronibus parum accomodatam")', Pereira had a copy of Clavius's algebra with him, and therefore he exceeded the level of a pure 'tyro'. Oughtred and Metius were two other popular textbooks on arithmetic and geometry, while Cabeo's book on Aristotelian meteorology refers to a much broader specter of interest, and exceeds also the framework of A. Thomas's limited mathematical curri-

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*Elementa*; (2) the calculation of solar and lunar movements, and their eclipses, followed in a third phase (3) by unspecified "*alias matheseos scientias*"; for these and other parts of his curriculum he indicated "*studium privatum*" as the most appropriate way: cf. JS 148, f<sup>o</sup> 13 and 14.

<sup>15</sup> See Brussels: KBR (Royal Library), Ms. 6487, f<sup>o</sup> 378 – 383v<sup>o</sup> (translated from the original Flemish report): "in the beginning, he studied the science, which we commonly call mathematics, on fixed hours, but afterwards he destined – in order to get a better / deeper understanding – also all the time, which he found 'empty' from his current exercises and concerns, and this not only because of the great pleasure he got from the 'certainty' and the clearness of this science, but also because he couldn't find any other, which was more adapted to 'settle' a certain nostalgia (depression) and 'tristezza' than to consider with attentive concentration some of its propositions".

<sup>16</sup> On its contents: G. Schubring, in: [http://www.chiesadelgesu.org/documenti/120212\\_Clavius\\_Algebra\\_it.pdf](http://www.chiesadelgesu.org/documenti/120212_Clavius_Algebra_it.pdf) (consulted 11/07/2017).

<sup>17</sup> See my discussion on this *Synopsis* in EASTM, vol. 45, 2017.1, pp. 121 – 185 (forthcoming). This seems now confirmed by a statement of Thomas himself in his ms., now in the library of the Hispanic Society of New York, where he explains why he had postponed this discipline to the last (= 16<sup>th</sup>) chapter: "*Algebra, quae est subtilior ars numerandi, ab Arabibus excogitata, deinde a P(atre) Clavio S.J. magnopere illustrata ac deinde a[d] Descartes in novam methodum longe meliorem traducta, quae proinde dicitur 'algebra speciosa'. Hanc partem Tyronibus parum accomodatam in hunc locum remittimus*".

<sup>18</sup> C. Jami, in *A Lifelong dedication to the China mission. Festschrift J. Heyndrickx*, Leuven, 2007, pp. 459 – 466; see also C. Jami, *The Emperor's new Mathematics*, Oxford: OUP, 2012, p. 201.

culum. All this may characterize the young Pereira's mathematical level as rather 'advanced'. This is in all probability the reason of the great expectations one had in his "ingenium"<sup>19</sup>.

Here are rising various questions, which due to a lack of sufficient evidence are hardly to be answered. Was his study indeed completely 'independent', or had he some support among the Jesuits or other competent persons within the Coimbra context? As far as mathematics included astronomy – André de Almada, SJ, had died in 1642, and I don't know whether his informal '*academia*' and patronage was still functioning after his death<sup>20</sup>; Francisco Rodrigues Cassão (born 1596) was in 1654 58 years old, and had himself some practical astronomical experience, but we don't know whether he had also a broader mathematical interest, nor whether he was interested in supporting or monitoring young *scholastici* of the class of rhetoric. Certainly Pereira died shortly (i.e. some 3 months) before Ferdinand Verbiest, SJ (1623-1688) arrived in Coimbra, invited as an *Indipeta* with some mathematical training, and reputation; his courses – on which we don't know anything in detail – covered the period from Oct. 1656 to March 1657<sup>21</sup>, and 'missed' therefore the young Pereira.

Yet, the almost complete coincidence of the moment of Pereira's decease and the arrival of the *Indipeta* Verbiest could explain why this group of 8 books arrived after Pereira's death in China: as Jesuits in general were looking for mathematical (and other scholarly) books for the China mission – where a mathematical training was a very important element in the recruitment and the selection – it looks almost evident that the books were 'offered' during the temporary stay of Verbiest, either to himself or to the 'organizer' of the group, Martino Martini. The latter hypothesis seems to be proven by the fact, that Martini's name is found in one of these books (n°. 2879), in a personal dedication in Portuguese ("*ao...Martinez*").<sup>22</sup> The

<sup>19</sup> According to a laconical statement of Francisco Franco, *Synopsis Annalium Societatis Jesu in Lusitania ab annis 1540 usque ad annum 1725*, Augsburg – Graz, 1726, p. 316, n° 16: "*Magnas de ipsius ingenio spes conceptas morbus diuturnus & mors secuta inturbavit*".

<sup>20</sup> On his '*Academia*' in Coimbra, see M. Carolino, 'Science, patronage and academies in early seventeenth-century Portugal: The Scientific Academy of the nobleman and university professor André de Almada', in: *History of Science*, 54.2, 2016, pp. 107-137.

<sup>21</sup> See N. Golvers, 'Two overlooked letters of Ferdinand Verbiest to A. Kircher. How a missionary project was shaped, and Kircher's books were received in mid-17th century Spain and Portugal', in: *Humanistica Lovaniensia*, LIV, 2005, pp. 267 – 284.

<sup>22</sup> Apart from being known from other locations (e.g. also in the Low Countries he was known under his Spanish name variant), its presence also in Coimbra (side by side with the Portuguese "*Martim*") reminds us of the many other signs of Spanish influence in Coimbra, as I found in the 1655 letter of Ignatius Hartoghvelt (see note 9).

Pereira books were assigned – either by the procurator of the Far Eastern Mission in Lisbon (or his *socius*, both in the *Colégio Santo Antão*<sup>23</sup>) or in Macau – to the Chinese Vice-Province or to the college in Macau<sup>24</sup>; after arrival, some of these books were put in the ‘room(‘cubiculum’)-library of the Chinese Vice-Provincial (n° 3342<sup>25</sup>) or in that of the Japanese Provincial (nos 2677; 2283<sup>26</sup>); n° 1290 was later transmitted to the Portuguese college Xitang (Nantang) in Peking<sup>27</sup>, and the copy dedicated to Martini arrived with him in Hangzhou, and was, after his death in 1661, transferred to the local college library, following the common rule<sup>28</sup>.

Unfortunately we don’t know whether this transmission to the China mission happened according to Pereira’s own intention or will; neither we have any application letter from his hand for China, which could refer to particular interest in the China mission, a frequently attested desire among young Jesuit novices with a particular mathematical ‘profile’ / interest – or was decided independently from his person by the Jesuit superiors in Coimbra and the Portuguese province.

At any rate, the presence of these 4 rather advanced mathematical books next to the ‘poor’ mathematical collection of the Jesuit College library shows that mathematics could, in particular conditions, be part of *personal* culture and practiced also by young novices, in the margin of the simultaneous official curricula. Currently, these forms of informal mathematical study can only be known from data, such as these 4 book inscriptions – preserved

<sup>23</sup> In 1655 it was Father Cosme Coelho: cf. Lus. 45, f° 112v., n° 17 in the *Cat. Ius Coll(eg)ii Olisipon(ensis) D(ivi) Antonii a(nno) D(omini) 1655*: “*procurator Generalis (per) 4 ann(os), cuius munus curam etiam nunc gerit pro provinciis Orientalibus & Lusitaniã*”; confirmed on f° 185r. (n° 297): “*Cosmus Coelho...Diversis temporibus Procurator et Minister Coll(eg)ii Conimbricensis, nunc Procurator Provinciae et simul Provinciae Indiae*”.

<sup>24</sup> No. 1170: “*Aplicado a Missao da China ou ao collegio de Macao*”; n° 2239: “*Aplicado a Missam da Comp(anhi)a de Jesu da China ou ao Collegio de Macao*”; n° 2357: “*Aplicado a Missao da China no novo collegio de Macao*”. I assume that an ‘open’ dilemma between an assignment to the Vice-Prov. or the College in Macau is less probable in Macau itself, which could argue for an assignment made by the procurator in Lisbon.

<sup>25</sup> 3342: “*Aplicado a Vice-Provincia da Comp(anhi)a de Jesu da China – No cubiculo do P(adre) V(ice) Provincial*”.

<sup>26</sup> 2677: “*Aplicado ao collegio da Comp.a de JESU Macao na China. No cubiculo do Pe Provincial – Cuno (??) Cubiculo do P(adr)e Reitor*; 2283: “*Aplicado a ViceProv(inci)a da Comp(anhi)a de JESU da China. No cubiculo do P(adr)e Provincial*”.

<sup>27</sup> 1290: “*Aplicado a Missam da Comp;a de JESU da China ou do colegio de Macao – Applicatus Collegio S.I. Pekim*”.

<sup>28</sup> 2879: “*Aplicado a Missao da Comp(anhi)a de JESU da China – Ao P(adr)e P(rocurado)re Martim Martinez – Caza de Ham cheu*”.

in China, inventories of individual book collections and other related documents<sup>29</sup>. When these can be traced, they become a small, but relevant correction on the generally low esteem of modern scholars for the mathematical culture in 17<sup>th</sup>-century Portugal outside Lisbon.

Rome – July 2017

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### Abbreviations:

ANTT:	Arquivo Nacional Torre do Tombo
ARSI:	Archivum Romanum Societatis Iesu
CHAM:	Centro de História de Além-Mar
HS:	Historia Societatis (section of ARSI)
JS:	Japonica Sinica (Section of ARSI)
KBR:	Koninklijke Bibliotheek / Bibliothèque Royale (Brussels)
Lus:	Lusitania (section of ARSI)

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Rome, *ARSI, Lusitania, Catalogi varii*.

Rome, *ARSI, Japonica Sinica, var.loc.*

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<sup>29</sup> Such personal declarations of book ownership in 17<sup>th</sup> century Coimbra are preserved in Coimbra, *Biblioteca Geral*, ms. 602, f<sup>o</sup> 81ff. (among others from Manuel de Magalhães) and Ms. 633 (18th century): I owe this reference to a kind communication of Dr. H. Baudry (CHAM).

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