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TRABAJO DE FIN DE GRADO

Seventeenth-Century Titles Relating to Science in the  
Historical Library of Santa Cruz, Valladolid: Toward a Study  
of their Circulation in Spain

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## **Abstract**

The study of the reception of seventeenth-century British scientists in Spain has been carried out only partially. Key figures representing early modern English and Scottish scientific thought are well researched, like Newton or Napier, but in general, the presence of their books in Spanish libraries remains to be precised. This BA Dissertation will use such bibliographical study to provide fresh evidence on the circulation of the works of British scientists within our libraries in the 1600s. It looks at the copies of the works of John Napier, Hugh Semple, John Selden, and Francis Bacon kept in the Historical Library of Santa Cruz, Valladolid, and describes their copy-specific features and marks of provenance. The aim is to confirm whether these authors only began to be studied in Spain in the late 1700s, as is generally sustained, and contribute new pieces on evidence of how and why that may have been.

**Keywords:** early modern science, early modern Spain, circulation, Historical Library of Santa Cruz, bibliography, provenance

## **Resumen**

El estudio de recepción de la obra de los científicos británicos del siglo diecisiete en España se ha llevado a cabo solamente de forma parcial. Las figuras clave de los inicios del pensamiento científico inglés y escocés han sido investigadas a fondo, como es el caso de Newton o Napier, pero en general, la presencia de sus libros en las Bibliotecas de España debe ser aún precisada. Este trabajo final hará uso de un estudio bibliográfico para aportar nuevas evidencias con respecto a la circulación de las obras de científicos británicos en nuestras bibliotecas en torno a 1600. Examina copias de las obras de John Napier, Hugh Semple, John Selden y Francis Bacon, todas ellas localizadas en la Biblioteca Histórica de Santa Cruz, Valladolid, y describe las características específicas de cada copia y sus marcas de procedencia. El propósito es confirmar si esos autores no empezaron a estudiarse en España hasta finales de 1700, como se suele afirmar, y aportar nuevas pruebas sobre por qué y cómo pudo haber sido ello.

**Palabras clave:** ciencia del siglo XVII, España del Siglo de Oro, circulación, Biblioteca Histórica de Santa Cruz, bibliografía, procedencia.



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## INTRODUCTION

This BA Dissertation consists in a study of seventeenth-century books relating to modern science written by British authors. It is framed within the field of the history of science and bibliography, as well as in a study of the reception of British scientific culture in Spain. It focuses mainly on the treatises of five authors whose works arrived in Spain soon after they were published and seeks to contribute to the study of their circulation within our frontiers throughout the seventeenth century.

Considering the pioneering role that modern science played in Britain, since the first scientific publications came out in 1666 in the journal *Philosophical Transactions* of the Royal Society of London, it is of great interest to enquire how early their contributions reached Spain. It is generally sustained that it was not until the eighteenth century, and in the late decades, that scientific subjects were taught and fully embraced in Spain. The case of Newton and Napier are well known and point in that direction. But we want to employ the methodology of bibliography and the study of provenance to get a fuller picture of their circulation in early modern Spain: identify their copies in Spanish libraries, describe copy-specific features, and what use and purpose they had according to their marks of provenance. Doing so will be a way to contribute to the study of their circulation in the general European panorama, as well as of the development of science in Spain.

This research is based on five titles from the Library of Santa Cruz, the historical library of the University of Valladolid:

1. John Napier's *Logarithmorum canonis descriptio* (Lyon, 1619) and *Mirifici logarithmorum canonis constructio* (Lyon, 1620)
2. Francis Bacon's *Instauratio magna* (London, 1620)
3. Hugh Semple's *De mathematicis disciplinis libri duodecim* (Antwerp, 1635)
4. John Selden's *De anno civili veterum Iudaerum* and James Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683)

To carry out this study, we have decided to use the following methodology:

- a) Identify and locate all seventeenth-century science books in the Historical Library of Santa Cruz, Valladolid, listing all of them according to author, subject, title, year, and number of volumes.

- b) Search the catalogues of all centers of study or investigation in Spain, making use of the catalogues of Red de Bibliotecas Universitarias and Patrimonio Bibliográfico Español, to be able to identify how many different copies of those titles were extant in Spanish libraries today.
- c) Select the authors and the works on which we were going to focus: John Napier (1550-1617) and Hugh Semple (1596-1654) as representatives of mathematical discipline; John Selden (1584-1654) and James Ussher (1581-1656), who dwell on astronomic concerns; Francis Bacon (1561-1621), known for his contributions to natural philosophy; and finally, Robert Boyle (1627-1691) in the field of chemistry. This last author was finally removed from the list since the copy of his *Opera varia* in our historical library was a 1714 reissue of his seventeenth-century works and not a seventeenth-century edition properly.
- d) Investigate the historical context, of author, the relevance of the work itself, and fundamentally, the context and the reception of the work in question in our country or in Europe.
- e) Carry out a bibliographical analysis and description of each copy in the Historical Library of Santa Cruz, paying attention to format, collation, binding, readers' marks and marks of provenance.

The results have been arranged in a total of six chapters: one first chapter with a state of the question that helps to delve into the subject matter, four chapters that individually analyse the copies in the Historical Library of Santa Cruz of John Napier, Hugh Semple, John Selden and James Ussher, and Francis Bacon, and a final concluding chapter that includes an overview of general and specific interpretation of all cases, as well as the verification through the study of the degree to which these works are present in our country and for what purpose they appear to have been used.

In this way it will be possible to suggest how the majority of these books arrived in Spain soon after they were published, but only a minority of them seem to have been intended for teaching and disseminating science at that early stage.

Our thanks are due to the personnel of the Historical Library of Santa Cruz, Valladolid, for granting us access to their holdings and permission to publish the images included here.



## 1. State of the question

The rise of modern science in Great Britain in the seventeenth century played a key role in the advancement of early modern science in the west, and that can be seen represented by the publication of the first scientific journal on the subject, *Philosophical Transactions*, in 1665 by the Royal Society of London, the earliest British scientific society and one of the earliest in Europe. Many personalities of the scientific world of the time have since then been involved in its formation and later development, including the establishment of a network of contacts throughout Europe. The principal goal of the association was to improve scientific research and to expand and share it, covering a range of disciplines, from language, mathematics, physics, chemistry and astronomy, through medicine and surgery, to natural philosophy and botany, as well as electricity and optics.

A large number of English and Scottish scholars of all disciplines emerged around it, and others were attracted from Ireland, and although the figure of Isaac Newton stands out among the rest, apart from him, there were many other scientific authors of the seventeenth century who would become highly influential over a great part of Europe. Names such as John Napier in mathematics, Robert Boyle in chemistry, and Francis Bacon in natural philosophy are quickly associated with advances in their fields: logarithms, gas law, and experimental research; other scholars like John Selden and James Ussher, who also formed part of the London and Oxford circles, and were well known in Europe for their studies of law, politics, or history, are not so well known for their scientific advances, but did publish contributions in astronomy, calendars and calculation. A few, like Hugh Semple, who lived in Spain for most of his life, contributed to the spread of teaching and the general knowledge of the sciences.

The six names are relevant for this dissertation on the circulation of the work of British works of science in seventeenth-century Spain, because their works are found among the rare books in our university's historical library. What is known about their circulation in Spain in the 1600s and what is known about the teaching of science in our university at that time?

There are recent studies on the reception of John Napier in Spain, like Juan Navarro-Loidi and José Llombart's "The Introduction of Logarithms into Spain" (2008) and "Historia de los logaritmos y de su difusión en España por Vicente Vázquez Queipo,"

by Inés Roldán de Montaud and Mercedes Sampayo Yáñez (2015) where Hugh Semple is also mentioned. Francis Bacon's reception in Europe and Spain has been studied little and only in connection with Isaac Newton, as in Antoni Malet's "Newton in the Iberian Peninsula" (2019), plus a few mentions in Íñigo Sanchez Llama's "La recepción de la filosofía ilustrada en España" (2006). The reception of science in general or specific areas in the works of Víctor Navarro-Brotons, like "Astronomy and cosmology in Spain in the Seventeenth Century" (2007) do include valuable information, but very disperse. Sometimes, evidence is found in historical or biographical works like Maurice Taylor's *The Scots College in Spain* (1971). In any case, all of these studies generally agree that in Spain, many of the subjects carried out by those scientists only began to be known and taught in the eighteenth century.

Was science taught at the University of Valladolid during the 1600s? Margarita Torremocha Hernández in "Los estudiantes, los estudios y los grados" (1989) describes how in those days the University of Valladolid had chairs of law and theology, which showed preponderance over the sciences in general, and even over medicine, which was also taught, but a very low number of students enrolled for it (34). The social prestige of the doctor and his possibilities of promotion were not comparable to those of the jurist or the ecclesiastic. Practically no other scientific study was taught. And yet, in the Historical Library of Santa Cruz today, there are titles printed in the seventeenth century that deal with mathematics, astronomy, chemistry, or natural sciences. These titles include a small number that were written by English and Scottish scholars or scholars that belonged to their sphere.

From José Manuel Ruiz Asensio and Soledad Carnicer Arribas' "La Biblioteca de Santa Cruz de la Universidad de Valladolid" (1989), we know that the historical library of the University of Valladolid today holds two main collections: the library of the College of Santa Cruz, housed at the Palace of Santa Cruz since 1483, and the old library of the University, which included the libraries of the Jesuit colleges and the monasteries in the city, and was transferred to the college of Santa Cruz at the start of the twentieth century. The majority of the books kept today in the library show marks of provenance (readers' notes, bindings, library stamps, inscriptions) that may reveal the time when a book entered a certain library and through which hands it has gone. This has been shown by David Pearson's *Provenance Research in Book History* (1994).

The catalogue of the University of Valladolid historical library shows only limited information on those copy-specific aspects. This dissertation will undertake the bibliographical study of the copies of Napier, Bacon, Selden, Ussher, and Semple, that are held there, and the examination of their marks of provenance. They will hopefully reveal new aspects on the circulation of their scientific works in seventeenth-century Spain, as well as contribute to the knowledge of what use was made of the advances proposed in them in our colleges and universities.

## **2. John Napier's *Mirifici logarithmorum canonis descriptio* (Lyon, 1619) and *Mirifici logarithmorum canonis constructio* (Lyon, 1620)**

The Scottish scientist John Napier (1550-1617) was involved in the scientific pursuit of various branches of knowledge, but his greatest contributions were undoubtedly made in the field of mathematics. Napier always sought to simplify science, or rather the scientific method. For him, logarithms arose as an answer and solution to the problems of mathematical calculation. It is in this context that his great work *Mirifici logarithmorum canonis descriptio* emerged. It was first published in Edinburgh in 1614, followed by *Mirifici logarithmorum canonis constructio*, published posthumously in 1619, also in Edinburgh.

In order to better understand the reception of Napier and his logarithms in Spain, it is necessary to compare it with their reception in Europe, as Juan Navarro-Loidi and José Llombart do in their article “The Introduction of Logarithms in Spain,” in their analysis of the transmission of Napier’s mathematical outbreak among the Spanish-speaking community. In the case of Germany, Napier’s logarithms were promoted by the astronomer and mathematician Johannes Kepler, a key figure in the scientific revolution, in *Chilias logarithmorum* (Marburg, 1624). The same occurred in France, thanks to Denis Henrion’s tract of 1626 *Traité des logarithmes*. In the Low Countries, Adriaan Vlacq, an editor as well as an author of mathematical tables, published *Arithmetica logarithmica* (1628), where he amplified Henry Briggs’ tables of logarithms (Roldán de Montaud and Sampayo Yáñez 359). Meanwhile, the Italian Jesuit priest Bonaventura Cavalieri, spread the knowledge of Napier’s logarithms in *Directorium generale uranometricum* (1632).

It is generally agreed that John Napier had a different reception in Spain, after Philip II's failed attempt to encourage the study of applied mathematics in Spanish universities, "when logarithms appeared, mathematics was in decline in Spain" (Navarro-Loidi and Llombart 84). Therefore, their knowledge and that of Napier's *Descriptio* and *Constructio* continued to be poor until the last quarter of the seventeenth century, once the Cistercian Juan Caramuel, and the Jesuit José Zaragoza, had published *Architectura civil recta, y obliqua* (Vigevano, 1678) and *Trigonometria española* (Mallorca, 1672) respectively. Even so, it appears that John Napier was not appreciated in Spanish circles. Though Caramuel believed logarithms were "among the great discoveries of the Renaissance" he believed his own system was better, in preference to Napier's and Henry Briggs'. Similarly, Zaragoza, a pioneer in having tables of logarithms printed in Spain, preferred Briggs and Vlacq to Napier, and this idea that he reflected in his treatise spread throughout Spain and the Spanish empire.

This may explain why, according to Navarro-Loidi and Llombart, while in Europe logarithms were developing into differential and integral calculus, in Spain this would not happen until the 1750s. In his *Liciones de matematica* (1758, 1760), José Tomás Cerdá recovered Napier's logarithms because they facilitated integral calculus. From then on, they were incorporated to Spanish university studies and the teaching of mathematics was revitalized by the close of the century. The reading of Benito Bails' *Elementos de Matemática*, printed in 1779-1787, made of Vicente Vázquez Queipo the definitive transmitter of logarithms in Spain in the mid-nineteenth century (Roldán de Montaud and Sampayo Yáñez 363-364).

What can a study of the seventeenth-century copy of Napier's *Descriptio* and *Constructio* kept in the Historical Library of Santa Cruz add about the reception of Napier in Spain? The volume in question, with signature BU 08482 and located at the Historical Library of Santa Cruz, Valladolid, includes the Lyon 1619 and 1620 editions of the *descriptio* and *constructio*, the only ones that exist in Spain, besides a second copy in the University of Barcelona library, which was also printed in Lyon, but with a 1620 edition of the *Descriptio*.

Our copy was printed in octavo format in Lyon, France, by Barthélemy Vincent (d. 1627).

The first part, *Mirifici logarithmorum canonis descriptio* defines the concept of logarithm, its function and all that this entails.

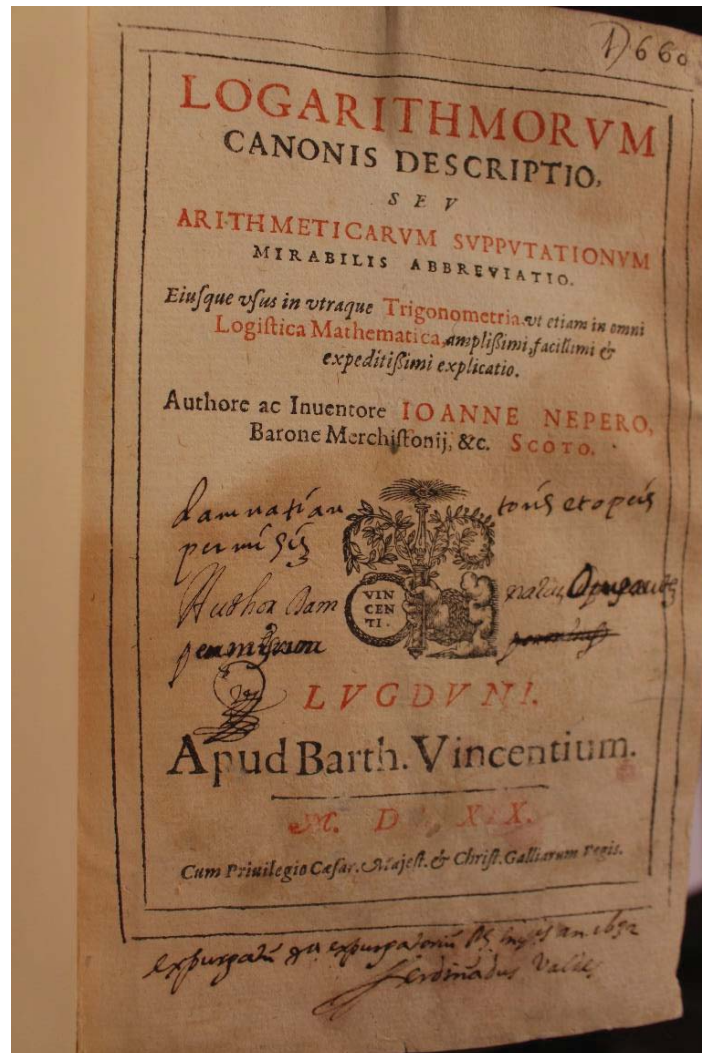


Figure 1. Title page of *Mirifici logarithmorum canonis descriptio* (Lyon, 1619). BHSC BU 08482.

The second part, *Mirifici logarithmorum canonis constructio*, consists of an explanation of how logarithms are constructed, as its own title states.

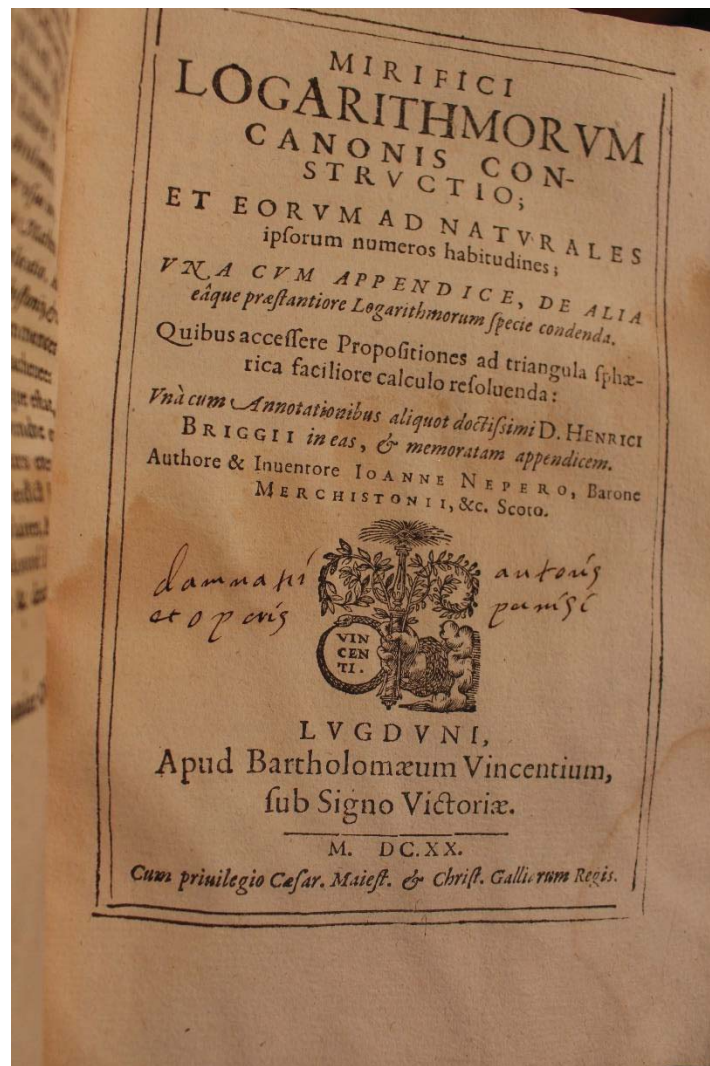


Figure 2. Title page of *Mirifici logarithmorum canonis descriptio* (Lyon, 1619). BHSC BU 08482.

In the middle of both titles, there are several leaves containing logarithmic tables, which as its title suggests (*Sequitur tabvla canonis logarithmorum*) follow the first part. It is printed on a paper of a very different quality, the leaves are unpaginated and the signatures of the gatherings do not follow the previous series.

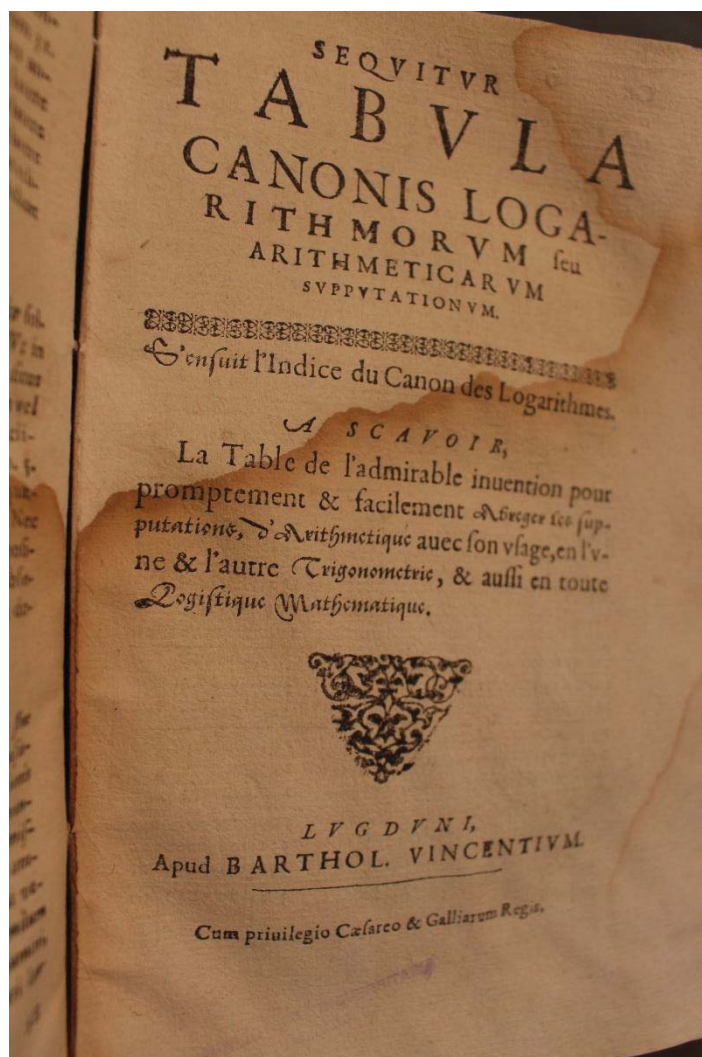


Figure 3. Title page of *Sequitur tabvla canonis logarithmorum* (Lyon, 1619). BHSC BU 08482.

The bibliographical formula of this book indicating gatherings, leaves and pagination is described as the follows:

8°:  $\pi 1$  B-H<sup>4</sup>, A<sup>4</sup> <sup>2</sup>B-L<sup>4</sup> M<sup>2</sup>, <sup>3</sup>A-H<sup>4</sup> [\$3 signed; missigning D3 as 'D5']; leaves, pp. [2] 1-56 [52], [1-2] 3-62 [63-64]

From this, we can think that the tables were printed separately and perhaps inserted here later only to bind it with the rest, but the fact that the King's privilege for publishing the description in 1619 appears in the last leaf of the gatherings containing the tables and the catchword in the last page of the description corresponds with the first word in the title of the tables indicates that the tables were printed in order to end there. The only reason why the paper has a different quality is because they are engraved.

The binding is made of parchment, probably in the early eighteenth century. It looks Spanish and very typical of monastic or college libraries: it has no decoration as if it were made for study and use.

In the text, all title pages show inscriptions which can be very useful to be able to learn about the circulation of the book. They are on the general title page (Figure 1), the title page of the *Constructio* (Figure 2) and at the opening of Briggs's calculations. (Figure 4). The first two show the same inscription: "Damnati autoris et operis permissi" which means 'Damned author, but this work is permitted.' It tells us that the book was at some time expurgated following the directions of the Spanish Inquisition. This is confirmed by two other inscriptions that appear on the general title page: "Author damnatus. Opus autem permissus" ('Damned author, but this work is permitted') and "Expurgatus secundum expurgatorium Sanctissimae Inquisitionis, anno 1632. Ferdinandus Valdes" (Expurgated according to the expurgatory index of the Holy Inquisition of 1632. Fernando Valdés'). This Fernando Valdés could be Fernando Queipo de Llano y Valdés (1604-1647), the student at the College of Santa Cruz who was also inquisitor in Valladolid and bishop of León. The last inscription reads "utriusque neperi et brigii autores damnati" ('both Napier and Briggs are damned authors').



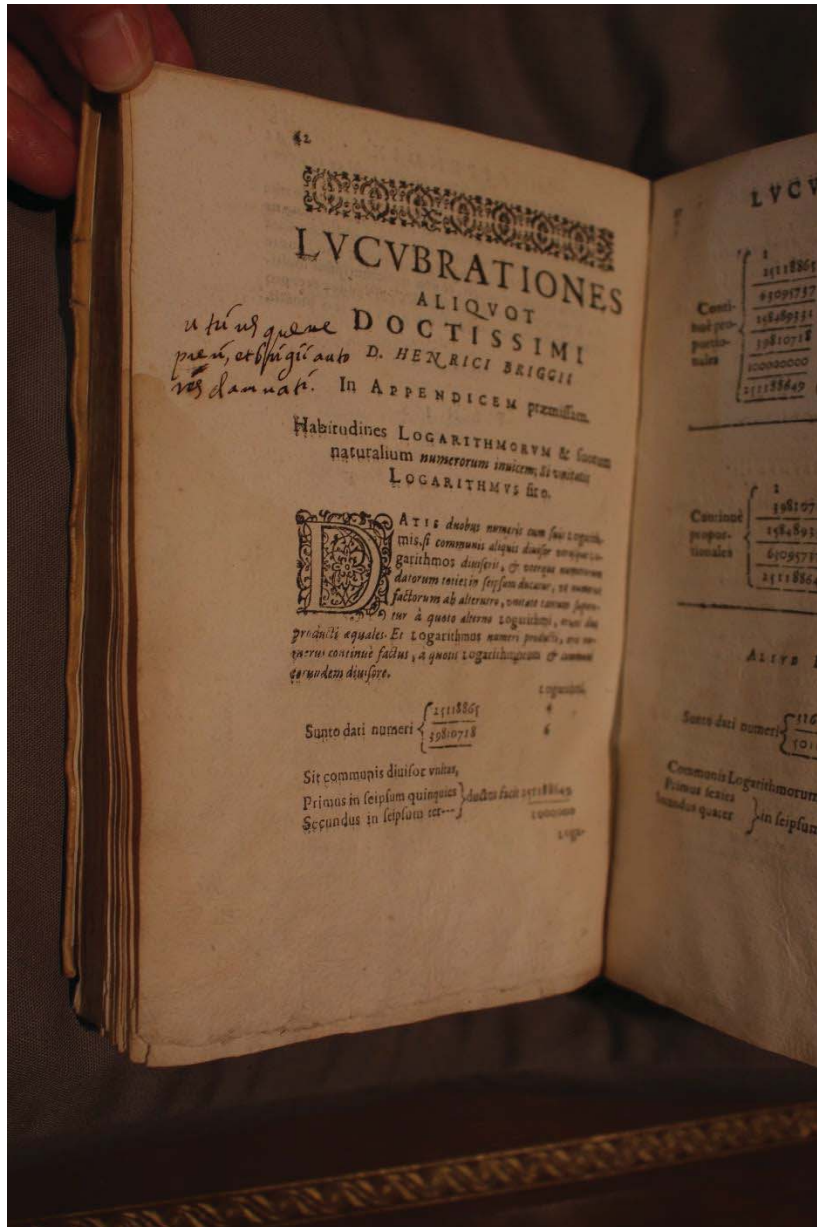


Figure 4. Inscriptions at the opening of Henry Briggs’s *Lucubrations* fol. 42 (Lyon, 1619). BHSC BU 08482.

Napier, a Calvinist, was included in the Index of 1632 among those authors that were damned for being heretic in their religious practice, but whose works were considered valuable and not harmful. So, about dating the circulation of this book, the last inscription clearly indicates that the work may have been in the hands of that Fernando Valdés as early as 1632 and not later than 1705 when the next edition of the Index came out.

So, from our copy we know that Napier's logarithms were already circulating in Spain before Caramuel and Zaragoza mentioned him in their works and probably that they discarded him, not only because his logarithmic calculations did not seem correct, but perhaps because Napier was damned by the Inquisition and they were ecclesiastics. And so Napier was not known until the eighteenth century. However, more signs of direct provenance are found in the own tables, like corrections in their numbering. This can be interpreted as an indication that, although Napier was a banned author, his work was still seen to be valuable for use.

Gr.	Sinus	Logarithmi	Differentia	Logarithmi	Sinus
30	1995679	16126028	15923233	201795	979247
31	1996530	15111742	15908355	203387	9798667
32	1999380	16097477	1589497	20380	979886
33	2002230	16083232	1587858	204574	9797904
34	2005080	16069008	1586339	205169	9795168
35	2007920	16054805	15849040	205755	979237125
36	2010780	16040623	1583426	206362	9795753
37	2013629	16026462	15819502	206960	9795168
38	2016478	16012222	15804764	207558	979458122
39	2019327	15998203	15790046	208157	979399521
40	2022176	15984105	15775348	208757	979340720
41	2025025	15970028	15760670	209358	979281819
42	2027874	15955971	15746012	209960	979222818
43	2030722	15941936	15731373	210563	979163817
44	2033570	15927921	15716754	211167	979104816
45	2036418	15913926	15702154	211772	979045815
46	2039266	15899951	15687573	212378	978986814
47	2042114	15885996	15673012	212984	978927813
48	2044962	15872062	15658461	213591	978868712
49	2047809	15858148	15643919	214199	978809711
50	2050656	15844254	15629446	214808	978750710
51	2053503	15830371	15614953	215418	978691709
52	2056350	15816518	15600439	216029	978632708
53	2059197	15802685	15586044	216641	978573707
54	2062043	15788871	15571617	217254	978514706
55	2064889	15775077	15557210	217867	978455705
56	2067735	15761303	15542822	218481	978396704
57	2070581	15747559	15528463	219096	978337703
58	2073427	15733824	15514112	219712	978278702
59	2076272	15720109	15499780	220329	978219701
60	2079117	15706414	15485467	220947	978160700

Figure 5. Inscriptions on logarithmic tables of *Sequitur tabvla canonis logarithmorum* (Lyon, 1619). BHSC BU 08482.

### 3. Francis Bacon's *Instauratio magna* (London, 1620)

Francis Bacon (1561-1626) stands out in the scientific world for his contributions in natural philosophy and scientific thought. That his relevance as a philosopher was acknowledged in his own time all across Europe is undeniable. His connections with Isaac Newton, one of the most prominent personalities within the scientific world ever, show a preference for a method of experimentation in scientific procedures, or as Benito Jerónimo Feijóo would say: the ways of “reflection, attention, and judgement” in the search for truth (qtd. in Sánchez Llama 77). Feijóo clearly represents a point of convergence of Francis Bacon with eighteenth-century Spain. Before him “the highly conservative intellectual context of the mid-seventeenth century was first questioned by the *novatores* or *neoterici*, mostly physicians working in Seville, Zaragoza, and Valencia who began publishing in the late 1680s” who, besides Descartes or Boyle, quoted Bacon (Malet 3). But university professors and the Catholic resisted them, as well as the Inquisition. So it is generally agreed that it was thanks to royal patronage and authors such as Feijóo, Gaspar de Jovellanos or José Cadalso, that experimentalism became known to Spanish scholars. Bacon, and later Newton, became crucial figures within their works. Feijóo praised “el grande, y sublime genio de Francisco Bacon” (‘the great and sublime genius of Francis Bacon’) (Malet 7). He had discovered the man that today is described as “the father of modern science and its method” (Conrad 73).

It can be said that Francis Bacon established himself as a philosopher of science when he began publishing the six parts his great work *Instauratio magna*, of which only two were completed: *De augmentis scientiarum* (1623) and *Novum organum*, the second part, printed by John Bill in the year 1620, in London. This is the title that the University of Valladolid historical library holds.

One of the first things that catches our attention in the case of this book and characterizes it is the engraved frontispiece of the title page by Simon de Passe (1595-1647):

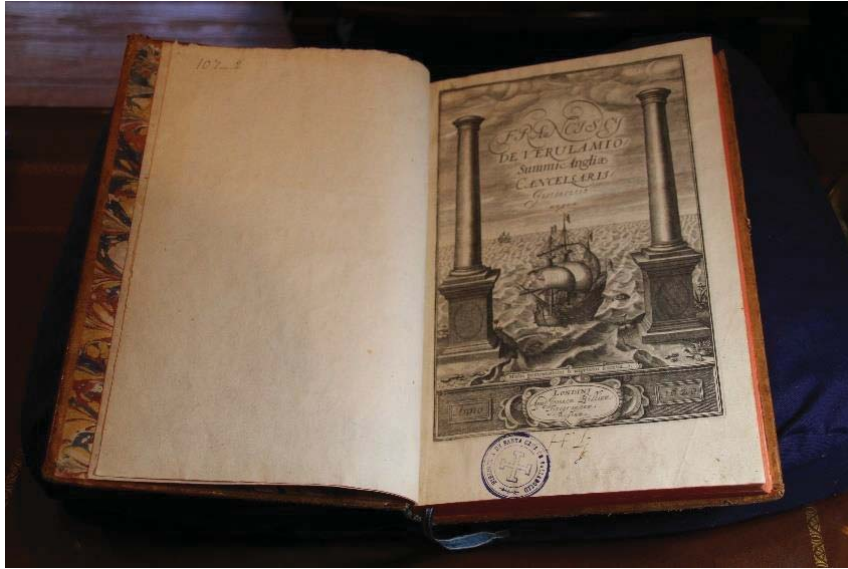


Figure 6. Frontispiece of Bacon's *Instauratio Magna* (London, 1620). BHSC 05784.

It depicts a ship sailing between two pillars, often interpreted as an allegory of Bacon's desire to traverse the old world of knowledge and explore and discover the new experimental the ways of science. What matters here is the marks of provenance on the page and one of them in particular. At the bottom, below the imprint information, there are some initials:



Figure 7. Library stamp and initials on the title page of Bacon's *Instauratio Magna* (London, 1620). BHSC 05784.

They are very difficult to read (perhaps 'H L') and the name of the person that is behind them is for the moment impossible to know. The name could be English, Spanish or any

other nationality. The hand seems to be from the seventeenth century. Certainly, it is someone that possessed this book before it became part of the Valladolid collection; the university library stamp was placed on it.

After the title page, the text block begins with two introductory leaves, followed by a dedication, a blank leaf, and a preface, followed next by a plan of the content that the *Instauratio* intends to cover. Then comes the half-title of *Novum organum* and its contents in two books and a sketch of the third part of the *Instauratio magna: Parasceve ad historiam naturalem et experimentalem*, plus two sets of aphorisms. The text closes with a final errata leaf and colophon reading “Londini. Apud Joannem Billium Typographum Regium. M.DX.XX.”

As the work of the King’s printer, the text is ornamented with headpieces and decorated initials. However, it shows many printing errors, especially in pagination, and it is very inconsistent with regard to the presence of running titles or catchwords.

The book is a folio and its structure is as follows:

2°:  $\pi^2 \text{¶}^4$  A-C<sup>6</sup> D-2S<sup>4</sup> 2T<sup>6</sup> a-e<sup>4</sup> [\$2 signed]; 378 leaves, pp. [i-vi] 1-172 181-360, 21-26 35-36 [37-38]

If we focus our attention on the cover and binding, we will get much information. It is light brown, marbled leather, the spine and edges are gold tooled.



Figure 8. Front cover of Bacon’s *Instauratio Magna* (London, 1620). BHSC 05784.

It does not look English nor Spanish, but rather French or Dutch. We could assume that this binding is a prototypical of the second half of the eighteenth century. As can be seen in Fig. 8, the marbled endpapers show yellow, red, blue, and white colours. The

pattern is a variation of the French curl. Like the leather binding, it also looks mid-eighteenth century.



Figure 9. Front pastedown and flyleaf of Bacon's *Instauratio Magna* (London, 1620). BHSC 05784.

A very simple library label with the shelf mark "1045" is on the pastedown, probably from an earlier institutional library.

Given all this, this book does not seem to be for reading or study, as the binding is not parchment, but leather, it is not inscribed but shows decorated end leaves, and there are no readers' marks. The fact that the title page has no inscriptions saying that it belonged to a particular Jesuit library or a particular monastery in Valladolid, like the majority of other books in Santa Cruz have, may confirmed that it comes from a private library where the book may have collected and shown. If the binding and endpapers were French and from the mid eighteenth century, as it seems, this could mean that this particular copy of Bacon's *Novum Organum* did not come to Spain until the end of the eighteenth century.

Was Bacon present in the Spanish libraries of the nobility? Only the Count of Gondomar owned one copy of this first editions of Bacon's *Instauratio*. So, how many copies like this are extant today in Spanish libraries? According to the catalogue of Patrimonio Bibliográfico Nacional, Bacon's 1620 *Instauratio magna* is available in only two other libraries in Spain: the copy held by the Real Seminario Sacerdotal de San Carlos, Zaragoza, is also bound in leather and tooled in gold, and the copy in the Biblioteca Nacional de España, Madrid, is bound in parchment along with another work

by the same author. This may mean that only one of the three copies extant in Spain may have been used for study.

Considering how Francis Bacon was also a banned author, whose books had to be expurgated, this seems to be logic. The analysis of our copy may confirm that interest in Francis Bacon only aroused at the end of the eighteenth century and that it is doubtful whether before that time his work was read by many others than Feijóo, Jovellanos or Cadalso.

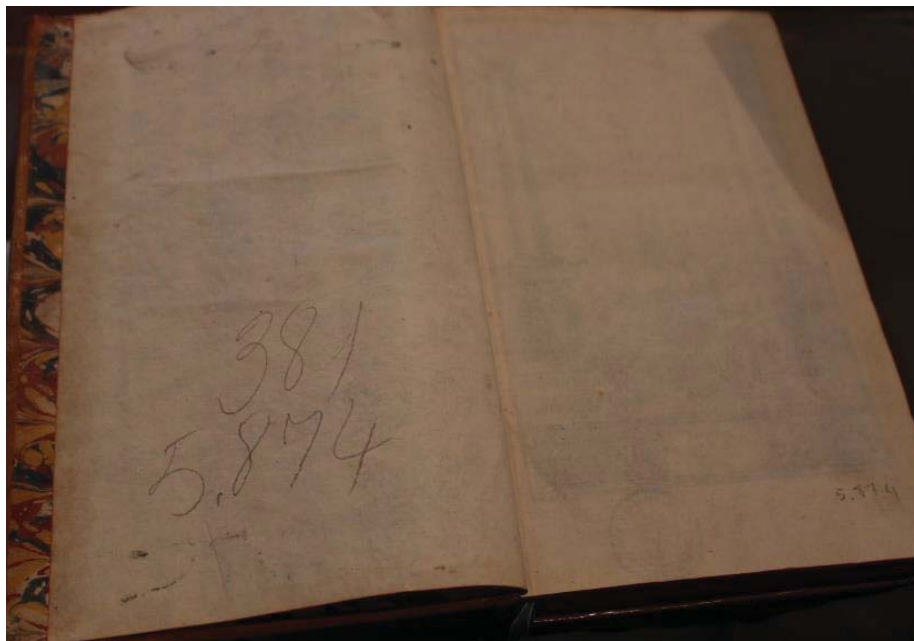


Figure 10. Blank leaves in Bacon's *Instauratio Magna* (London, 1620). BHSC 05784.

#### **4. Hugh Semple's *De mathematicis disciplinis* (Antwerp, 1635)**

The Scottish Jesuit Hugh Semple (1596-1654), known for his contributions on mathematics, astronomy and geography, maintained several connections with our country throughout his life. Firstly, his uncle, Colonel William Semple (1546-1633) lived more than fifty years in the service of the Spanish monarchy and founded the Scots College in Madrid in 1627, under the administration of the Society of Jesus, later transferred to the city of Valladolid in 1771. Hugh Semple himself played an important role in this institution. He had joined the Jesuits of Toledo in 1615 after his uncle had offered to sustain him financially (Taylor). He became a professor of mathematics at the *Colegio Imperial de San Isidro*, in Madrid, known for having advanced the teaching of

mathematics in Spain in the 1600s (Navarro Brotóns). Two of the titles he published were *De mathematicis disciplinis* (Antwerp, 1635), dedicated to King Philip IV, and *Exercitia mathematica* (Madrid, 1642). Regarding his reception in Europe, there is not much evidence of whether or how his works were received in other European countries, except for one of his works on geography (Capel), but what seems clear is that he was well received in Spanish circles from his professorship in the *Colegio Imperial*.

From there, Hugh Semple served as a precedent for some Spanish authors like José Zaragoza and Juan Caramuel (Zaragoza occupied his professorship when Semple left), due to his innovation in the use of arithmetic, as Navarro-Loidi highlights (“La aritmética común y decimal y álgebra del P. Hugo Sempil Escocés”, 303). He is also presented as one of the pioneers of the introduction of logarithms into Spain by his quoting of John Napier, “The baron Juan Nepero, Scotch in blood and cleverness,” although, like Caramuel, he is said to have followed the method of Briggs’s (Navarro-Loidi and Llombart 85).

The work we are going to examine here, in the copy kept by the Historical Library of Santa Cruz, is entitled *De mathematicis disciplinis*. It was printed in Plantin’s printing shop in Antwerp by Balthasar Moreto (1574-1641), printer to the King of Spain, whose coat of arms is seen on the title page.



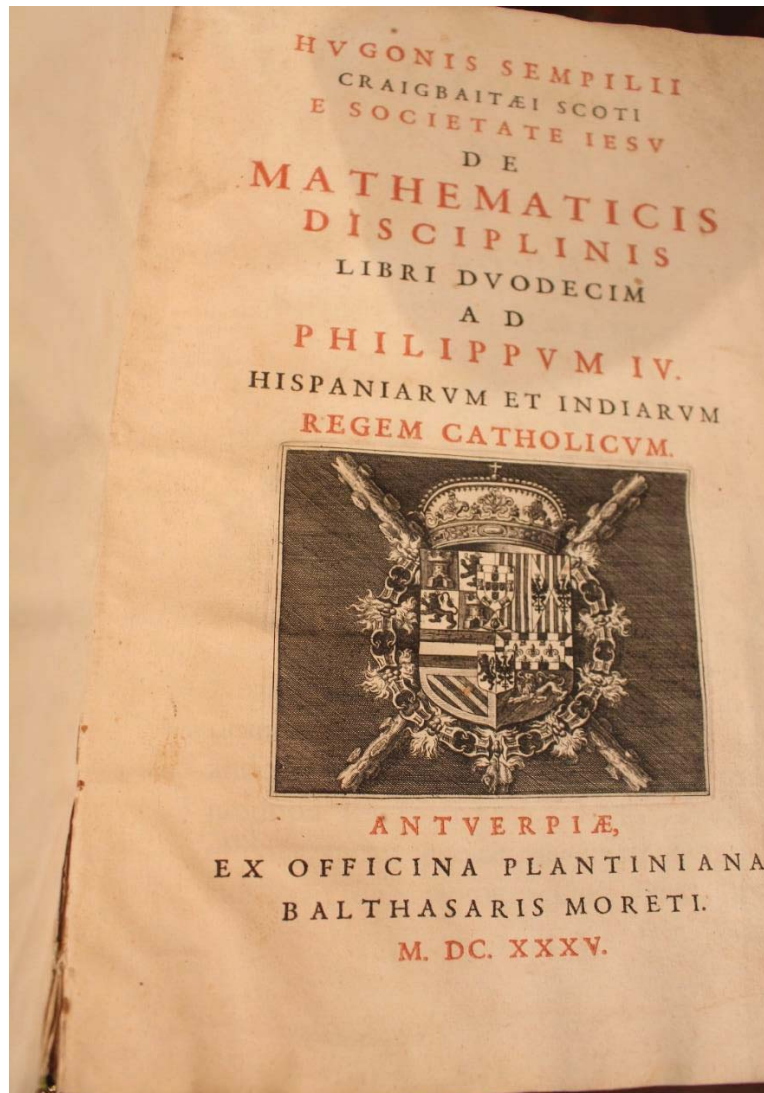


Figure 11. Title page of Semple's *De mathematicis disciplinis* (Antwerp, 1635). BSCH BU O9255.

The copy is a folio, containing forty-two gatherings and 170 leaves, most of them paginated. A bibliographical analysis of this copy can describe it as:

2<sup>o</sup>: \*4 A-2R<sup>4</sup> 2S<sup>6</sup> [\$3(+2S4) signed]; 170 leaves, pp. [8] 1-322 [10]

The book starts with four introductory leaves. After that, there is a table of contents indicating that there are twelve different parts. There are two first lessons on the dignity, and on the utility of mathematical science, and eight more on its applications: Geometry and Arithmetic, Optics, Statics, Music, Cosmography, Geography, Hydrography, Astronomy, Astrology; and finally, a calendar.

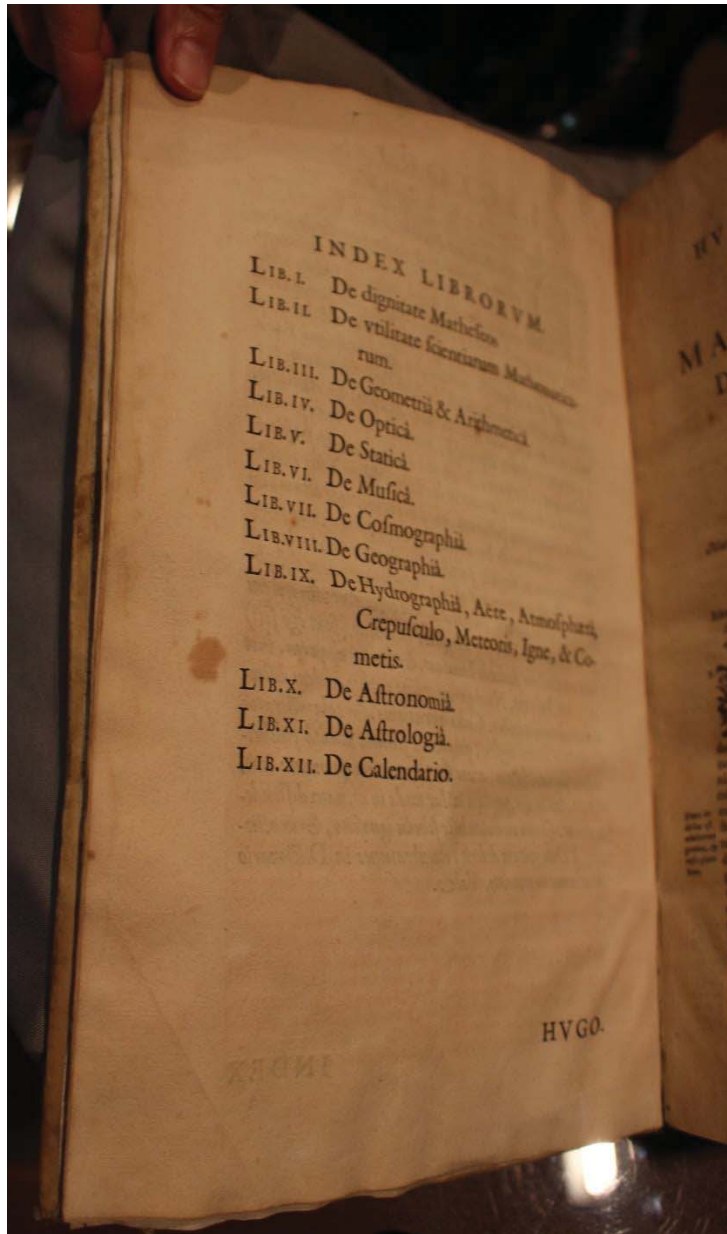


Figure 12. Index of Semple's *De mathematicis disciplinis* (Antwerp, 1635). BSCH BU O9255.

As Navarro Brotóns suggests, it could be said that it serves as an introductory guide for students, though authorities like Brahe, Kepler, Simon Stevin, Guidobaldo del Monte, Napier and Galileo are frequently quoted (“Sempill, Hugh (1596-1654)”).

The binding is made of pasteboard covered in parchment and may be from the early 1700s. It is a plain binding which has no decoration. The only mark is the author's name and title on the spine, which is in brown ink, again from that period. This type of binding is cheap and made to last long, but the covers and the text block have been damped, and are stained.



Figure 13. Binding (and front edge of text block) of Hugh Semple's *De mathematicis disciplinis* (Antwerp, 1635). BHSC BU 09255.



Figure 14. Binding (spine) of Hugh Semple's *De mathematicis disciplinis* (Antwerp, 1635). BHSC BU 09255.



Figure 15. Binding (cover) of Hugh Semple's *De mathematicis disciplinis* (Antwerp, 1635). BHSC BU 09255.

This type of binding is very common in college and monastic libraries. This suggests a practical use of reading and study which goes well with the contents of the book. Apart from the library label of the University of Valladolid on the front pastedown, no other library or reading mark is present.

The book may have belonged to the original library of the College of Santa Cruz. Many other similar books in the Historical Library of Santa Cruz have inscriptions saying that they belonged to the libraries of the Jesuit colleges or Franciscan and Benedictine monasteries in Valladolid, but this does not. It is then possible that it originally belonged to the library of the College of Santa Cruz.

According to the catalogue of Patrimonio Bibliográfico Nacional, there are at least fourteen copies of Semple's *De mathematicis disciplinis* in Spanish libraries. If we compare ours to the others through their catalogue descriptions, we see that they are very similar: all bound in parchment and originally from church or university libraries. This speaks of a similar purpose of study and use for Semple's work. This goes well with the general content of the text and confirms Semple was well received in Spain. Although Semple may not have contributed much to the advancement of mathematical science, the Scotsman contributed greatly to the spread of its teaching in Spain. The censor's license printed on the last leaf gives free permission for the book to be printed and read, and it seems it was.

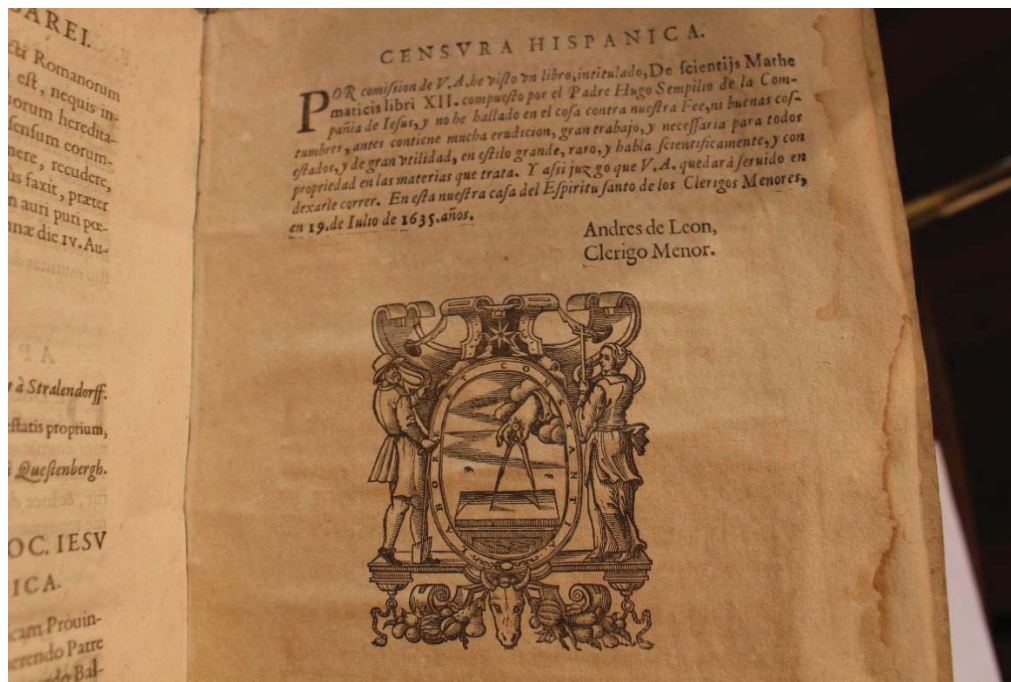


Figure 16. Folio 2S6 of Semple's *De mathematicis disciplinis* showing Andrés de León's license and Platin's device (Antwerp, 1635). BHSC BU O9255.

### 5. John Selden's *De anno civili veterum Iudaerum* and James Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683)

This volume contains two works that deal with calendars and astronomy. One is by John Selden (1584-1654), the English jurist and antiquary who was particularly interested in English and Jewish history and law, but who also did scientific work and provided his own explanations in the field of astronomy through the study of calendars. Selden's work is *De anno civili veterum Iudaerum*, first published in London in 1644, where he looks for the origin of correct calendar calculations in Hebrew antiquity. The other work is *De Macedonum et Asianorum anno solari*, written by James Ussher (1581-1656), the Church of Ireland Archbishop of Armagh, while he lived in England. Like Selden, he was known for his antiquarian studies and interest in Oriental subjects, but Ussher focused on the study of chronology and the Church Fathers. He had first published this comparison between Grecian, Macedonian, and Julian Calendars at the end of his most famous work, *Annales veteris testamenti*, in London in 1650.

The edition of these two works we are going to analyse belongs to the University of Valladolid, and it is now located in the Historical Library. It is a joint edition of the two,

printed in 1683 by the Dutch printer Pieter Van Der Aa (1659-1733) in Leiden. It was published with an engraved title page that depicts the Jewish Paschal rite:



Figure 17. Engraved title page of Selden's *De anno civili veterum Iudaerum* and Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683). BSCH BU 00572.

The engraving speaks of the Jewish tradition and astronomy at the same time. The Paschal season was believed to commence when the Sun entered into the constellation of the Ram. Many orientalists like Selden and Ussher used that idea for their calendar calculations. It is the only illustration in the book. However, the pages that contain calendar tables are printed in red and black.

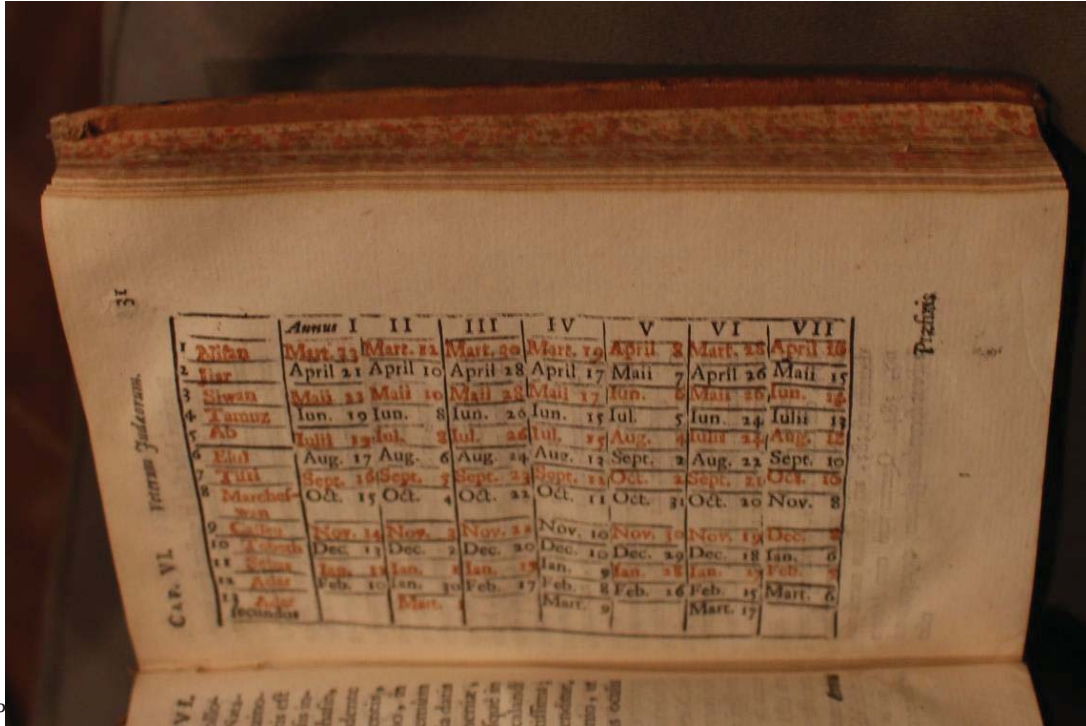


Figure 18. Tables of Calendar of Selden’s *De anno civili veterum Iudaerum* and Ussher’s *De Macedonum et Asianorum anno solari* (Leiden, 1683). BSCH BU 00572.

In Van Aa’s edition, Selden’s and Ussher’s works have separate title pages, are paginated separately, and followed by a series of unpaginated leaves comparing the three calendars: “Ephemeris anni Macedonici & Asiani cum Juliano collate.” The book is printed in octavo format and contains a total of nineteen gatherings and 141 leaves:

8°: A<sup>2</sup> B-S<sup>8</sup> T<sup>8</sup>(—T6,T7,T8) [\$5(—L4,R5,T5) signed]; 141 leaves, pp. [20] 1-128 [4], <sup>2</sup>[1-2] 3-98 [32] [misprinting 28 as ‘27’ and 29 as ‘28’].

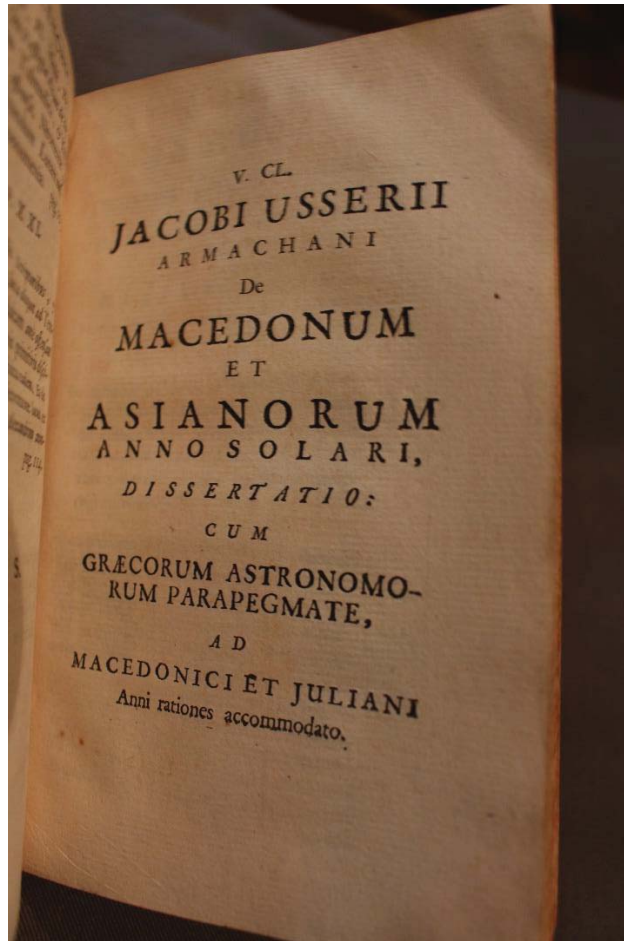


Figure 19. Title page of Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683). BSCH BU 00572.

It is interesting that there are no marks from the censors of the Inquisition. The two authors were banned by the 1632 Index and continued to be banned by the 1667 Index. Selden was very popular all across Europe, mainly though his publications relating to law and natural philosophy. Some of his most notable works in the field of law and politics, like *De jure naturali et gentium* (1640) and *Mare clausum* (1652), were also well known in Spain. A quick look at the catalogues of the Spanish libraries of the Golden Age will show that many of his works circulated here in the seventeenth century (Biblioteca Digital Siglo de Oro). This is because his works could be read after being expurgated, just like Napier's. But this should have been stated on the title page of the book, to follow the expurgatory index of 1667, and it was not.

James Ussher was not as well-known abroad or here in in Spain. His books do not appear in Spanish private libraries (Biblioteca Digital Siglo de Oro). The 1667 Index



completely forbids his *Annales* and, as we said, *De Macedonum et Asianorum anno solari* was part of the *Annales*, so that should have been stated on the first page.

Furthermore, the Hebrew and Arabic languages were banned in seventeenth-century Spain, a nation dominated by religious controversy, as García-Arenal and Rodríguez-Mediano point out (134). The two languages are very often used in both Selden's and Ussher's texts. All these factors could have been enough reason to have written a note of expurgation or prohibition on the title page.

Anyway, the book does not show any readers' marks, either. The fact that parts of the book are printed in Hebrew and Arabic may explain that. In contrast with what happened in other parts of Europe, not many Spanish scholars would be prepared to read its contents.

The Valladolid copy has some library marks, however. Apart from the stamps and labels of the University of Valladolid, there are some early pencil shelfmarks on the front flyleaf, some of which are crossed out. These pencil marks are also inscribed on the front cover:

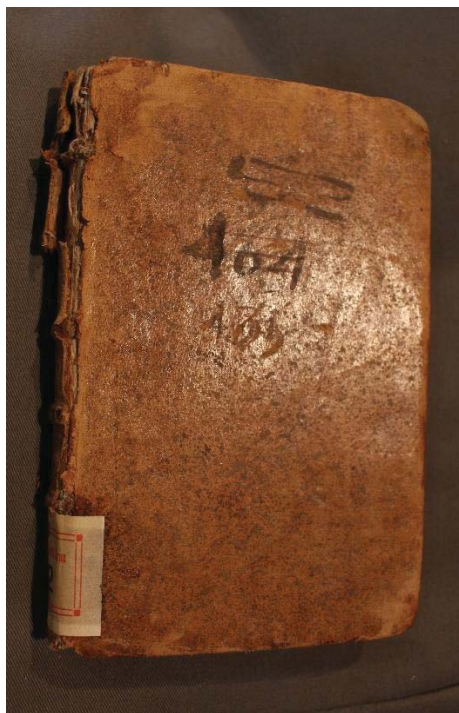


Figure 20. Early shelfmarks on the front cover of Selden's *De anno civili veterum Iudaerum* and Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683). BSCH BU 00572.

The three numbers on the cover of the book are '359', '464' and '131' and are crossed out and '165' is written over them (Figure 14). On the front flyleaf, the crossed-out marks are also present and number '165' is also written over them (Figure 10). These may be the different accession numbers that the book was given in the old library of Santa Cruz or in the old library of the University of Valladolid before the book was given its current signature.

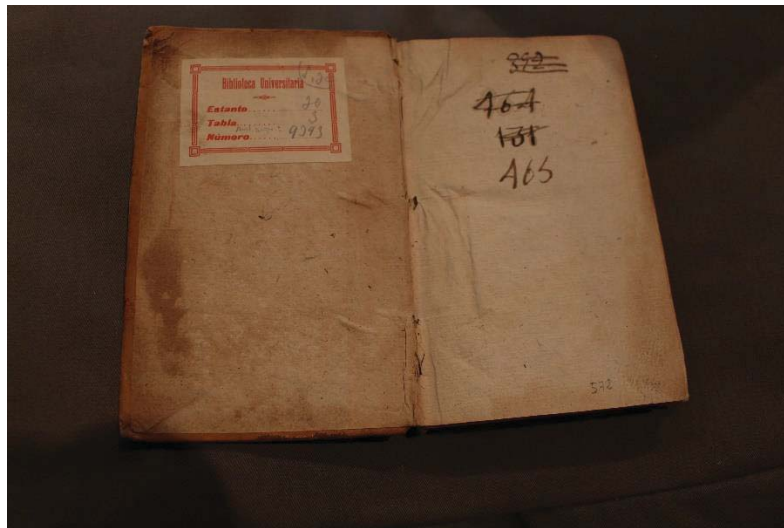


Figure 21. Front pastedown and flyleaf of Selden's *De anno civili veterum Iudaerum* and Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683). BSCH BU 00572.

The binding is from the late eighteenth century. It is made of brown leather and there are traces of gold tooling on the spine. The fact that it is not made of parchment and that there are no inscriptions of provenance from the Valladolid monasteries or Jesuit colleges makes us think that it is possible that it belonged to a private library before coming to the University. This, and what García-Arenal and Rodríguez-Mediano say about members of the Spanish nobility and royalty collecting Arabic manuscripts and sources for their libraries since the late sixteenth century (134), makes us think this may be the reason why some Spanish owner bought this book. In seventeenth-century Spain books were printed on comets, astrological predictions, almanacs, cosmography, calendars, astronomy in general, instruments, and astronomical tables, and astronomy was taught since Philip II's times (Navarro-Brotóns, "Astronomy and Cosmology in Spain" 16). So, the topic was popular and apart from that, buying a book with parts printed in Arabic and Hebrew could be seen as exotic. And this could have been the case of our copy.



Figure 22. Binding of Selden's *De anno civili veterum Iudaerum* and Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683). BSCH BU 00572.



Figure 23. Binding (spine) of Selden's *De anno civili veterum Iudaerum* and Ussher's *De Macedonum et Asianorum anno solari* (Leiden, 1683). BSCH BU 00572.

The Catalogue of Patrimonio Bibliográfico Nacional gives more evidence for the circulation of this particular edition in Spain. It lists four copies: one held in the Real Seminario Sacerdotal de San Carlos, Zaragoza, another one in the Cathedral of Santiago de Compostela, a third one in the Real Academia de la Historia, Madrid, and our copy

in the University of Valladolid historical library. Of these, only one is bound in leather; all the other are bound in parchment. So, it could be said that the Valladolid copy must have circulated early though Spain but in private libraries not visited by the Inquisition. It can be assumed that it was not bought for study or even reading, but more for show on the part of someone interested in antiquity and the Oriental languages. The reason why it ended in the historical library of our University cannot be known from the direct marks of provenance.

## **CONCLUSION**

This final dissertation has tried to contribute to reception studies and book history, through the application of bibliographical study. It is concerned with the circulation in seventeenth-century Spain of books from the same period relating to science written by British authors. The study has been carried out in the Historical Library of Santa Cruz, Valladolid, selecting the copies, analyzing bibliographically their format and examining their marks of provenance (readers' marks, bindings, inscriptions, stamps). We started from the premise that in the articles we had read the eighteenth century appeared as the universal date of Spanish scientific emergence and we began to go a century back to see whether there was any knowledge of British scientific thought a hundred years earlier. Focusing on authors who wrote their publications in the seventeenth century, English and Scottish, we aimed at finding out whether in seventeenth-century Spain modern science was known and taught.

The present study and its subsequent analysis have allowed us to prove several things. Firstly, the hypothesis has been confirmed that in the seventeenth century, the scientific publications that were published by British authors reached Spain, circulated there and today are housed in libraries in our country. We were also able to discover five volumes written by English and Scottish authors (or Irish author living in the London and Oxford sphere) and relating to scientific knowledge subject matters that were extant in the Historical Library of Santa Cruz, Valladolid. They covered the subjects of mathematics, astronomy, and natural philosophy.

In addition, it has been observed that books of which only one or two copies existed, were found in our Library, which makes the Historical Library of Santa Cruz, Valladolid the perfect place to know a little more about the provenance and origin of

subjects that concern us. Another one of the important things that this study proves is the diversity among the books chosen, whether for their purpose of use, their format or their provenance. The binding, as well as the purpose, are also quite related linked to the provenance, something in which the books also differ greatly: parchment bindings usually have to do with college or monastery libraries and are given for books that will be very much used, while leather bindings are for books that are not meant to be used frequently, but perhaps just to stand on the shelves.

In the case of the aim and the function of the copies, Hugh Semple's text, *De mathematicis disciplinis libri duodecim*, seemed to serve as a general scientific guide for students rather than a specific treatise of some scientific concern created to contribute to the dissemination or advancement of science. That was different in John Napier. His works *Mirifici logarithmorum canonis descriptio* and *Mirifici logarithmorum canonis constructio* made up a treatise aimed for the dissemination of knowledge of logarithms and the spread of the use of logarithmic tables. Although both John Napier and Hugh Semple deal with science on his books, which had the same type of binding, both made of parchment, they differ very much in the purpose of use that they had: one to advance scientific thought, the other to disseminate its general knowledge. In addition, John Napier's book is a special case, since its most important signs of provenance are all those inscriptions, which indicate that he was an author banned by the Inquisition, a piece of evidence that explains very well the reason why Napier's reception in Spain may have been limited, something which had not been mentioned by any of the works cited.

In the case of the book written by Francis Bacon, it has a binding that seems from the late eighteenth century, and that, coupled with its format and state of preservation may lead us to think that it could also be a private donation. This may be sustained by the seventeenth-century initials appearing in the title page, that could be from the person who owned the book before it was bound. If the binding and endpapers are French as it seems and their dating is from the late eighteenth century, that may mean that this copy of Bacon's *Novum organum* only entered Spain and this particular library after that date. Because there are only two more copies of the work in Spain, the late and limited reception of this banned author is proved.

In the single volume of John Selden's *De anno civili veterum iudaerum* and James Ussher's *De Macedonum et Asianorum anno solari* the binding is leather, and the spine

is gold tooled. This may mean that it comes from a private library. Also, the fact that it shows shelf marks inscribed on the front cover in late eighteenth-century handwriting indicates that this book entered the library around that time. However, the spine is torn, and the book appears to have been very heavily used or very badly preserved. Maybe the fact that Selden was a forbidden author explains why the librarians inscribed those numbers on the front cover without any care at all. We cannot think that the book was well regarded.

Regarding provenance, we can conclude that none of the works seems to come from the Jesuit libraries or the monasteries in Valladolid, as they would probably have some inscriptions alluding to them, the way that is often found in this library's holdings. This makes it more probable that all of these copies belonged once to the old library of the College of Santa Cruz and not to the old library of the University of Valladolid, where the Jesuit and monastic libraries were transferred.

The purpose of the use of these books can also be linked to the number of copies extant in Spanish libraries today. In the case of our works, Hugh Semple's is the one that seems to have the largest number of copies in Spain since it is found in up to fourteen repositories, while John Napier's (and this would be explained by the expurgation he received by the Inquisition since he was a damned author) is only known to be found so far in two places in Spain (University of Valladolid, and University of Barcelona). Francis Bacon can only be found in two other libraries and John Selden and James Ussher in three other centers. These numbers may seem small but considering the example of Francis Bacon's 1620 *Novum organum* for which there are no more than fifty copies in the world, its circulation in Spain does not seem so poor. The same could be said of the others.

The truth, however, is that Napier seems to be the only one that arrived early in the seventeenth century into the library of Santa Cruz, and probably that may be the case of Hugh Semple too. In contrast, Bacon and Selden and Ussher seem to have come late in the eighteenth century. This seems to confirm the general assumption of a small circulation of these works, but looking at the rest of copies in our country or elsewhere in Europe may prove a different matter.

## WORKS CITED

### PRIMARY SOURCES

Bacon, Francis. *Instauratio Magna*. London, 1620. BHSC 05784.

Napier, John. *Descriptio Mirifici logarithmorum canonis*. Lyon, 1619. BHSC BU 08482.

Napier, John. *Mirifici logarithmorum canonis constructio*. Lyon, 1620. BHSC BU 08482.

Selden, John. “*De anno civili veterum iudaerum*”. Leiden, 1683. BSCH BU 00572.

Semple, Hugh. “*De mathematicis disciplinis libri duodecim*”. Antwerp, 1635. BHSC BU O9255.

Ussher, James. “*De Macedonum et Asianorum anno solari*”. Leiden, 1683. BSCH BU 00572.

### SECONDARY SOURCES

Capel, Horacio. "La geografía como ciencia matemática mixta. La aportación del círculo jesuítico madrileño en el siglo XVII." *Geo Crítica: cuadernos críticos de geografía humana*, 1980. pp. 3-34.

Cervera, José Antonio. "John Napier (1550-1617) y su libro de Rabdología." *Historia de las ciencias y de las técnicas*, vol. 1, 2004, pp. 347–356.

Evans, Griffith Conrad. "The Place of Francis Bacon in the History of Scientific Method." *Rice Institute Pamphlet-Rice University Studies*, vol. 13, no. 1, 1926, pp. 73-92.

García, José María Rodríguez. "Solitude and Procreation in Francis Bacon's scientific Writings: The Spanish Connection." *Comparative Literature Studies*, vol. 35, no. 3, 1998, pp. 278–300.

García-Arenal, Mercedes, and Fernando Rodríguez Mediano. “Sacred History, Sacred Languages: The Question of Arabic in Early Modern Spain.” *The Teaching and Learning of Arabic in Early Modern Europe*, vol. 3, 13 Feb. 2017, pp. 133–162.

- Navarro Brotóns, Víctor. "Astronomy and cosmology in Spain in the Seventeenth century: the new practice of astronomy and the end of the Aristotelian-Scholastic cosmos." *Cronos*, 10, 2007, pp.15-40.
- Navarro-Loidi, Juan, and José Llombart. "The Introduction of Logarithms into Spain." *Historia mathematica*, vol. 35, no. 2, 2008, pp. 83-101.
- Navarro-Loidi, Juan. "La Arithmética común y decimal y algebra del P. Hugo Sempil escocés de la Compañía de Ihesús." *Actes d'història de la ciència i de la tècnica*, 2008, pp. 303-310.
- Malet, Antoni. "Newton in the Iberian Península". *The Reception of Isaac Newton in Europe*. Edited by Scott Mandelbrote and Helmut Pulte, 2016. pp. 1-18.
- Merchant, Carolyn. "'The Violence of Impediments': Francis Bacon and the Origins of Experimentation." *Isis*, vol. 99, no.4, 2008, pp. 731-760.
- De Montaud, Inés Roldán, and Mercedes Sampayo Yáñez. "Historia de los logaritmos y de su difusión en España por Vicente Vázquez Queipo." *Gaceta de la Real Sociedad Matemática Española*, vol. 18, no. 2, 2015, pp. 353-374.
- Pearson, David. *Provenance Research in Book History: A Handbook*. The British Library, 1998.
- Ruiz Asencio, José Manuel and Soledad Carnicer Arribas. 'La Biblioteca de Santa Cruz de la Universidad de Valladolid'. *Historia de la Universidad de Valladolid*. Edited by Palomares Ibáñez and Ribot García.vol. II. pp. 805-811.
- Sánchez Llama, Íñigo. "La recepción de la Filosofía Ilustrada en España." *Anuario de la Sociedad Española de Literatura General y Comparada*, vol. 8, 1990, pp. 75-84.
- Sobaler Seco, María de los Angeles. *Catálogo de colegiales del Colegio Mayor de Santa Cruz de Valladolid (1484-1786)*. Valladolid: Universidad de Valladolid, 2000.
- Taylor, Maurice. *The Scots College in Spain*. Valladolid, 1971.



Torremocha, Margarita. "Los estudiantes, los estudios y los grados." *Historia de la Universidad de Valladolid*. Valladolid: Universidad. Secretariado de Publicaciones, vol. 1, 1989, pp. 83-147.

Urzainqui, Inmaculada. "Feijoo y la Ilustración. Desde Marañón." Alicante: Biblioteca Virtual Miguel de Cervantes, 2010.

Ziskind, Martha A. "John Selden: Criticism and Affirmation of the Common Law Tradition." *The American Journal of Legal History*, vol. 19, no. 1, 1975, pp. 22-39.