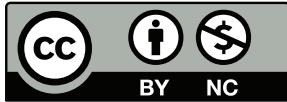


Euclid in print, 1482–1703.
A catalogue of the editions of the
Elements and other Euclidean works

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This is release #2, dated May 2025.
DOI:10.5281/zenodo.4269490

The editors will be pleased to receive notice of any errors or omissions.

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Introduction

This catalogue lists, in intention, every edition of one or more works attributed to Euclid printed in any language down to the year 1703. It is intended to improve upon the previous Euclidean bibliographies of Riccardi, Duarte, Thomas-Stanford and Steck, which were compiled before the availability of digital catalogues. It was produced as part of the 2016–18 project ‘Reading Euclid’, based at the University of Oxford and funded by the Arts and Humanities Research Council of the UK. This 2025 revision corrects a small number of errors in the original 2020 catalogue and adds reference to certain related publications appearing since that date.

Euclid in early modern print: the *Elements*

The history of the Euclidean editions has been narrated several times, including by Riccardi (1887), Thomas-Stanford (1926), Steck (1981) and Murdoch (2008). The sheer number of Euclidean issues in this period – over 250, most containing all or part of the *Elements* – creates difficulties for any attempt at a narrative account. Although some of those issues turn out to be straightforward reimpressions or even reissues of texts printed years or decades before, most bear more complex relationships to their predecessors, and in many cases those relationships are not made explicit on the title pages or elsewhere within the texts themselves (on this point see Wardhaugh 2024a, 2025b).

The *Elements* was by far the most-printed Euclidean text of this (or any) period, and received the most attention from editors and translators, resulting in a large number of ostensibly distinct versions. As can be seen from the charts in Appendix 1, we identify approximately fourteen ‘families’ of texts of the *Elements* in early modern print, although it is emphasised that we make such identifications only very tentatively (a more robust classification is attempted in Wardhaugh 2025b, with

which the following discussion should be read in conjunction). Quite a number of editions, perhaps the majority, can be shown to have had more than one textual source; some of the better known versions including those of Henry Billingsley and Christoph Clavius clearly had several. Conversely, certain editions had descendants which diverged quite widely from one another, or contributed to the later development of more than one strand of the printed Euclidean tradition. Thus, any grouping of editions into families is problematic and must be treated with great caution.

The printed history of the *Elements* begins with the edition of Erhard Ratdolt, issued at Venice in 1482 and based on a manuscript of the thirteenth-century redaction by Campanus. It contained fifteen books, including relatively long versions of the spurious books 14 and 15, with respectively 17 and 13 propositions; its text of book 5 was also long, with 34 propositions, but its book 10 was shorter than some, with 107. Ratdolt's text was reprinted by Leonardus Achates at Vicenza in 1491 and provided the text for Scipio Veggio's edition at Venice in 1509; it also probably provided the text for Ambrosius Lacher's printing of books 1–4 at Frankfurt in 1506.

By this last date a second Latin version of the *Elements* had come into print: the new translation by Bartolomeo Zamberti produced from Greek manuscripts and printed at Venice in 1505, and reprinted (in part reissued) in 1510. This was also a 15-book *Elements*; compared with the Campanine text the most obvious gross differences were much shorter books 14 and 15 with just 4 and 5 propositions, a shorter book 5 of 25 propositions and a longer book 10 with 118. There were other differences in detail in the number of propositions; it is notable that when Grynaeus printed a Greek *Elements* from two manuscripts at Basel in 1533, its numbers of propositions matched Zamberti's exactly, although Grynaeus omitted books 14 and 15.

What may be characterized as a Zamberti/Grynaeus *Elements* had considerable visibility in print for the remainder of the sixteenth century. Editions matching its numbering of the propositions – and in many cases derived from the texts of Zamberti and/or Grynaeus – appeared over the names of Oronce Fine (Paris 1536), Petrus Ramus

(Paris 1545), Angelo Cajani (Rome 1545), Georg Joachim Rhäticus and Joachim Camerarius (Leipzig 1549) and Johann Scheybl (Basel 1550) among others. The new Greek edition of books 1–6 by Henry Briggs (London 1620) also matched the Zamberti/Grynaeus numbers of propositions, although it was newly edited from manuscripts. The Zamberti/Grynaeus text type also achieved visibility in vernacular translations, as the Campanine had not: Cajani’s Italian version appeared in 1545, Wilhelm Holtzman translated Grynaeus into German in 1564 and Rodorigo de Zamorano’s Spanish was translated probably from Zamberti in 1567; the German version of Simon Marius (1610) and the Spanish of Luis Carduchi (1637) also match the proposition numbering of Zamberti/Grynaeus.

Both the Campanus/Ratdolt and the Zamberti types of text were incorporated into the 1516 Paris edition of Jacques Lefèvre d’Étaples, which made a feature of printing ‘the two traditions’ and inaugurated a long period during which the proofs in the Greek manuscripts were often characterized as a ‘commentary’ by Theon of Alexandria. It was characteristic of texts derived from d’Étaples to mark the extension to book 5 as an inauthentic addition, sometimes ascribing it to Campanus, and to print two versions (long and short) of books 14 and 15. D’Étaples himself appears to have used the 1509 version of the Campanine text as well as the 1505/1510 printings of Zamberti’s *Elements*.

Latin versions of the *Elements* dependent on d’Étaples were produced by Christian Herlin (Basel 1537), Valentin Nabod (Cologne 1556) and Jacques Peletier (Lyon 1557). Niccolò Tartaglia’s Italian version (Venice 1543) was in fact the first vernacular *Elements* to appear in print, and explicitly gave ‘the two traditions’; a French version of books 1–6 (Geneva 1611) also appears to have derived *via* Peletier from the d’Étaples *Elements*.

A longer version of book 10 was rehabilitated by Pierre de Mondoré in 1551; his was a new Latin translation of that book only, and gave 116 propositions. It appears to have been a source directly or indirectly for many subsequent editions of the *Elements* down to the end of the seventeenth century.

In the 1550s and 60s, a new version of the *Elements* appeared:

the family of texts sometimes known as that of Stephanus Gracilis. These combined the short form of books 5, 14 and 15 with the 116-proposition book 10, thus differing only in book 10 from the Zamberti/Grynaeus numbering of propositions. Joannes Magnienus prepared an edition of this kind, containing the enunciations in Latin and Greek, which was seen through the press after his death by Gracilis (Paris 1557); multiple sources were acknowledged including the edition of Mondoré. This version was reissued and reprinted at Paris and subsequently Cologne down to 1627. Meanwhile, another edition of the Latin and Greek enunciations, with the same numbers of propositions but containing only books 1–13, was published by Conrad Dasypodius at Strasbourg in 1564–5. The Greek text depended ultimately on Grynaeus, but the influence of Mondoré was again visible in book 10. Revisions and new versions of parts of this text (with contributions by Herlin) continued to be printed until 1599.

The Magnienus/Gracilis/Dasypodius group of texts was the apparent basis for three French versions of the *Elements*: those of Pierre Forcadel de Beziés in 1564–5, of Didier Dounot in 1610 and of Denis Henrion in 1615; the two last certainly had multiple sources, however, including longer versions of book 14 and, in the case of Henrion, proposition 10.117 which suggests contact with Commandino's edition. Henrion's translation was last printed in 1676 and last issued for sale (with a new title page) in 1685. Two Italian versions – those of Giovanni Ricci in 1651 and Pietro Paolo Caravaggi in 1671 – may also derive ultimately from the Magnienus group of Latin/Greek texts.

One of the more eccentric and audacious Euclidean projects in this period was that of François Foix de Candale, who in editions dated 1566 and 1578 added first a sixteenth book and subsequently a seventeenth and an eighteenth to his edition of the *Elements* (see Wardhaugh 2024b). His numbering of propositions was idiosyncratic in other books as well, making the descendants of his text relatively easy to identify: he gave the short form of book 5 but added five or six extra propositions to book 6 compared with the Grynaeus standard, and one extra to book 9. He gave the 116-proposition form of book 10 but included in books 14 and 15 respectively 20 and 21 propositions,

differing from any previous editor and reintroducing an instability into the texts of those two books which would persist for the remainder of our period.

Foix's second (18-book) edition was reissued in 1602 and was a source for Marin Mersenne's edition of 18 books of propositions in 1644. Meanwhile his first edition was one of the several sources for Henry Billingsley's English translation of the *Elements* in 1570, a hybrid text whose proposition numbering was often close to that of Foix and which repeatedly cited him. A French version of *Elements* 1–9 by Jean Errard (1598, 1605) also matched Foix's distinctive numbers of propositions. Through the edition of Clavius (see below), a version of Foix's book 16 would pass into numerous later editions, remaining in print until the mid-eighteenth century.

The 1570s saw two important milestones in the text of the *Elements*. The 1572 Latin edition of Federico Commandino was a new translation and, like that of Foix, a hybrid text based on several previous editions. It incorporated the longer form of book 5, marking the final group of propositions as an addition; it gave 117 propositions in book 10. For the spurious books Commandino gave the short (5-proposition) form of book 15 but an intermediate (7-proposition) form of book 14. Commandino's own edition was reprinted only once, in 1619, but editions acknowledging his as a source included those of John Keill and Carolus Porpora as late as 1701 and 1702, as well as Ioan Lanz's new version in 1617. Visibility in vernaculars included the Italian version prepared by Commandino's students (published at Urbino in 1575, reprinted in 1619 and in part in 1679), the Dutch version of Frans van Schooten (1617) and the French of Pierre le Mardelé (1622). The two last certainly used other sources in addition to Commandino's text; van Schooten omitted the extension of book 5 and le Mardelé stated that he had newly translated from Greek, despite both editors matching Commandino's proposition numbering in other respects.

For sheer visibility, all of these editions of the later sixteenth century were overshadowed by that of Christoph Clavius, which first appeared in 1574 at Rome. His edition was distinguished by long forms of books 5, 14 and 15, a 117-proposition book 10 (like Commandino) and the

inclusion of book 16 from Foix. Clavius added an extra proposition to book 5 compared with Commandino. He certainly also used the editions of Fine and Peletier, and showed a much-remarked tendency to increase the length of the text with commentary, scholia and extra proofs: so much so that his became nearly a Euclidean encyclopedia rather than a simple edition of the text. His version was reprinted down to 1654 and also issued as part of his *Opera*. Later editors who appear to have made some use of the text of Clavius, with or without acknowledgement, included Ambrosius Rhodius (1609), Carolus Malapertius Montensis (1620), Caterino Doino (1628), Georges Fournier (1643), Claude Richard (1645), Claude-François Milliet Dechaes (1660) and Gaspar Schott (1661); it is evident that his work on the text dominated the thinking of Jesuit educators for most of the seventeenth century.

Translations from the text of Clavius included the celebrated Chinese version of Matteo Ricci and Xu Guangqi (1607) and the French of Pierre Hérigone (1634), the latter another hybrid text with a shorter form of books 14 and 15. Among Clavian descendants, Fournier's Latin was translated into French in 1654, as was Dechaes' in 1672 and again in 1677. Dechaes' French was then translated twice into English (both versions in 1685), with further editions down to 1700. Given that the 1661 English *Elements* of John Leake and George Serle counted Clavius among its main sources (apparently using Foix for books 14–16), and that the version of Isaac Barrow (see below) was also a Clavian descendant, Clavius may be said to have dominated the English tradition of the *Elements* in the second half of the seventeenth century.

French versions by Jacques Rohault (1682) and Jacques Ozanam (1693), an anonymous Italian translation of 1690, Dutch versions of Heinrich Coetsius (1702) and Claas Janszen Vooght (1695) and a German translation by Anton Ernst Burckhard von Pirckenstein (1694) also all show at least some traces of Clavius' version of the text, although in some cases the transmission is indirect and in others the presence of Clavius' numbering of propositions may be misleading. The subject of Clavius' impact on vernacular versions of the *Elements* would repay further study.

The year 1575 also saw the belated publication of Francesco Mau-

rolico's version of *Elements* 13–15, composed in 1532. With respectively 21, 39 and 13 propositions, this matched no other version of the text and was probably a source for at least some later editors who gave long versions of those books. A final, and remarkable newly printed version of the *Elements* appeared in 1594 when the Medicean press at Rome issued the Arabic redaction attributed (wrongly) to al-Ṭūsī, as part of its programme of publication in oriental languages.

The Dutch version of Jan Pieterszen Dou (Leiden 1606) contained only books 1–6, but was many times reprinted: there were eight subsequent printings down to 1701, and the text was translated into German in 1618. An English version of 1651 (that of Rudd) may have used it as a source. Dou's own sources were the editions of Holzmann and Errard, respectively texts of the Zamberti/Grynaeus and Magnienus/Gracilis/Dasypodius types; his book 5 was short.

Two derivatives of Clavius' text may be mentioned separately, as having to some degree gained transmission histories of their own. First, Andrea Tacquet in 1654 published an edition of books 1–6 and 11–12: what was to become a popular selection from the text. Tacquet's version was reprinted five times and his text used in the Cambridge edition of Whiston in 1703, as well as possibly by Reyher in 1697. Two Spanish versions of the 1680s (those of Fernandez and Kresa) appear to be based on Tacquet's Latin (Kresa certainly, Fernandez conjecturally).

Second, Pierre Hérigone in 1634 gave a 15-book Latin *Elements*, with a long book 5 but short books 14 and 15; the proofs were new. Isaac Barrow's celebrated edition of 1655, with new, succinct symbolic proofs acknowledged a debt to Hérigone (and others) and matched Hérigone's proposition numbers exactly. Barrow's book was reprinted in Latin down to at least 1687, and in English to 1751; a separate English translation of books 1–6 and 11–12 was prepared for inclusion in Jonas Moore's *Système of the Mathematicks* in 1680–81.

The final edition of the *Elements* included in this catalogue is that of David Gregory, printed at Oxford in 1703. This was a new edition of the Greek text, from manuscripts, with a new Latin version based on that of Commandino. The short versions of books 5, 14 and 15 were restored, and the text concurred with Mondoré in giving 117 propo-

sitions in book 10. This fresh start would become a major source for Euclidean editions in Latin and various vernaculars during the eighteenth century, until it was superseded by new work on the manuscripts from the early decades of the nineteenth.

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The ‘Boethian’ versions of the Euclidean geometry may be mentioned here. An account of their genesis and early circulation is given in (Folkerts 1970), where the two principal versions of the text (as ‘Geometria 1’ and ‘Geometria 2’) are edited. Both comprise brief excerpts from the early books of the *Elements* together with other material mostly taken from the early medieval compendium now called the ‘Corpus Agrimensorum’. It is possible that Boethius did in fact translate all or part of the *Elements*, and possible that the texts under consideration here preserve fragments from that Latin text, but the quantity of actually Euclidean material is in any event small. The later medieval circulation of these two texts – after the appearance of Adelard’s Latin translation of the *Elements* in the twelfth century – does not seem to have been studied, but by the late fifteenth century they were evidently sufficiently associated with the works of Boethius for a version to be included in printed editions of his *Opera* at Venice (1491 and 1498) and Basel (1546 and 1570). A version was also included in the 1500 edition of Sacrobosco’s *De Sphaera* at Paris, where it was reprinted at least eight times down to 1538.

Later editions of the *Opera* of Boethius seem to have omitted the ‘Geometria’, although we are not aware of early modern discussions bearing on the question of its authenticity as a work of Euclid or of Boethius. It also ceased to appear in editions of Sacrobosco after 1538; the status of that medieval classic as a teaching text was itself of course changing during this period.

The opuscula

The other works of Euclid were printed much less frequently, and individually present much less complex pictures than do the *Elements*.

The *Phaenomena* was first printed in a Latin translation by Zamberti as part of his 1505 edition of various works of Euclid (the *Optica*, *Catoptrica* and *Data* were also included, on which see below). His version was reissued in 1510 and reused by Herlin in 1537; in the latter form it was reprinted in 1546 and 1558. Also in 1558 a revision of Zamberti's text (containing the enunciations only) was published by Maurolico. His text was used by subsequent editors including Baudry in 1626 and Mersenne in 1644.

In 1570, Dasypodius edited the *Phaenomena* in Greek for the first time, accompanying his edition with a new Latin translation: the differences from the version of Zamberti are striking; we are not aware of scholarship on the manuscript sources of these divergent texts of the *Phaenomena*. Dasypodius' text was reprinted in 1571 and 1572.

Guiseppe Auria in 1591 prepared a new Latin version of the *Phaenomena*, using the versions of both Zamberti and Maurolico as well as manuscripts in the Vatican. The resulting text was significantly different from either of its predecessors and was reissued in 1609. There was no further printing of the *Phaenomena* until Gregory's Euclidean *Opera* in 1703, where it appeared in a newly edited Greek text based on manuscripts, and a new Latin translation. The *Phaenomena* does not appear to have received any vernacular translation in our period.

The *Optica* and *Catoptrica* were also first printed in Latin by Zamberti in 1505, and received the same series of reissues and reuse (by Herlin) down to 1558 as did the *Phaenomena*. It is likely that Baudry's 1626 printing of the Latin enunciations of the *Optica* also used Zamberti as a source. The *Catoptrica* is now regarded as spurious, but no early modern edition seems to have prominently challenged its attribution to Euclid. The two texts were frequently but not invariably printed together in our period; one exception is the 1557 Greek edition of the *Catoptrica* by Dasypodius (1557), with a new Latin version. This

was never reprinted, and appears to have been independent of the new Greek and Latin versions of both texts printed at Paris in the same year by Jean de la Pène. La Pène's Latin version was reprinted in 1604, while his text of the enunciations in both languages was used by Dasypodius in his 1570 version of the books. It appears that la Pène's Latin text of the enunciations was also used in editions in 1599 (Leiden) and 1607 (Leipzig), whose exact sources are uncertain.

Egnatio Danti published an Italian translation of the two texts in 1573 and Pedro Ambrosio Ondériz a Spanish translation in 1585; their sources are not known. Jacques Ysambart translated the *Optica* into French from Greek – possibly using la Pène's text – in 1663. Finally the Greek text was newly edited and translated into Latin by Gregory in 1703.

The *Data* was also included in Zamberti's 1505 Latin publication and Herlin's re-uses of its texts to 1558. Dasypodius gave a Greek text of the enunciations in 1571, with a new Latin translation. Unlike the *Phaenomena* and optical works, however, the *Data* received serious textual attention during the seventeenth century: Claude Hardy in 1625 printed a full Greek text of the work with a new Latin translation. The Latin enunciations were included by Mersenne in his 1644 *Synopsis* of geometry and mixed mathematics. French translations appeared in 1632 (by Henrion) and 1634 (by Hérigone), with new issues and new impressions down to 1685 and 1664 respectively. There was an English translation in 1661. Barrow gave a new Latin version as a companion to his *Elements* in 1657, with reimpressions and reissues down to 1687. Finally, new Latin and Greek texts of the *Data* were included in Gregory's *Opera* in 1703.

The fragment *De levi et ponderoso* was first printed by Herlin in 1537, in Latin, with reimpressions down to 1558. Forcadel's French translation in 1565 was presumably from Herlin's text, as was the Italian version published by Curzio Troiano in the same year. The latter was last issued in 1586, and the *De levi* was not printed again until Gregory's edition in 1703, which was the first to print a Greek text of the work.

Another fragment, the *De superficierum divisionibus liber*, was not usually firmly attributed to Euclid in our period, though the possibility of

Euclidean authorship was raised more than once. (Fragments of the Euclidean *Division of figures* appear in the *De divisionibus*, but it is in fact a distinct work.) It was printed first at Pesaro in 1570 by Commandino, in both Latin and Italian; John Dee had drawn the text to his attention and provided the manuscript from which he printed, his own copy of a medieval Latin translation. Authorship was clearly ascribed to Machometus Bagdedinus (Abu-Bekr Muhammed ben Abdelbaqi el-Bagdadi) on the title pages to Commandino's Latin and Italian editions (and therefore these editions are not included in our catalogue), although Dee in a prefatory letter to Commandino attempted to trace it to Euclid: see Rosen (1970), Rose (1972) and Watson (1973). It was translated into English and appended to the 1661 English *Elements* of Leake and Serle, who pressed the claim for Euclidean authorship on their title page and included Dee's prefatory letter in English translation. The Latin text was also included in Gregory's *Opera*, with a title page that equivocated as to its authorship ('Euclidis, ut quidam arbitrantur, De Divisionibus liber. Vel ut alii volunt, Machometi Bagedini Liber De Divisionibus Superficierum').

Finally, of the two musical works, the *Sectio canonis* and *Introductio harmonica*, the latter is now universally attributed to Cleonides (perhaps second century A.D.); the authorship of the former continues to be discussed, with serious support for the view that some form or some part of the text originated with Euclid: see Barker (1981, 2007) and Barbera (1991). The *Introductio* was printed at Venice in 1497 in the version of Placentino and by Georgio Valla, also at Venice, in 1498: in Latin and attributed to Cleonides. Both texts were then printed by la Pène in 1557: in Greek and Latin, and now attributed to Euclid. Dasypodius took up the enunciations in both languages in 1570, and Forcadel published a French translation in 1556. Antonio Possevino in 1593 gave new Latin versions, informed by manuscripts in the Vatican as well as the texts of la Pène; finally Marcus Meibom included both texts in both Greek and Latin, retaining the attribution to Euclid, in his collection of ancient musical writings in 1652. Gregory edited and translated both afresh for his edition in 1703.

This summary is intended as much as anything to convey something of the complexity of the set of texts that were presented as works of Euclid in early modern print. Although Appendix 1 presents a scheme of textual types for the *Elements* and a stemma of their relationships, it is emphasised that no story of linear descent and dependence can do more than partial justice to a situation in which the nexus of editor, printer and publisher routinely used multiple sources when constructing a text. Furthermore, the Euclidean diagrams have to some degree their own history of transmission in print, and it might plausibly be argued that the spurious books of the *Elements* do so too: one which is in part independent of the transmission of books 1–13 with which they were coupled. The work of Vincenzo de Risi (2016) has shown clearly how complex was the subject of Euclidean axiomatics in the early modern period, with many editors of the *Elements* evidently feeling authorised to revise this part of the material they found in their sources in response to pedagogical, philosophical or other agendas. Some editors – like Foix – were willing to provide substantial quantities of entirely new ‘Euclidean’ material, while the attribution status of certain ostensibly ancient texts shifted during the period. Our picture is one of a rich ecosystem in which few textual relationships were simple or evident; a world, in fact, in which the category ‘Euclidean’ functioned more as a genre than as a statement of authorship in a narrow sense.

Previous Euclidean catalogues

The existing sources for bibliographic information about Euclidean editions are several.

First, a number of bibliographers and historians from the seventeenth century to the nineteenth provided lists or catalogues of mathematical works; some of these include quite a number of editions of Euclidean texts: in particular those of Fabricius (1713), Heilbronner (1742), Murhard (1797–1805) and Smith (1908). Heilbronner and

Murhard frequently seem to have carried across bibliographical information from Fabricius without re-checking it, including some items which can be shown to be bibliographic ‘ghosts’; on the other hand they report some genuine editions which have become very rare. None is anything like complete as a list of Euclidean editions.

Second, bibliographies dedicated specifically to Euclidean were produced by Pietro Riccardi (1887), Charles Thomas-Stanford (1926), Francisco Duarte (1967), Max Steck (1981) and the team of Odile Koutechnikoff, François Loget and Marc Moyon (2013).

Riccardi was assiduous in incorporating the references from earlier mathematical bibliographies in his catalogue, although he did not make explicit his criterion for marking some of these as doubtful and he was occasionally wrong to do so. Some of his reports were based on his own collection of books, and there are certain rare imprints for which these have long been the best descriptions available.

Thomas-Stanford was concerned principally to describe the books in his own remarkable collection of early Euclidean imprints, and his catalogue – which covers only the sixteenth century – is far from complete; nevertheless his descriptions are detailed and on the whole strikingly accurate. He also pointed out certain cases where imprints reported in older catalogues are the result of the misreading of title pages or colophons.

Duarte’s is also not a complete catalogue; it contains new transcriptions of title pages and colophons from actual copies seen, and therefore avoids perpetuating ghost editions from previous catalogues. Unfortunately the transcriptions are frequently inaccurate.

Steck carried over some information from Riccardi but based many of his descriptions on copies seen in – mainly German – libraries; his catalogue was left unfinished at the time of his death and unfortunately the sources of his information are unclear in some cases. His reports of imprints and title pages are less complete than those of Thomas-Stanford, and some of his truncations are ambiguous. He omitted a number of items from Riccardi’s catalogue whose existence he could not verify, although in a few cases these items can now be shown to be genuine; he also pointed out that some exemplars he believed to be

unique were destroyed in German libraries during the Second World War.

The Kouteynikoff–Loget–Moyon catalogue (CERE) groups the 91 items it lists into 35 ‘editions’ or rather families of editions, describing in full only the first member of each family. An important feature is the provision of links to digitized versions of many of the editions listed.

Third, certain recent electronic bibliographical catalogues include many, but by no means all, of the early modern Euclidean imprints. These are the Incunabula Short-Title Catalogue (ISTC), listing items down to 1500, the English Short-Title Catalogue (ESTC), covering imprints from Britain or in English down to 1800, and the Universal Short-Title Catalogue (USTC), which lists imprints in a range of European languages down to 1650.

Fourth, the (now electronic) catalogues of individual libraries holding early Euclidean imprints provide in some cases very full and accurate descriptions of those imprints, although mis-description does occur and in some cases it is not possible to be certain which of several impressions or issues is held without inspecting the copy in question. Among the many catalogues used during this project, particular mention should be made of those of the Oxford and Cambridge university library systems, the British Library, the National Libraries of Wales and of Scotland, and the Bibliothèque Nationale de France. Many of these catalogues can also be efficiently searched using meta-search engines; particular use was made of the Karlsruher Virtueller Katalog (KVK), which searches a large number of (mainly European) library catalogues and union catalogues, and of COPAC (now part of Jisc Library Hub Discover: discover.libraryhub.jisc.ac.uk), which incorporates more than 150 UK and Irish academic, national and specialist library catalogues.

This catalogue

The purpose of the present catalogue is to provide as nearly as possible a complete list of impressions and issues of works attributed to Euclid

down to 1703, the year of Gregory's important new edition of all of the Euclidean texts. The main sources mentioned above – Riccardi, Thomas-Stanford, Duarte, Steck, Kouteynikoff *et al.*, the ISTC, USTC and ESTC, the KVK, COPAC and the individual library catalogues – were searched for items apparently relevant. Details were then checked against physical or digital copies of the books in question.

A relatively exhaustive initial search leads to a catalogue larger than most previous lists of early modern Euclidean editions; on the other hand, exhaustive checking against actual copies of the books results in the modification of some details compared with previous catalogues, and the exclusion of certain items. (Two items are included in our catalogue on the basis of apparently reliable library catalogues, as well as three on the basis of descriptions in the secondary literature; all others have been inspected physically or *via* digital photographs).

In particular, cases are fairly frequent in which Riccardi's catalogue lists an impression, often based on a citation by an earlier bibliographer, whose existence we cannot verify. A few such cases were carried over into Steck's catalogue. Some cases are easily explained by misreadings of single digits in imprints or colophons (1610 for 1618, and so on); some such explanations have been offered by earlier bibliographers. The only really notable such 'ghost' edition is the widely reported 1517 Venice issue, which as both Riccardi and Thomas-Stanford remark is based on a misreading of the printer's colophon in the imprint of 1510 (see Thomas-Stanford 1926, p. 6). Other cases are less easy to account for, and it is quite possible that certain extant but rare impressions have eluded our searches. There is also the possibility that impressions extant during the lifetimes of Riccardi or Steck have become extinct due to the destruction of their last exemplars. Our procedure, then, produces a list of editions which avoids erring on the side of inclusion, but almost certainly errs on the side of exclusion.

Furthermore, we adopt a relatively strict definition of an 'edition', which means that we exclude some items included by earlier bibliographers. Works containing at least one whole book of the *Elements*, or the whole of any of the shorter works, are included, as are larger works (such as the *Opera* of Clavius or the *Cursus* of Pierre Hérigone) which

contain an edition of Euclidean works. Versions which omit, supplement or replace the received proofs are included. Editions of smaller fragments of a text, however – including editions giving definitions only – are not noticed; neither are versions which substantially rearrange or excerpt the Euclidean material. Compared with the earlier catalogues this leads notably to the omission of the series of editions of *Elementale geometricum* by Johannes Voegelin.

Appendix 2 to this volume provides a brief list of items – seen by us or reported in apparently reliable current library catalogues – whose titles declare a relationship with Euclid or the Euclidean texts but which are not editions in our sense: this includes commentaries both ancient and early modern and re-workings of Euclidean texts, including a number of geometry textbooks said to be based on Euclid and which typically rearrange the material substantially compared with the *Elements*. It is emphasized that this list has not received the same detailed checking as our main catalogue; it is based in large part on library catalogues rather than the inspection of copies, and it should be taken only as an indicative handlist of (much of) what exists, rather than an exhaustive or authoritative survey.

Table 1 shows the numbers of items listed by the various Euclidean catalogues, including this one.

	1482–1600	1601–1703	Total
Riccardi	138	236	374
Thomas-Stanford	97	–	97
Duarte	46	33	79
Steck	125	93	218
Kouteynikoff <i>et al.</i>	75	15	90
The present catalogue	94	170	264

Table 1: Sizes of Euclidean catalogues.

Using the catalogue

Each item record begins with a unique identifier such as ‘Venice 1482’, used in cross-references within the catalogue. Editions are ordered by year of publication, then by city. Where one city produced multiple editions in the same year, editorial judgement is used to arrive at an order, signalled for instance by Strasbourg 1570a, Strasbourg 1570b. We provide transcriptions of title (or incipit in the case of incunabula lacking a title page), imprint and/or colophon where these are present; epigrams within or without a printer’s device are not included. Capitalization and diacritics are retained; so are the ligatures *æ* and *œ*. The pseudo-scribal abbreviations adopted by some early modern printers are expanded using italics: namely the overbar and tilde denoting various omitted letters, the decorated *p* denoting variously *pre*, *pro* or *per*, the slashed or decorated *q* denoting the suffix *-que*, and various forms of single-character *et*. Other abbreviations are not expanded. Other typographical conventions such as the ligatures for *ti*, *fi* and more rarely *tz* are expanded silently, as are all ligatures in Greek; the occasional appearances of *CIO* and *IO* in imprint dates are transcribed as *M* and *D* respectively. Differences between italic and roman, red and black, and the use of superscript are neglected. We do not distinguish in transcription between long and short *s*; nor do we preserve line breaks or their associated hyphens.

In the notes which follow the transcription, we indicate the physical format of the edition and which Euclidean texts it includes; the latter information is often given in incomplete, unclear or misleading form on title pages. Further notes give other information known to us but not stated on the title page or in the colophon, including dedicatees, relationships with previous editions or specific manuscript sources – including the re-use of previously printed diagrams – uncredited editors or translators, and any known variants. It is emphasised that a ‘reimpression’, even if it matches its source page-for-page, will almost always be found to differ at the character level in matters of orthography, punctuation and the use of ligatures. We note here if an edition

lacks diagrams. Dates of dedications, epistles, and the various forms of permission to print (privilege, imprimatur, license, and so on) are reported, and dates that appear in the colophons in Roman (kalends and ides) style are given in modern form. The notes also mention related editions reported by earlier bibliographers (selectively in the case of Riccardi) whose existence we have not been able to confirm.

We next give citations of the edition, if any, in the catalogues of Riccardi, Thomas-Stanford (TS), Duarte, Steck and Koutenikoff *et al.* (CERE) as well as in the ISTC, ESTC and USTC (as at 2020), and in *Greek Mathematics in Print* (GMIP: Wardhaugh 2025a), a companion to the present catalogue with which it partially overlaps. Finally we list copies held in public collections in Britain and Ireland. (This geographical limitation is a consequence of the scope of the funded project from which this catalogue arose, and which investigated Euclidean reception specifically in Britain and Ireland. Full censuses, particularly of the earlier Euclidean imprints later than the scope of the ISTC, remain a desideratum.) These lists are based on publicly available, usually online, catalogues of the individual libraries. They have been checked by inspection of the copies themselves in only about half of the cases reported; it is therefore certain that they will contain errors of both inclusion and exclusion. Locations are listed in alphabetical order, with the exception that the colleges of Oxford and Cambridge are grouped to avoid repeating the name of the city inordinately. Where a city is named without further comment, the university library is meant. The libraries of properties owned by the National Trust are collectively denoted ‘National Trust Properties’ (separate holdings for these libraries are listed in discover.libraryhub.jisc.ac.uk). The following abbreviations are used.

BL: British Library.

NLS: National Library of Scotland.

NLW: National Library of Wales.

UL: University Library.

Acknowledgements

We are grateful to the AHRC for funding the project ‘Reading Euclid’ during 2016–2018, of which this catalogue is one of the outcomes. Our gratitude extends to the many specialist librarians who assisted with access to books and with sometimes recondite queries about their holdings, including in particular at the Bodleian Library and the college libraries of All Souls College, Christ Church, Corpus Christi College, Merton College and The Queen’s College, Oxford, the University Library and Trinity College Library, Cambridge, as well as Eton College, Leicester University Library, the British Library, London Metropolitan Archives, the Guildhall Library, Lambeth Palace Library, the Royal Society, the Royal College of Physicians, the Wellcome Library, University College London, Senate House Library, Middle Temple Library, Manchester University Library, Westminster School, the National Library of Wales, Winchester College, the library of York Minster, Armagh Robinson Library, Trinity College, Dublin, the Russell Library, Maynooth University, Edward Worth Library and Marsh’s Library, Dublin. Librarians at the Ruusbroec Institute Library, Antwerp, Christ Church, Oxford, the Huntington and the National Library of Spain were particularly helpful in providing photographs of rare books, including during the final stages of preparing this catalogue, which coincided with the difficult circumstances of the global coronavirus pandemic.

We are also grateful to the participants at three workshops held in Oxford during 2016–18 on subjects related to early modern Euclidean mathematics, and to the contributors to our volume on ‘Reading Mathematics’ (Beeley, Nasifoglu and Wardhaugh 2021). Their contributions and discussion both formal and informal did much to shape our thinking as reflected in the final form of this catalogue, as did the organisers and participants at seminars in Maynooth (July 2019) and Oxford (September 2017) at which portions of our Euclidean work were presented.

Catalogue

Venice 1482

[*Original impression*]: Preclarissimum opus elementorum Euclidis megarensis vna cum commentis Campani perspicacissimi in artem geometriam incipit feliciter.

[*Re-set*]: Preclarissimus liber elementorum Euclidis perspicacissimi: in artem Geometrie incipit quamfoelicissime:

Colophon: Opus elementorum euclidis megarensis in geometriam artem In id quoque Campani perspicacissimi Commentationes finiunt. Erhardus ratdolt Augustensis impressor solertissimus. venetijs impressit. Anno salutis. M.cccc.lxxxij. Octauis. Calen. Iun. Lector. Vale.

Folio. *Elements* 1–15. The first printed edition of the *Elements*; the text is that of the Campanus redaction.

Dedicated to Joannes Mocenico; according to ISTC, at least seven copies have the dedicatory letter printed in gold.

The colophon date is 25 May 1482. After the initial impression, the first nine leaves were set up in type afresh with the ‘Preclarissimus liber’ incipit, various detailed alterations to the text and some rearrangement of the layout, including some modified diagrams. The definitions and part of proposition 1 had previously been printed in a draft version intended as an advert. See Nordqvist 1961, 40–47, Baldasso 2009 and 2013.

Steck reports from Saubert 1643 a variant dated in 1483, which we cannot confirm. He also reports a reimpression at Ulm in 1486, following a report of Fabricius. Duarte (p. 7) notes that this does not exist.

References: Riccardi 1482¹. TS I.1 and I.1a. Duarte p. 19. Steck II.1. ISTC ie00113000. CERE 1.

UK/Irish copies: Aberdeen. BL (3). Cambridge: Caius, Fitzwilliam Museum, St John’s (2), Trinity (2), UL (2). Durham. Edinburgh Royal Observatory. Edinburgh UL. Glasgow. Leeds. Manchester. Newcastle. NLW. Oxford: Bodleian (2), Brasenose, St John’s. Royal Society. Senate House Library. UCL. Victoria and Albert Museum.

Venice 1491

[*Part 1*]: Haec sunt opera Boetii: quae in hoc volumine continentur.

[Part 2]: Incipit tabula super libris Boetij de consolatione philosophiae secundum ordinem alphabeti.

Colophon: [Part 1] Uenetijs Impressum Boetij opus per Joannem et Gregorium de gregorijs fratres foelici exitu ad finem vsque perductum accuratissimeque emendatum Anno humane restorationis. 1492. die. 18. Augusti. Augustino Barbadico Serenissimo Uenetiarum principe Rem pu. tenente.

[Part 2] Diui. Seuerini Boetij de consolatione: necnon de scolarium disciplina mellifluis operibus: cum sancti Thomae super vtroque commentarijs: in hoc eodem volumine. Jmpressis venetijs per Joannem de Forliuio et Gregorium fratres. Anno salutis. M.cccc.lxxxj. die. xxvj. mensis Martij.

Two parts, folio. *Geometria*. The first printed edition of the ps.-Boethian *Geometria*.

References: TS p. 49. ISTC ib00767000. USTC 996750.

UK/Irish copies: BL (2). Cambridge: Caius, St John's, Trinity, UL (3). Edinburgh, Royal Observatory. Glasgow. Lambeth Palace Library. Leeds. Liverpool. Oxford: All Souls, Bodleian (3), Christ Church, New College. Rochester Cathedral. Shrewsbury School. UCL (2).

Vicenza 1491

Preclarissimus liber elementorum Euclidis perspicacissimi: in artem Geometrie incipit quamfoelicissime:

Colophon: Opus elementorum euclidis megarensis in geometriam artem In id quoque Campani perspicacissimi Commentationes finiunt. Impresum Vincentiae per Magistrum Leonardum de Basilea & Gulielmum de Papia Socios. Anno salutis M.cccclxxxj. Vigesimo. Calen. Iunius. Lector. Vale.

Folio. *Elements* 1–15. A reimpression of **Venice 1482** in its final state, that is with the 'Preclarissimus liber' version of the text of the first quire. The dedication is omitted, and although the main text is re-set so as to match the original at the page level, there are many changes at the character level. The colophon date is irregular in form, though 13 May 1491 was evidently

intended: see TS (p. 5), who suggests that it was constructed by a too-close analogy with the ‘Octauis. Calen. Iun.’ of Ratdolt’s colophon.

References: Riccardi 1491¹. TS 2. Duarte p. 19. Steck II.5. ISTC ie00114000. CERE 1.

UK/Irish copies: BL. Cambridge: Trinity. Edinburgh Royal Observatory. NLW. Oxford: Bodleian, Brasenose. Senate House Library. UCL.

Venice 1498

[*Part 1*]: Hec sunt opera Boetii. que in hoc uolumine continentur.

[*Part 2*]: De Arithmetica ad Patritium simmachum libri duo. De Musica libri quinque. De Geometria libri duo. De philosophie consolatione libri quinque. De scholarium disciplina liber vnus.

[*Part 3*]: Boetius de consolatione: et de disciplina scholarium

Colophon: [*Part 1: None.*]

[*Part 2*] Venetiis. Impressum Boetii opus per Ioannem et Gregorium de gregoriis fratres felici exitu ad finem vsque perductum accuratissimeque emendatum Anno humane restorationis. 1499. die. 8. Iulii. Augustino Barbadico Serenissimo Uenetiarum principe Rempu. tenente.

[*Part 3*] Adest finis Diui. Seuerini Boetii de consolatione. necnon de scholarium disciplina mellifluis operibus cum sancti Tome super vtroque commentariis. in hoc eodem volumine. Impressis venetiis per Ioannem de Forliuio et Gregorium fratres Anno salutis. Mccccclxxxvii die. x. februarii.

Three parts, folio. *Geometria*. New version of **Venice 1491**. The *Geometria* appears in vol. 2, ff. 55–69.

References: ISTC ib00768000. USTC 996749.

UK/Irish copies: Belfast. BL (4). Cambridge: Christ’s, Trinity, UL (2). Edinburgh. Glasgow. Kilkenny: St Canice’s Library. Oxford: Bodleian (2), Corpus Christi, Magdalen. Royal Astronomical Society. Royal College of Music. Senate House Library. Wellcome Library (2).

Venice 1498a

Georgio Ualla Placentino Interprete. Hoc in volumine hec conti-

nentur Nicephori logica Georgij valle libellus de argumentis Euclidis quartus decimus elementorum Hypsiclis interpretatio eiusdem libri euclidis Nicephorus de astrolabo Proclus de astrolabo Aristarchi samij de magnitudinibus & distantijs solis & lune Timeus de mundo Cleonidis musica Eusebii pamphili de quibusdam theologicis ambiguitatibus Cleomedes de mundo Athenagore philosophi de resurrectione Aristotelis de celo Aristotelis magna ethica Aristotelis ars poetica Rhazes de pestilentia Galenus de in equali distemperantia Galenus de bono corporis habitu Galenus de confirmatione corporis humani Galenus de presagitura Galenus de presagio Galeni introductorium Galenus de succidaneis Alexander aphrodiseus de causis febrium Pselus de victu humano.

Colophon: Impressum Venetiis per Simonem Papiensem dictum Beuilaquam. 1498. Die ultimo Septembris

Folio. *Elements* 14. Giorgio Valla ed. Dedicated to Guido Urbini. Contains, in Latin, 25 opuscula by Nicephorus, Valla, Proclus (*De astrolabo*), Aristarchus, Timaeus (*De mundo*), Cleonides (*De musica*), Eusebius, Cleomedes, Athenagoras, Aristotle (*De caelo*, *Ethica*, *Ars poetica*), Rhazes, Galen, Alexander Aphrodisias and Psellus. *Elements* 14 appears at diii^v–dvi^r; the text differs from the version printed by Ratdolt in **Venice 1482**.

The *De musica* of Cleonides (which had also been printed at Venice in 1497 in the version of Placentino) is correctly attributed here; cf. **Paris 1557b**, where it would be attributed to Euclid. Perhaps as a result of confusion with the separate Cleonides volume, Riccardi reports a 1497 impression of the present work.

References: Riccardi 1498¹. Steck II.6. ISTC in00044000. USTC 992882. CERE 2.GMIP Venice 1498.

UK/Irish copies: BL. Oxford: New College. Royal Society.

Paris 1500

TEXTus De Sphaera Iohannis de Sacro bosco Cum additione (quantum necessarium est) adiecta: Nouo commentario nuper edito Ad vilitatem studentium Philosophice Parisiensis. Academie illustratus

Cum Compositione Anuli Astronomici Boni Latensis. Et Geometria Euclidis Megarensis.

Colophon: Impressum Parisii in pago diui Jacobi ad insigne sancti Georgii Anno christi siderum conditoris 1500 prima septembris Per impressorem vvolgangum hopylium Cui hec sententia semper firma mente sedet: Non viribus aut velocitatibus aut celeritate corporum res magne geruntur: sed Consilio, Sententia, et auctoritate.

Folio. *Geometria* (extract). The printer was Johannes Higman (USTC). The volume contains a commentary on Sacrobosco by Jacques Lefèvre d'Étaples, which bears a dedication to Carolus Bozza; editorship of the volume as a whole is credited in some catalogues to d'Étaples.

The leaves containing the texts of Bonetus and the *Geometria* seem sometimes to have been removed; they are wanting from certain copies, and are sometimes to be found bound separately.

A reimpression dated at Venice in 1501, reported by Steck, appears to be a ghost.

References: Riccardi 1500^{1*}. Steck II.7. ISTC ij00423000. USTC 201872.

UK/Irish copies: BL. Cambridge: Trinity. Oxford: Bodleian.

Venice 1505

Euclidis megarensis philosophi platonici Mathematicarum disciplinarum Ianitoris: Habent in hoc volumine quicumque ad mathematicam substantiam aspirant: elementorum libros. xiiij. cum expositione Theonis insignis mathematici. quibus multa quae deerant ex lectione graeca sumpta addita sub nec non plurima subuersa et prepostere: voluta in Campani interpretatione: ordinata digesta et castigata sunt. Quibus etiam nonnulla ab illo venerando. Socratico philosopho mirando iudicio structa habentur adiuncta. Deputatum scilicet Euclidi volumen. xiiij. cum expositione Hypsi. Alex. Itidemque et Phaeno. Specu. et Perspe. cum expositione Theonis. ac mirandus ille liber Datorum cum expositione Pappi Mechanici vna cum Marini dialectici protheoria. Bar. Zamber. Vene. Interprete. Cum gratia et Priuilegio

per decennium.

Colophon: Impressum Venetiis fœlicibus auibus opus est huiusmodi aureum & rarissimum: in aedibus Ioannis Tacuini librarii accuratissima dilligentia recognitum. Anno reconciliatæ diuinitatis. M.D.V. VIII. Klendas nouembris. Auspiciis fœlicissimæ Venetorum. Re. Pu. Leornadi Lauretani: Principis sapientissimi: Cautum est tamen dominiî sanctione: ne quis presens opus Venetiis cudat: aut alibi impressum uendere audeat: mulcta adiuncta ut in Priui. pressius legitur.

Folio. *Elements* 1–15; *Phaenomena*; *Optica*; *Catoptrica*; *Data*. A new translation of the *Elements* by Bartolomeo Zamberti, distinctly different from the Campanine text of **Venice 1482**. Heiberg was not able to identify the Greek manuscript(s) used by Zamberti (Heath 1926, 1.98). The first printing of the *Phaenomena*, *Optica*, *Catoptrica*, and *Data*.

In this edition the books normally known as books 14 and 15 are called, respectively, the ‘traditio’ of Hypsicles and book 14.

In addition to the Euclidean texts, this volume contains a preface by Zamberti and a *Vita Euclidis* and *Euclidis castigationes*, and the *Protheoria* of Marinus introducing the *Data*. While the whole is dedicated to Guido Urbini, *Elements* 14 and the minor works have separate dedications, respectively to Laurentio Lauretano, Paulo Pisano, Lodovico Mocenico, Ioannes Zamberto, Antonio Abiosioi and Marino Georgio.

Heath (vol. 1, p. 98) states that Zamberti’s *Elements* was ‘printed as early as 1500, though the complete work ... has the date 1505 at the end’, but his evidence for this is not clear. Some catalogues report a date of 1508 due to a misreading of the colophon (the date is correctly read as 25 October 1505). Smith (p. 482) describes a manuscript version of the first three books of this translation which he dates c. 1525. Meanwhile, a supposed reimpression dated 1513 (Steck III.11, Riccardi 1513¹) appears to be a ghost.

References: Riccardi 1505¹. TS 3. Steck III.3. USTC 828471. CERE 3.

UK/Irish copies: BL (2). Cambridge: Fitzwilliam Museum, UL; Glasgow. NLW (2). Oxford: Merton, New College, St John’s. Senate House Library. UCL. Victoria and Albert Museum.

Frankfurt 1506

Preclarissimus liber elementorum Euclidis perspicacissimi. in artem Geometrie incipit quamfoelicissime

Colophon: Et tantum de quatuor libris elementorum Euclidis cum familiari Campani in eosdem comentario. qui cum in omnibus vniuersalibus studijs ordinaria institucione preeleguntur sic eciam in hac nostra achademia franckfordiana. ab illustrissimis Ioachim principe electore et Alberto germanj marchionibus Brandenburgj nuper erecta. per Mgrm Ambrosium lacher de Merspurgh mathematicum ibidemque Collegiatum accurata diligencia lecti castigati propriisque impensis elaborati sunt atque impressi ut athenarum more studium philosophie a mathematico splendore mirifice inceptum efflorescat Anno salutis. vi.

Quarto. *Elements* 1–4. Ambrosius Lacher ed. Dedicated to Albrecht von Brandenburg. The text appears to be that of Campanus.

References: Riccardi 1506¹. TS I. Steck III.4. USTC 654423.

UK/Irish copies: BL.

Paris 1507

TEXtus De Sphera Iohannis de Sacrobosco Cum additione (quantum necessarium est) adiecta: Nouo commentario nuper edito Ad vtilitatem studentium Philosophice Parisiensis. Academie illustratus Cum Compositione Anuli Astronomici Boni Latensis. Et Geometria Euclidis Megarensis.

Colophon: Impressum Parisij in officina Henrici stephani e regione Scholae decretorum sita. Anno Christi siderum conditoris 1507. Decimo die Nouembris.

Folio. *Geometria*. Reimpression of **Paris 1500**. Steck (III.6) reports a further reprint at Cologne in 1508, which we cannot confirm.

References: Riccardi 1507¹. Steck III.5. USTC 143312.

UK/Irish copies: Cambridge: UL. UCL.

Venice 1509

Euclidis megarensis philosophi acutissimi mathematicorumque

omnium sine controuersia principis opera a Campano interprete fidissimo tralata Que cum antea librariorum detestanda culpa mendis fedissimis adeo deformia essent: vt vix Euclidem ipsum agnoscere-mus. Lucas paciulus theologus insignis: altissima Mathematicarum disciplinarum scientia rarissimus iudicio castigatissimo deterisit: emendauit. Figuras centum *et* vndetriginta que in alijs codicibus inuerse *et* deformate erant: ad rectam symmetriam concinnauit: *et* multas necessarias addidit. Eundem quoque plurimis locis intellectu difficilem commentariolis sane luculentis *et* eruditiss. aperuit: enarrauit: illustrauit Adhec vt elimatior exiret Scipio vegius mediol. vir vtraque lingua: arte medica: sublimioribusque studijs clarissimus diligentiam: *et* censuram suam prestitit.

Imprint: A. Paganus Paganinus Characteribus elegantissimis accuratissime imprimebat.

Colophon: Euclidis megarensis philosophi perspicacissimi elementorum opus de duabus quantitibus discreta scilicet *et* continua. ac earundem proportionibus *et* proportionalitatibus: ex optima Campani interpretatione. Magistro Luca paciolo de Burgo Sancti Sepulchri Ordinis Minorum sacre theologie professore. Matematicę discipline cultore feruentissimo die noctuque chalcographis asistente postillis suis oportunis plerisque in locis additis manu propria accuratissime castigatum finit.

Venetis impressum per probum Virum Paganinum de Paganinis de Brixia decreto tamen publico vt nullus ibidem totique dominio annorum .xv. curriculo imprimat aut imprimere faciat. *et* alibi impressum sub quouis colore in publicum ducat sub penis in dicto priuilegio contentis Anno redemptionis nostre .M.D.VIII. Klen .XI. Iunii. Leonardo Lauretano Ve. Re. Pu. Gubernante. Pontificatus Iulii .II. Anno .VI.

Folio in 8s. *Elements* 1–15. Luca Pacioli ed. The text is essentially that of **Venice 1482**; Heath (vol. 1, p. 99) suggests that this edition was printed at the expense of Ratdolt, with the intention of vindicating the text of Campanus as against that of Zamberti. Steck, following Heilbronner, describes a manuscript version dated 1485 and a printing at Venice in 1489, which we cannot confirm. To the address of Pacioli is appended a list of those present when his lecture

was given in Venice in August 1508; the colophon date is 22 May 1509.

References: Riccardi 1509¹. TS 4. Duarte p. 22. Steck III.7. USTC 828472. CERE 4.

UK/Irish copies: BL (3). Cambridge: Caius, Christ's, Fitzwilliam Museum, St John's, Trinity, UL. Edinburgh Royal Observatory. NLW. Oxford: Bodleian, Christ Church. St Andrews. Senate House Library.

Venice 1510

Euclidis Megarensis philosophi platonici Mathematicarum disciplinarum Ianitoris: Habent in hoc volumine quicumque ad mathematicam substantiam aspirant: elementorum libros. xij. cum expositione Theonis insignis mathematici. quibus multa quae deerant ex lectione graeca sumpta addita sub nec non plurima subuersa et prepostere: voluta in Campani interpretatione: ordinata digesta et castigata sunt. Quibus etiam nonnulla ab illo venerando. Socratico philosopho mirando iudicio structa habentur adiuncta. Deputatum scilicet Euclidi volumen. xiiij. cum expositione Hypsi. Alex. Itidemque et Phaeno. Specu. et Perspe. cum expositione Theonis. ac mirandus ille liber Datorum cum expositione Pappi Mechanici vna cum Marini dialectici protheoria. Bar. Zamber. Uene. Interprete. Cum gratia et Priuilegio per decennium.

Colophon: Impressum Venetiis foelicibus auibus opus est huiusmodi aureum & rarissimum: in aedibus Ioannis Tacuini librarii accuratissima dilligentia recognitum. Anno reconciliatae diuinitatis .M.D.X. VII. Klendas Aprilis. Auspiciis foelicissimae Venetorum. Re. Pu. Leonardi Lauredani: Principis sapientissimi: Cautum est tamen dominii sanctione: ne quis presens opus Venetiis cudat: aut alibi impressum uendere audeat: mulcta adiuncta ut in Priui. pressius legitur.

Folio. *Elements* 1–15; *Phaenomena*; *Optica*; *Catoptrica*; *Data*. Bartolomeo Zamberti ed. 'A reissue of the sheets of [Venice 1505] as far as the end of quire O. From this point the book has been reset in slightly different type, page for page and line for line' (TS, p. 23). The new colophon date is 26 March 1510.

According to TS, some copies have a four-piece border on I1^a surrounding the text.

The colophon in this issue has sometimes been misread as 1517: see Thomas-Stanford, p. 6, Riccardi, and the inexistent edition reported at Steck III.15.

References: Riccardi 1510¹. TS 5. Steck III.8. USTC 828470. CERE 3.

UK/Irish copies: BL (2). Cambridge: St Catharine's, Christ's. Edinburgh Royal Observatory. Glasgow. NLW. Royal Society. UCL.

Paris 1511

TEXTus De Sphera Johannis de Sacrobosco Cum additione (quantum necessarium est) adiecta: Nouo commentario nuper edito Ad vtilitatem studentium Philosophice Parisiensis. Academie illustratus cum Compositione Anuli Astronomici Boni Latensis. Et Geometria Euclidis Megarensis.

Colophon: Impressum Parisij in officina Henrici stephani e regione Schole decretorum sita. Anno Christi siderum conditoris 1511. Decimo die Nouembris.

Folio. *Geometria*. Reimpression of **Paris 1500/Paris 1507**. Steck (III.9) reports from Zakhartchenko a separate printing of *Elements* 1–4 in Paris this year by Stephanus, reprinted in 1516: we can confirm neither and suspect confusion arising from mis-description of this edition.

References: Riccardi 1511². Steck III.10. USTC 143880.

UK/Irish copies: Chetham's School. Royal Society.

Paris 1516

CONTENTA. EVCLIDIS Megarensis Geometricorum elementorum libri XV. CAMPANI Galli transalpini in eosdem commentariorum libri XV. THEONIS Alexandrini Bartholamæo Zamberto Veneto interprete, in tredecim priores, commentariorum libri XIII. HYPsiclis Alexandrini in duos posteriores, eodem Bartholamæo Zamberto Veneto interprete, commentariorum libri

II. VTCVNQVE NOSTER VALVIT LABOR conciliata sunt hæc omnia, ad studiosorum non paruam (quam optamus) vtilitatem: id Magnifico D. FRANCISCO Briconneto postulante. Si hæc beneuole suscipiantur, & fructum adferant quem cupimus: alia eiusdem authoris opera prodibunt in lucem, successum præstante deo, & adiutoribus (vbivbi gentium sint) ad bonarum literarum institutionem probe affectis Gallis, Italis, Germanis, Hispanis, Anglis. quibus omnibus prospera imprecamur: & puram pro dignitate veramque cognitionis lucem.

Imprint: PARISIIS in officina Henrici Stephani e regione scholæ Decretorum.

Colophon: EVCLIDIS MEGARENSIS CLARISSIMI PHILOSOPHI Mathematicorumque facile principis, primum ex Campani, deinde ex Theonis in priores tredecim, & Hypsiclis Alexandrini in duos posteriores, Graecorum philosophorum traditionibus, Bartholamæo Zamberto Veneto interprete: geometricorum Elementorum librorum quindecim. Finis.

Folio. *Elements* 1–15. Dedicated to Francisco Briconnet by Jacques Lefèvre d'Étaples, the editor of this version, which gives the translations of Campanus (as improved by Pacioli in **Venice 1505/1510**) and Zamberti (*i.e.* **Venice 1509**) in conjunction.

The dedication is dated ‘postridie Epiphaniæ Domini M.D.XVI.’, that is 7 January 1516; TS notes that the practice of Parisian printers at this time was to date the New Year from Easter, and that it is therefore not clear whether the year of printing was in fact 1516 or 1517.

Duarte reports that some copies have a title page with ‘Euclides’ for ‘Euclidis’, which we cannot confirm.

Steck (III.32), following Riccardi (1537²) reports a reimpression in 1537, possibly due to confusion with the Basel issue of that year. Both Steck (III.89) and Riccardi (1576²) report a reimpression in 1576, which we also cannot confirm.

References: Riccardi 1516⁴. TS 6. Duarte p. 22. Steck III.14. USTC 144539. CERE 5.

UK/Irish copies: Aberdeen. BL (2). Cambridge: Christ’s, Peterhouse, Trinity, UL (2). Edinburgh Royal Observatory. Liverpool. Marsh’s Library, Dublin. Maynooth. NLW. NLS. Oxford: Bodleian (2), Corpus Christi, Mag-

dalen, Merton, New College, St John's. Senate House Library. Shrewsbury School. UCL. Wellcome Library.

Paris 1516a

Textus De Sphera Joannis de Sacrobosco. Cum additione (quantum necessarium est) adjecta: Nouo commentario nuper edito. Ad vtilitatem studentium Philosophice Parisiensis. Academie illustratus cum Compositione Anuli Astronomici Boneti Latensis. Et Geometria Euclidis Megarensis.

Colophon: Impressum Parisijs in officina Henrici Stephani e regione Schole decretorum sita. Anno Christi siderum conditoris 1516. Decimo die Maij.

Folio. *Geometria*. Reimpression of **Paris 1500/Paris 1507/Paris 1511**. Steck (III.16) and Riccardi (1519²) report a 1519 reimpression or reissue, but we cannot confirm it.

References: Riccardi 1516¹. Steck III.12. USTC 203490.

UK/Irish copies: Cambridge: Whipple. Oxford: All Souls, Bodleian. NLW.

Paris 1521

TEXTVS DE SPHÆRA IOANNIS DE SACROBOSCO: INTRODVTORIA ADditione (quantum necessarium est) *commentarioque*, ad vtilitatem studentium philosophiæ Parisiensis Academiae illustratus. Cum compositione Annuli astronomici Boneti Latensis: Et Geometria Euclidis Megarensis.

Imprint: PARISIIS. Vænit apud Simonem Colinæum, e regione scholæ Decretorum. 1521

Colophon: PARISIIS, EX AEDIBVS SIMONis Colinæi, e regione scholæ Decretorum positus. Anno a Christo nato, primo & vigesimo supra sesquimillesimum. Sexto Calendas Maias.

Folio. *Geometria*. Reimpression of **Paris 1500/Paris 1507/Paris 1511/Paris 1516a**. The colophon date is 26 April 1521.

Steck (III.13) following Riccardi (1521¹) reports a Colines edition of the

Elements in this year, but we suspect confusion with this edition. Meanwhile Riccardi's 1521² appears to describe a separately bound copy of the *Geometria* from this edition.

References: Riccardi 1521³. Steck III.17. USTC 145470.

UK/Irish copies: Edinburgh. Royal College of Physicians.

Paris 1527

TEXTVS DE SPHAERA IOANNIS DE SACROBOSCO:
INTRODVCTORIA ADDITIONE (quantum necessarium est)
commentarióque, ad vtilitatem studentium philosophiæ Parisiensis
Academiæ illustratus. Cum compositione Annuli astronomici Boneti
Latensis: Et Geometria Euclidis Megarensis.

Imprint: PARISIIS Vænit apud Simonem Colinæum. 1527

Colophon: PARISIIS, EX AEDIBVS SIMONIS COLINÆi, Anno à
Christo nato, vigesimoseptimo supra sesquimillesimum. XII Calendas
Septembres.

Folio. *Geometria*. Reimpression of **Paris 1500/Paris 1507/Paris 1511/Paris 1516a/Paris 1521**. The colophon date is 21 August.

Steck (III.20) following Riccardi (1527²) also reports an impression of this text in Venice this year, which we cannot confirm.

References: Riccardi 1527^{1*}. Steck III.19. USTC 145882.

UK/Irish copies: BL. Oxford: New College. Senate House Library.

Paris 1531

TEXTVS DE SPHAERA IOANNIS DE SACROBOSCO:
INTRODVCTORIA ADDITIONE (quantum necessarium est)
commentarióque, ad vtilitatem studentium Philosophiæ Parisiensis
Academiæ illustratus. Cum compositione Annuli astronomici Boneti
Latensis: Et Geometria Euclidis Megarensis.

Imprint: PARISIIS Vænit apud Simonem Colinæum. 1531

Colophon: PARISIIS, EX AEDIBVS SIMONIS COLINÆi, Anno à
Christo nato, tricesimoprimum supra sesquimillesimum, pridie Nonas

Februarij.

Folio. *Geometria*. Reimpression of Paris 1500/Paris 1507/Paris 1511/Paris 1516a/Paris 1521/Paris 1527. The colophon date is 4 February.

See also TS p. 49. Steck (III.27) and Riccardi (1532²) report a reimpression or reissue in 1532, which we cannot confirm.

References: Riccardi 1531¹. Steck III.24. USTC 138085.

UK/Irish copies: None identified.

Basel 1533

ΕΥΚΛΕΙΔΟΥ ΣΤΟΙΧΕΙΩΝ ΒΙΒΛ. ΙΕ'. ΕΚ ΤΩΝ ΘΕΩΝΟΣ
ΣΥΝΟΤΣΙΩΝ. Εἰς τοῦ αὐτοῦ τὸ πρῶτον, ἐξηγημάτων Πρόκλου βιβλ.
δ'. Adiecta præfatiuncula in qua de disciplinis Mathematicis nonnihil.

Imprint: BASILEAE APVD IOAN. HERVAGIVM ANNO M. D.
XXXIII. MENSE SEPTEMBRI.

Colophon: BASILEAE APVD IOAN. HERVAGIVM ANNO M. D.
XXXIII. MENSE SEPTEMBRI.

Folio. *Elements* 1–13. Dedicated to Cuthbert Tunstall by the editor Simon Grynäus; the dedication is dated 31 August. This was the first printed edition of any part of the Greek text of the *Elements*, and would not be superseded in its entirety until 1703. According to TS (p. 7) it was also the first edition to set the diagrams into the text.

In addition to the Euclidean text and dedication it contains (in Greek) a preface ‘de methodo et quonam pacto geometræ utantur, tum quomodo ad disciplinas cæteras sit transferenda, locus Galeni doctissime rem explicans’ and the commentary of Proclus on *Elements* 1.

The Euclidean text was based on two manuscripts: Venetus Marcianus 301 and Paris gr. 2343, provided respectively by Lazarus Bayfius and John Ruellius; the manuscript for the Proclus text was provided by John Claymond of Oxford. It is possible that Erasmus collaborated in the work on this edition: see Steck (pp. 54–5) and Newald 1947, pp. 317–18. Steck also speculates as to the involvement of Hans Holbein the younger or his school in the initial decorations (p. 56).

Two ghosts are associated with this edition. Steck (III.22; see pp. 54–5 with note 19 there) includes a 1530 impression of Grynäus’ *Elements* in his catalogue: his evidence for it is unclear and we cannot confirm its existence. Steck (III.36) and Riccardi (1539²), following Heilbronner and Fabricius, also report that Grynäus published a *Euclidis opera omnia* at Basel in 1539: an expanded reimpression of the present edition. This, too, has resisted confirmation.

References: Riccardi 1533¹. TS 7. Duarte p. 22/25. Steck III.29. USTC 654430. CERE 8.GMIP Basel 1533.

UK/Irish copies: Aberdeen. Belfast: Queen’s University. BL (7). Cambridge: Caius, Christ’s (2), Fitzwilliam Museum, King’s, Peterhouse (2), Sidney Sussex, St John’s, Trinity (5), UL (4). Canterbury Cathedral. Dublin: Trinity College (2). Edinburgh: Royal Observatory. Eton College. Glasgow (4). Leicester. Manchester. NLS. NLW. Oxford: All Souls, Balliol, Bodleian (7), Christ Church (2), Corpus Christi, Magdalen, Merton, New College, Pembroke, St John’s. Royal College of Physicians. Royal Society. Science Museum. Senate House Library. St Andrews (2). UCL. Victoria and Albert Museum. Westminster School.

Paris 1534

TEXTVS DE SPHAERA IOANNIS DE SACROBOSCO:
INTRODVCTORIA ADDITIONE (QVANTum necessarium est)
commentarióque, ad vtilitatem studentium Philosophiæ Parisiensis
Academiæ illustratus. Cum compositione Annuli astronomici Boneti
Latensis: Et Geometria Euclidis Megarensis.

Imprint: PARISIIS Vænit apud Simonem Colinaeum. 1534

Colophon: PARISIIS, EX AEDIBVS SIMONIS COLINAEI, Anno à Christo nato, tricesimoquarto supra sesquimillesimum, septimo Idus Nouembris.

Folio. *Geometria*. Reimpression of Paris 1500/Paris 1507/Paris 1511/Paris 1516a/Paris 1521/Paris 1527/Paris 1531

USTC knows of no such Colines issue of the *de Sphaera* but reports (USTC 203237) a Paris 1534 issue of that text by Wechel.

References: Riccardi 1534². Steck III.30.

UK/Irish copies: Aberdeen. BL. Royal College of Physicians. UCL.

Paris 1536

Orontij Finei DelPHINATIS, REGII Mathematicarum professoris, IN SEX PRIORES LIBROS geometricorum elementorum Euclidis Megarensis Demonstrationes. Quibus ipsius Euclidis textus græcus, suis locis insertus est: vnà cum interpretatione latina Bartholamæi Zamberti Veneti, ad fidem geometricam per eundem Orontium recognita.

Imprint: CVM PRIVILEGIO Regis ad decennium, PARISIIS. Apud Simonem Colinæum. 1536.

Folio. *Elements* 1–6. Oronce Fine ed. Dedicated to Francis I of France. The epistle to the reader is dated October and the privilege 15 September 1536.

Contains the Euclidean enunciations in Greek and Latin, together with new proofs by Fine. The Latin text follows Zamberti, *i.e.* **Venice 1505/Venice 1510**; the Greek was presumably taken from **Basel 1533**. According to TS (p. 9) the proofs are based on those of Zamberti.

A commentary had been issued by Fine in 1530 (Riccardi 1530¹/Steck III.23), but this seems to be the first appearance of the Euclidean text itself under his editorship.

References: Riccardi 1536¹. TS 8. Steck III.31. USTC 182158. CERE 9.

UK/Irish copies: Aberdeen. Cambridge: Trinity. NLW. Oxford: Bodleian. St Andrews. Senate House Library. UCL (2).

Basel 1537

EVCLIDIS MEGARENSIS MATHEMATICI CLARISSIMI ELEMENTorum Geometricorum. Lib. XV. Cum expositione THEONIS in priores XIII à Batholomæo Veneto latinitate donata, CAMPANI in omnes, & HYPsicLIS Alexandrini in duos postremos. His adiecta sunt Phænomena, Catoptrica & Optica, deinde Protheoria Marini & Data, Postremum uero, Opusculum de Leui & Ponderoso, hactenus non uisum, eiusdem autoris.

Imprint: BASILEAE APVD IOHANNEM HERVAGIUM, MENSE AVGVSTO. ANNO M. D. XXXVII. Cum priuilegio Cæsareo.

Colophon: BASILEAE APVD IOHANNEM HERVAGIVM, ANNO M. D. XXXVII. MENSE AVGVSTO.

Folio. *Elements* 1–15; *Phaenomena*; *Catoptrica*; *Optica*; *Data*; *De levi et ponderoso*. Edited by Christianus Herlinus and based in part on **Venice 1505/Venice 1510**; in part on **Paris 1516**. The prefatory matter is new, consisting of a brief epistle of Herwagen to the reader and a longer address *Studiosis adolescentibus* by Philipp Melanchthon. The text of the *Elements* follows that of **Paris 1516**, presenting the proofs of both Zamberti and of Campanus (the Theonine and Campanine ‘expositiones’ of the title page). Heath (vol. 1, p. 100) judges that Herlin ‘seems to have done no more than correct one or two passages’ and add some Greek words in places where Zamberti’s translation was unsatisfactory.

The texts of the minor works are those of **Venice 1505/Venice 1510**, *i.e.* the translations of Zamberti: included are the *Protheoria* of Marinus and the dedications to Paulo Pisano, Lodovico Mocenico, Ioannes Zamberto, Antonio Abiosioi and Marino Georgio. The unattributed translation of the fragment *De levi et ponderoso* is the first printed edition of that work.

Steck (III.38) and Riccardi (1541¹), following Zakhartchenko, report a reimpression at Rome in 1541, which we cannot confirm.

References: Riccardi 1537³. TS 9. Duarte p. 25. Steck III.33. USTC 654853. CERE 5.

UK/Irish copies: BL. Cambridge: Caius, UL. NLW. Oxford: All Souls, New College. St Andrews (2).

Paris 1538

TEXTVS DE SPHAERA IOANNIS DE SACROBOSCO: INTRODVTORIA ADditione (quantum necessarium est) commentarióque, ad vtilitatem studentium Philosophiæ Parisiensis Academiae illustratus. Cum compositione Annuli astronomici Boneti Latensis: Et Geometria Euclidis Megarensis.

Imprint: PARISIIS Vænit apud Simonem Colinaeum. 1538

Colophon: PARISIIS, EX AEDIBVS SIMONIS COLInæi, Anno à Christo nato, tricesimo octauo supra sesquimillesimum, tertio Idus

Martias.

Folio. *Geometria*. Reimpression of Paris 1500/Paris 1507/Paris 1511/Paris 1516a/Paris 1521/Paris 1527/Paris 1531/Paris 1534. The colophon date is 13 March.

References: Riccardi 1538¹. Steck III.34. USTC 147525.

UK/Irish copies: Royal Society. UCL.

Strasbourg 1538

ΕΥΚΛΕΙΔΟΥ ΤΩΝ ΠΕΝΤΕ ΚΑΙ ΔΕΚΑ ΣΤΟΙΧΕΙΩΝ ἐκ τῶν
του Θέωνος συνουσιῶν τὸ πρῶτον.

Imprint: ARGENTORATI APVD Vuendelinum Rihelium. Anno
Domini M.D.XXXVIII. Mense Augusto.

Colophon: ARGENTORATI APVD Vuendelinum Rihelium Anno.
M. D. XXXVIII. Mense Sept.

Quarto. *Elements* 1. Dedicated to Joannes Meier. The dedication is dated
‘5. Nonas August.’, an irregular form which might be read as ‘the fifth, that is
the nones, of August’.

The editor is named in some catalogues as Rudolph Hermann, but there
does not seem to be evidence in the text to confirm the attribution; the
dedication is by Rihel.

The text was presumably extracted from **Basel 1533**. Despite the promise
on the title page, only book 1 is included.

References: Steck III.35. USTC 654432.

UK/Irish copies: UCL (2).

Venice 1543

EVCLIDE MEGARENSE PHILOSOPHO: SOLO INTROD-
VITTORE DELLE SCIENTIE MATHEMATICHE: DILIGENTE-
MENTE REASSETTATO, ET ALLA INTEGRITA RIDOTTO
PER IL DEGNO Professore di tal Scienze Nicolo Tartalea,
BRISCIANO, Secondo le due Tradottioni: E PER COMMUNE
COMMODO & vtilita di latino in volgar tradotto. CON VNA

AMPLA ESPOSITIONE DELLO ISTESSO TRADOTTORE DI NOVO AGGIUNTA. Talmente chiara, che ogni mediocre ingegno, senza la notitia, ouer suffragio di alcun'altra scientia con facilità, sera capace à poterlo intendere.

Colophon: Stampato in Vinegia per Venturino Roffinelli ad instantia e requisitione de Guilielmo de Monferra, & de Pietro di Facolo da Vinegia libraro, & de Nicolo Tartalea Brisciano Tradottore: Nel Mese di Febraro. Anno di nostra salute M. D. XLIII.

Folio. *Elements* 1–15. Niccolò Tartaglia ed. Dedicated to Gabriele Tadino. The first printed edition of the *Elements* in Italian, and the first in any modern language. The translation is stated to be from Latin and the versions of Campanus and Zamberti are mentioned, although the exact source does not seem to be made clear (no Greek source is mentioned, and Heath (vol. 1, p. 106) suggests that none was consulted). Each definition, petition, common notion and proposition is numbered twice, according to its positions in the versions of Campanus and Zamberti, implying a degree of dependence on **Paris 1516**, **Basel 1537** or a descendant. On the other hand, a single version of each of these items is given, and a single proof for each proposition, and the detailed relationship of these to Latin predecessors is not specified.

Reimpressions or reissues dated in 1544 and 1545 have been reported (Steck III.41, III.45, Riccardi 1544¹, 1545³), but we cannot confirm their existence.

References: Riccardi 1543¹. TS 34. Duarte p. 25. Steck III.40. USTC 828473. CERE 12.

UK/Irish copies: BL. Cambridge: Trinity, UL. Edinburgh: Royal Observatory. Glasgow. National University of Ireland. NLW. Oxford: Bodleian, St John's. Royal Society. St Andrews. Senate House Library. UCL.

Paris 1544

ORONTII FINAEI DELPHINATIS, REGII MATHEMATICARVM LVETETIAE PROFESSORIS, In sex priores libros Geometricorum elementorum Euclidis Megarensis demonstrationes: Recens auctæ, & emendatæ: vnà cum ipsius Euclidis textu græco, &

interpretatione latina Bartholomæi Zamberti Veneti. Omnia ad fidem geometricam, per eundem Orontium recognita.

Imprint: LVTETIAE PARISIORVM, Apud Simonem Colinaeum. 1544. Cum priuilegio Regis.

Folio. *Elements* 1–6. Oronce Fine ed. Reimpression of **Paris 1536**. The dedication to Francis I of France bears both its original date, October 1536, and the new date August 1544.

References: Riccardi 1544². TS 10. Steck III.42. USTC 160195, 149198. CERE 9.

UK/Irish copies: BL. Cambridge: Trinity Hall. Glasgow. NLW (2). Oxford: Bodleian. St Andrews. Senate House Library. Victoria and Albert Museum.

Paris 1545

Euclides.

Imprint: PARISIIS. Apud Lud. Grandinum, è regione gymnasij Mariani sub signo galli. 1545.

Colophon: PARISIIS. Excudebat Ludouicus Grandinus. 1545

Octavo. *Elements* 1–15 (enunciations). Petrus Ramus ed. No diagrams are given. The preface is dated 28 January 1544, *i.e.* 1545.

Steck reports an earlier edition in 1541, but this seems questionable; no copies seem to be known: see Steck III.39 with note on p. 61. Similarly, according to Riccardi, Poggendorff cites an edition of 1544 for which no other evidence seems to exist. See Sharratt 1966, 606–7 and Ong 1958, 68–9.

References: Riccardi 1545¹. TS 27. Steck III.43. USTC 200620. CERE 14.

UK/Irish copies: None identified.

Rome 1545

ΕΥΚΛΕΙΔΟΥ ΣΤΟΙΧΕΙΩΝ ΒΙΒΛΙΑ ιε. EVCLIDIS ELEMENTORVM LIBRI XV.

Imprint: ROMÆ. MDXXXXV. Cum priuilegio S. D. N. Pauli III, & inclytæ Reip. Venetiarum, ad quinquennium.

Colophon: Romæ, apud Antonium bladum Asulanum.

Octavo. *Elements* 1–15 (enunciations). Angelo Cajani ed. Dedicated to Antonio Altovito. No diagrams are given, and the textual source is not stated. Manuscripts must have been used, since this is the first printing of any part of Books 14 and 15 in Greek.

References: Riccardi 1545². TS 26. Duarte p. 28. Steck III.44. USTC 828475. CERE 13.

UK/Irish copies: BL (2). Cambridge: Christ's, Trinity (2), UL. Manchester (2). NLW (2). Oxford: Bodleian (3), Worcester. UCL.

Rome 1545a

I QVINDICI LIBRI DEGLI ELEMENTI DI EVCLIDE, DI GRECO TRADOTTI IN LINGVA THOSCANA.

Imprint: IN ROMA. MDXXXXV. Con gratia & priuilegio del S. N. S. Paulo Terzo, & della Serenissima repubblica Venetiana per cinque anni.

Colophon: Stampata in Roma per Antonio Blado Asolano. M D XLV.

Octavo. *Elements* 1–15 (enunciations). Angelo Cajani ed. Dedicated to Antonio Altovito; the dedication is dated 20 September 1545. Translated from **Rome 1545** with, as TS notes, a small amount of additional matter (a list of ‘Le tredici rette Irrazionali, che Euclide tratta nel decimo libro’). Sometimes found bound with **Rome 1545**.

References: Riccardi 1545². Smith pp. 236–8. TS 35. Duarte p. 28. Steck III.44a. USTC 828474.

UK/Irish copies: Cambridge: Trinity (2), UL. Manchester. NLW. Oxford: Bodleian. UCL (2).

Basel 1546

Euclidis Megarensis mathematici clarissimi Elementorum geometricorum libri xv. Cum expositione Theonis in priores XIII à Bartholomæo Veneto Latinitate donata, Campani in omnes, & Hypsiclis Alexandrini in duos postremos. His adiecta sunt Phænomena,

Catoptrica & Optica, deinde Protheoria Marini & Data, Postremum uerò, Opusculum de Leui & Ponderoso, hactenus non uisum, eiusdem auctoris.

Imprint: BASILEAE, PER IOHANNEM HERVAGIVM, MENSE AVGVSTO, ANNO M. D. XLVI. Cum priuilegio Cæsareo.

Colophon: BASILEAE, PER IOHANNEM HERVAGIVM, ANNO M. D. XLVI. MENSE AVGVSTO.

Folio. *Elements* 1–15; *Phaenomena*; *Catoptrica*; *Optica*; *Data*; *De leui et ponderoso*. Christianus Herlinus ed. Reimpression of **Basel 1537**.

References: Riccardi 1546¹. TS 11. Duarte p. 28. Steck III.46. USTC 654424. CERE 5.

UK/Irish copies: BL. Cambridge: King's, St John's, UL. Durham. Edinburgh: Royal Observatory, UL. Glasgow. NLW (2). Oxford: Bodleian, Christ Church, Lincoln, St John's. UCL (3). Westminster School.

Basel 1546a

ANITII MANLII SEVERINI BOETHI IN OMNIBVS PHILOSOPHIAE PARTIBVS INTER LATINOS & GRÆCOS AUTORES PRINCIPIS OPERA, quæ extant, omnia, non solum liberalium disciplinarum, sed maiorum facultatum studiosis etiam utilissima. sine quibus Aristoteles in præcipuis locis intellegi non potest. Quare summi uiri rectè censebant, uerè studiosum non esse in cuius bibliotheca hic autor non erat. Porro, infinitis locis non aliquot uoces, sed longas periodos quæ in prioribus æditionibus desiderabantur, emendauimus, adiuti præsidio uetustissimorum manuscriptorum exemplarium, & auxilio doctissimorum uirorum: Inter quos in omni literarum genere summus uir HENRICHVS LORITVS GLAREANVS Arithmeticam & Musicam demonstrationibus & figuris auctiorem redditam suo pristino nitori restituit, cui exemplar aureum uenerandæque uetustatis fuit ex monasterio S. Georgij. Et MARTIANVS ROTA opus de tota differendi ratione, hoc est, organum, Dialecticæ & Rhetoricæ studiosis necessarium, illustrauit. Et huius auctoris uitam certis coniecturis, cum ex alijs, tum ex Boëthi monumentis collectam, bona fide descripsit.

Imprint: BASILEAE APVD HENRICHVM PETRVM.

Colophon: BASILEAE PER HENRICHVM PETRVM MENSE MARTIO. ANNO M. D. XLVI.

Folio. *Geometria*. The Euclidean text begins at p. 1179. It is stated that manuscripts were used for this edition; its relationship, if any, with **Venice 1491/Venice 1498** is not clear.

References: TS p. 49. USTC 611575.

UK/Irish copies: Chetham's. Dublin: Trinity College. Oxford: Bodleian. Senate House. UCL.

Leipzig 1549

Εὐκλείδου στοιχείων βιβλία ἕξ. EVCLIDIS ELEMENTORVM GEOMETRICORVM LIBRI SEX, CONVERSI IN LATINVM sermonem à Ioach. Camerario. Edebat Lipsiæ Georg. Ioach. Rhet.

Imprint: EXPERIMENTE VALENTINO PAPA. ANNO M. D. XLIX.

Octavo. *Elements* 1–6 (enunciations). Georg Joachim Rhäticus, Joachim Camerarius ed. A new translation into Latin of the Euclidean enunciations. The basis of the Greek text printed is not stated but is likely to be **Basel 1533** or a descendant, since manuscripts are not mentioned. The proem is dated 9 November.

Unusually for an enunciations-only edition, diagrams are included.

References: Riccardi 1549². TS 28. Steck III.47. USTC 654436. CERE 15.

UK/Irish copies: BL. Lincoln Cathedral. NLW. UCL (2).

Paris 1549

EVCLIDES.

Imprint: PARISIIS. Apud Thomam Richardum, sub Bibliis aureis, è regione Collegij Remensis. 1549.

Colophon: PARISIIS. Excudebat Thomas Richardus. 1549.

Octavo. *Elements* 1–15 (enunciations). Petrus Ramus ed. Reimpression of **Paris 1545**; the original preface is retained, with the date 5 calends February

(28 January) 1544. As before, no diagrams are included.

References: Riccardi 1549¹. TS 29. Steck III.48. USTC 196157. CERE 14.

UK/Irish copies: BL. Cambridge: UL. Manchester. NLW.

Basel 1550

EVCLIDIS Megarensis, Philosophi & MatheMATICI EXCELLENTISSIMI, SEX LIBRI PRIORES, DE Geometricis principijs, Græci & Latini, unà cum demonstrationibus propositionum, absque literarum notis, ueris ac proprijs, & alijs quibusdam, usum earum concernentibus, non citra maximum huius artis studiosorum emolumentum adiectis. ALGEBRAE PORRO REGVLAE, PROPTER NVMERorum exempla, passim propositionibus adiecta, his libris præmissæ sunt, eademque demonstratæ. AVTHORE IOANNE SCHEVBELIO, IN inclyta Academia Tubingensi Euclidis professore ordinario.

Imprint: Cum gratia & priuilegio Cæsario, ad quinquennium. BASILEAE, PER IOANNem Heruagium.

Colophon: BASILEAE, PER IOANNEM Heruagium, Anno salutis humanæ M. D. L. Mense Septembri.

Folio. *Elements* 1–6. Johann Scheybl ed. Dedicated to several members of the Fugger family: Antonio Sr. and the sons of his brother Reimund; the dedication is dated 1 April 1550. It is implied that the Latin text is a new translation by Scheybl, and – since no claim to have re-edited from manuscripts is made – likely that the Greek text was based on **Basel 1533**. This edition has the peculiarity that the proofs do not use letter names for points in the figures, but describe the lines and angles in words: see Heath, vol. 1, p. 101.

In addition to the Euclidean text, dedication and epistle, the edition contains epigrams by M. Garbisius and Ioan. Sambucus, biographical notes ‘de Euclide ex Proclo’ and Scheybl’s ‘Breuis regularum algebræ descriptio’.

Steck (III.101), following Riccardi (1590¹), reports a 1590 reimpression which we cannot confirm.

References: Riccardi 1550¹*. TS 12. Duarte p. 30. Steck III.49. USTC 654850. CERE 16.

UK/Irish copies: Aberdeen. BL. Cambridge: St John's, Trinity, UL (3). Eton College. Glasgow. Liverpool. NLW. Oxford: Bodleian, Christ Church. Royal College of Physicians. Senate House Library. UCL (4). York Minster.

Paris 1551

Orontij Finæi DelphiNATIS, REGII MATHEMATICarum Lutetiæ professoris, In sex priores libros Geometricorum elementorum Euclidis Megarensis demonstrationes, recens auctæ, & emendatæ: vnà cum ipsius Euclidis textu Græco, & interpretatione Latina Bartholomæi Zamberti Veneti. Omnia ad fidem geometricam, per eundem Orontium recognita. Aeditio tertia.

Imprint: LVTETIAE PARISIORVM, Apud Reginaldum Calderium. 1551.

Quarto. *Elements* 1–6. Oronce Fine ed. Reimpression of **Paris 1536/Paris 1544**, retaining the dedication to Francis I of France. The dedication and letters are now dated October 1551.

Riccardi incorrectly names Simon de Colines as the printer. Steck (III.60) and Riccardi's (1558⁵) report of a further reimpression at Strasbourg in 1558 we cannot confirm.

References: Riccardi 1551¹. TS 13. Steck III.50. USTC 150907, 196408. CERE 9.

UK/Irish copies: NLW. UCL.

Paris 1551a

Euclidis elementorum LIBER DECIMVS, PETRO Montaureo interprete. Ad Ioannem Bellaïum Cardinalem.

Imprint: LVTETIAE, Apud Vascosanum, uia Iacobæa ad insigne Fontis. M. D. LI. CVM PRIVILEGIO.

Quarto. *Elements* 10. Pierre de Mondoré ed. Dedicated to Johannes Bellaius.

References: Riccardi 1551². Smith pp. 238–9. TS XII. Duarte p. 30. Steck III.51. USTC 154133. CERE 17.

UK/Irish copies: BL. NLW. Royal College of Physicians. UCL.

Paris 1552

Euclidis elementorum LIBER DECIMVS, PETRO Montaureo interprete. Ad Ioannem Bellaïum Cardinalem.

Imprint: LVTETIAE, Apud Vascosanum, uia Iacobæa ad insigne Fontis. M. D. LII. CVM PRIVILEGIO.

Quarto. *Elements* 10. Pierre de Mondoré ed. Reissue of **Paris 1551a** with title page and preface re-set.

References: Riccardi 1552¹. TS XIII. Duarte p. 30. Steck III.52. USTC 151102.

UK/Irish copies: UCL.

Augsburg 1555

Das sibend, acht und neünt büch, des hochberümbten Mathematici Euclidis Megarensis, in welchen der operationen vnnd regulen aller gemainer rechnung, vrsach grund vnd fundament, angezaigt wirt, zü gefallen allen den, so die kunst der Rechnung liebhaben, durch Magistrum Johann Scheybl, der löblichen vniuersitet zü Tübingen des Euclidis vnd Arithmetic Ordinarien, auß dem latein ins teütsch gebracht, vnnd mit gemainen exemplen also illustrirt vnnd an tag geben, das sy ein yeder gemainer Rechner leichtlich verstehn, vnnd jme nutz machen kan.

Imprint: Mit Römischer Königlichlicher Maiestat gnade vnd freyhait, in sechs jaren nit nachzütrucken. 1555.

Colophon: Getrückt in der Kaiserlichen Reichsstat Augspurg, durch Valentin Ottmar, am zehenden tag Aprilis, im tausent fünffhundert vnd im fünffvndfünfftzigisten Jar.

Quarto. *Elements* 7–9. Johann Scheybl ed. Privilege to print dated 2 March 1555.

The first (partial) version of the *Elements* in German. Translated according to the title page from an unnamed Latin edition (Steck is therefore seemingly incorrect to state (p. 56) that it was translated from **Basel 1533**). The Latin edition **Basel 1550** to which Scheybl had contributed only contained books 1–6.

References: Riccardi 1555¹. TS XVI. Steck III.54. USTC 628009. CERE 16.

UK/Irish copies: BL. Edinburgh: Royal Observatory. NLW. UCL.

Cologne 1556

EVCLIDIS MEGARENSIS MATHEMATICI CLARISS. Elementorum Geometricorum liber primus, cui ex sequentibus libris accesserunt Propositiones selectæ atque ita ordinatæ, ut demonstrari queant obseruata Geometrarum Methodo.

Imprint: COLONIAE, Apud hæredes Arnoldi Birckmanni. 1556.

Octavo. *Elements* 1 (enunciations); *Elements* 2, 3, 6 (selection of enunciations). The epistle is signed by Valentin Nabod and dated 1555. The designation of Euclid as ‘Clarissimus’ suggests the textual source may have been **Paris 1516** or its descendant **Basel 1537/Basel 1546**.

References: TS XVII. Steck III.54a. USTC 654849. CERE 19.

UK/Irish copies: BL. NLW.

Lyon 1557

IACOBI PELETARII CENOMANI, In Euclidis Elementa Geometrica Demonstrationum Libri sex. Ad Carolum Lotharingum, Principem, Cardinalemque; amplissimum.

Imprint: LVGDVNI, APVD IOAN. TORNÆSIVM ET GVL. GAZEIVM. M. D. LVII. Cum Priuilegio Regis.

Folio. *Elements* 1–6. Jacques Peletier ed. Dedicated to Carolus Lotharingus. Privilege dated ‘IIII Non. Maias M. D. LV.’, *i.e.* 4 May 1555. Peletier prints the Euclidean enunciations but supplies his own proofs; see Heath (vol. 1, p. 104). As well as other prefatory matter this edition contains

final addresses to the editor's brother Joannes (dated 5 April at Lyon), Pontus Tiartus, Petrus Ronsardus, Maurius Scaeva, Ioannes Fernelius, Hieronymus Cardanus, Petrus Nonius and Paschasius Hamelius.

'Lugduni' is ambiguous and the city of imprint is given as Leiden in some catalogues; Gazeau and de Tournes were based in Lyon.

References: Riccardi 1557⁵. TS 14. Duarte p. 32. Steck III.55. USTC 152282. CERE 21.

UK/Irish copies: Aberdeen. BL. NLW. Oxford: Bodleian, Christ Church, Jesus, St John's. Senate House Library. UCL (2). Wellcome Library.

Paris 1557

EVCLIDIS ELEMENTORVM LIBRI XV. GRAECè & Latiné, Quibus, cùm ad omnem Mathematicæ scientiæ partem, tùm ad quamlibet Geometriæ tractationem, facilis comparatur aditus.

Imprint: LVTETIAE, Apud Gulielmum Cauellat, in pingui Gallina, ex aduerso collegij Cameracensis. 1557.

Octavo. *Elements* 1–15 (enunciations). The preface of Stephanus Gracilis, dated 10 April 1557, states that the translation is by Ioannes Magnienus, who was prevented by death from seeing it through the press. Steck describes this as the initiation of the whole family of Jesuit editions. According to Heath (vol. 1, p. 101–2) it is based on various earlier Latin versions, emended in books 7–15 and adopting the version of **Paris 1551a** in its entirety for book 10 (as is also mentioned in the preface). It is likely that **Rome 1545** was consulted for the Greek text of books 14 and 15. This edition possesses the peculiarity of printing the long o in certain Latin words as an ω: pentagōnum, *etc.*

USTC 198076 reports a Paris 1557 issue of this translation by de Marnef, based on a single copy in Montpellier; this seems likely to be a mistake.

References: Riccardi 1557³. Smith p. 240. TS 30. Duarte p. 32. Steck III.56. USTC 152265. CERE 20.

UK/Irish copies: BL. Glasgow (2). NLW. Oxford: Bodleian (2), St John's. UCL.

Paris 1557a

ΕΥΚΛΕΙΔΟΥΣ 'ΟΠΤΙΚΑ' ΚΑΙ ΚΑΤΟΠΤΡΙΚΑ'. Euclidis Optica

& CATOPTRICA, NVNQVAM ANTEHAC GRÆCE ÆDITA. EADEM LATINE REDDITA PER Ioannem Penam Regium Mathematicum. His præposita est eiusdem Ioannis Penæ de vsu Optices præfatio, AD ILLVSTRISSIMVM PRINCIPEM CAROLVM LOTHARINGVM CARDINALEM.

Imprint: PARISIIS, Apud Andream Wechelum, sub Pegaso, in vico Bellouaco: Anno Salutis, 1557.

Quarto. *Optica; Catoptrica.* Jean de la Pène ed. Dedicated to Carolus Lotharingus. The first Greek edition of the *Optics* and perhaps narrowly the second of the *Catoptrics*, with a new Latin translation of both (*cf.* Zamberti's Latin versions in **Venice 1505** and its descendants). The manuscript sources used are not known. No relationship with the contemporaneous **Strasbourg 1557** (edition of the *Catoptrics* only) is known; there are minor differences in the Greek text.

The Latin texts, which are printed after the Greek texts, have a separate title page reading 'EVCLIDIS / Optica & Catoptrica è Graeco / VERSA PER IOANNEM / PENAM REGIVM / Mathematicum, / AD / ILLVSTRISSIMVM PRINCIPEM CAROLVM / LOTHARINGVM CARDINALEM.' with imprint 'PARISIIS, / Ex officina Andreæ Wecheli. / 1557.' We have not seen copies of this part of the volume bound separately.

References: Riccardi 1557². Steck VIII.2. USTC 152270.

UK/Irish copies: Aberdeen. Cambridge: Peterhouse, Trinity, UL. Edinburgh: Royal Observatory. Eton College. Glasgow. Manchester. NLS. NLW. Oxford: All Souls, Balliol, Bodleian (5), Christ Church, History of Science Museum. Royal Society. Senate House Library. UCL (2).

Paris 1557b

ΕΥΚΛΕΙΔΟΥ ΕΙΣΑΓΩΓΗ Α΄ΡΜΟΝΙΚΗ'. Τοῦ αὐτοῦ κατατομὴ κανόνας. Euclidis Rudimenta MVSICES. Eiusdem sectio regulæ harmonicæ. E Regia bibliotheca desumpta, ac nunc primum Græcè & Latinè excusa, Ioanne Pena Regio Mathematico interprete. AD ILLVSTRISSIMVM PRINCIPEM CAROLVM LOTHARINGVM CARDINALEM.

Imprint: PARISIIS, Apud Andream Wechelum, sub Pegaso, in vico Bellouaco: Anno Salutis, 1557. CVM PRIVILEGIO REGIS.

Quarto. *Introductio harmonica; Sectio canonis.* Jean de la Pène ed. Dedicated to Carolus Lotharingus. The first printed edition to attribute the *Introductio* of Cleonides to Euclid (*cf.* Venice 1498a), and, we believe, its first printing in Greek. First printed edition of the *Sectio canonis*.

References: Riccardi 1557¹. Duarte p. 30. Steck VIII.3. USTC 152269.

UK/Irish copies: BL (2). Cambridge: St John's. Durham. Eton College. Glasgow (2). Manchester. NLS (2). NLW. Oxford: All Souls, Balliol, Bodleian (5), Exeter, Worcester.

Strasbourg 1557

ΕΥΚΛΕΙΔΟΥ ΚΑΤΟΠΤΡΙΚΑ. EVCLIDIS CATOPTRICA, ID EST ELEMENTA eius scientiæ, qua uniuersa speculorum uis atque natura explicatur: primum Græce, antehac nunquam in lucem ædita: & nunc noua translatione per Conradum Dasypodium in Latinam linguam translata.

Imprint: ARGENTORATI. M. D. LVII.

Quarto. *Catoptrica.* Conrad Dasypodius ed. Dedicated to Philipp Melanchthon; the dedication is dated 10 February 1557. Probably the first Greek edition of the *Catoptrics*, with a new Latin translation. No relationship with the contemporaneous Paris 1557a is known, from which the Greek text differs in detail.

References: Riccardi 1557⁴; 1557^{2bis}. Steck VIII.1. USTC 654435.

UK/Irish copies: BL. Cambridge: St John's (2). NLW. UCL.

Basel 1558

EVCLIDIS MEGARENSIS mathematici clarissimi Elementorum geometricorum libri xv. Cum expositione Theonis in priores XIII à Bartholomæo Zamberto Veneto latinitate donata, Campani in omnes, & Hypsiclis Alexandrini in duos postremos. His adiecta sunt Phænomena, Catoptrica & Optica, deinde Protheoria Marini, & Data.

Postremum uerò, Opusculum de Leui & Ponderoso, hactenus non uisum, eiusdem autoris.

Imprint: Cum priuilegio Cæsareo. BASILEAE, PER IOANNEM HERUAGIUM, & Bernhardum Brand, Anno M. D. LVIII.

Colophon: [Some copies] BASILEAE, PER IOANNEM HERVAGIUM & Bernardum Brand, Anno M. D. LVIII. mense Martio.

Folio. *Elements* 1–15; *Phaenomena*; *Catoptrica*; *Optica*; *Data*; *De leui et ponderoso*. Christianus Herlinus ed. Reimpression of **Basel 1537/Basel 1546**. Some copies are made up at least in part of sheets from the 1546 printing; thus there exist copies with the 1558 imprint but the 1546 colophon: see TS p. 8.

Riccardi reports copies dated 1557, which we cannot confirm.

References: Riccardi 1558³. TS 15. Duarte p. 32. Steck III.57. USTC 654852. CERE 5.

UK/Irish copies: Cambridge: Christ's, Peterhouse, UL. Edinburgh: Royal Observatory. Maynooth. NLW. Oxford: Merton, St John's. UCL.

Messina 1558

THEODOSII SPHAERICORVM ELEMENTORVM LIBRI. III. Ex traditione Maurolyci Messanensis Mathematici. MENELAI SPHAERICORVM LIB. III. Ex traditione eiusdem. MAVROLYCI SPHAERICORVM LIB. II. AVTOLYCI DE SPHAERA, QVAE MOVETVR Liber. THEODOSII DE HABITATIONIBVS. EVCLIDIS PHAENOMENA Breuissime demonstrata. Demonstratio & praxis trium tabellarum scilicet Sinus recti, Fœcundæ, & Beneficæ ad Sphæralia triangula pertinentium. COMPENDIUM MATHEMATICAE mira breuitate ex clarissimis Authoribus. Maurolyci de Sphæra sermo.

Colophon: MESSANAE IN FRETO SICVLO IMPRESSIT PETRVS SPIRA MENSE AVGVSTO M. D. LVIII.

Folio in 6s. *Phaenomena* (enunciations). Francesco Maurolico ed. Dedicated to Ioannes Cerda; the dedication is dated August 1558. Contains also an epistle of Maurolico to the Emperor Charles V dated July 1556. The Euclidean text appears at ff. 63^r–64^v; the text is close to but not identical

with that of Zamberti and Herlin, *i.e.* **Venice 1505/Venice 1510 and Basel 1537/Basel 1546/Basel 1558.**

References: Riccardi 1558^{1*}. Steck VIII.4. USTC 858964. GMIP Messina 1558.

UK/Irish copies: BL. Oxford: Bodleian (2), Christ Church.

Paris 1558

EVCLIDIS ELEMENTORVM LIBRI XV. GRAECè & Latiné, Quibus, cùm ad omnem Mathematicæ scientiæ partem, tùm ad quamlibet Geometriæ tractationem, facilis comparatur aditus.

Imprint: LVTETIAE, Apud Gulielmum Cauellat, in pingui Gallina, ex aduerso collegij Cameracensis. 1558.

Octavo. *Elements* 1–15 (enunciations). Joannes Magnienus, Stephanus Gracilis ed. Reissue of **Paris 1557** (see TS p. 30). USTC (160186) reports a 1538 edition of the *Elements* in Latin and Greek at Paris; the report is based on a single copy in the Bibliothèque municipale of Saint-Mihiel, and it seems likely to be a mistake for this edition.

References: Riccardi 1558². Steck III.58. USTC 154390. CERE 20.

UK/Irish copies: BL. Cambridge: Trinity. NLW. UCL.

Paris 1558a

EVCLIDIS elementorum libri QVINDECIM.

Imprint: PARISIIS, Ex Typographia Thomæ Richardi, sub Bibliis aureis, è regione collegij Remensis. 1558.

Quarto. *Elements* 1–15 (enunciations). Petrus Ramus ed. Reimpression of **Paris 1545/Paris 1549**. Steck (III.61) reports a further reimpression in 1559, citing Riccardi 1559², but this seems to be a mistake by Steck: at that location Riccardi has an edition of the *Scholæ mathematicæ* of Ramus (Frankfurt, 1559), which does not contain an edition of the Euclidean text. (The same is true of the reports in CERE of a 1569 Frankfurt and a 1569 Basel edition of the text.)

References: Riccardi 1558⁶. Steck III.59. USTC 198197.

UK/Irish copies: BL. Manchester. Maynooth. NLW.

Strasbourg 1559

ΕΥΚΛΕΙΔΟΥ ΤΩΝ ΠΕΝΤΕ ΚΑΙ ΔΕΚΑ ΣΤΟΙΧΕΙΩΝ ἐκ τῶν
τοῦ Θέωνος συνουσιῶν τὸ πρῶτον.

Imprint: ARGENTORATI Per Iosiam Rihelium. Anno M. D. LIX.

Octavo. *Elements* 1. Reimpression of **Strasbourg 1538**, retaining the dedication to Joannes Meier and its date ‘5. Nonas August.’ 1538. The same blocks for the diagrams appear to have been re-used. Once again, only Book 1 is included, despite the promise of all fifteen on the title page.

Like the first impression, this is sometimes attributed to Rudolph Hermann as editor, but the text does not confirm this.

References: Riccardi 1559³. TS XVIII. Steck III.62.

UK/Irish copies: Cambridge: Trinity. NLW.

Basel 1562

Die Sechs Erste Bücher Euclidis, Vom anfang oder grund der Geometrij. In welchen der rechte grund, nitt allain der Geometrij (versteh alles kunstlichen, gweisen, vnd vortailigen gebrauchs des Zirckels, Linials oder Richtscheittes vnd andrer werckzeüge, so zü allerlaj abmessen dienstlich) sonder auch der fürnemsten stuck vnd vortail der Rechenkunst, furgeschriben vnd dargethon ist. Auß Griechischer sprach in die Teütsch gebracht, aigenttlich erklärt, Auch mit verstentlichen Exempeln, gründlichen Figurn, vnd allerlaj den nutz füraugen stellenden Anhängen geziert, Dermassen vormals in Teütscher sprach nie gesehen worden. Alles zü lieb vnd gebrauch den Kunstliebenden Teütschen, so sych der Geometrij vnd Rechenkunst anmassen, mit vilfältiger mühe vnd arbeit zum trewlichsten ernarnet, vnd in Truckh gegeben, Durch Wilhelm Holtzman, genant Xyländer, von Augspurg.

Imprint: Getruckht zü Basel.

Colophon: Vollendet durch Iacob Kündig, zü Basel, in Ioanns Oporini kosten, im jar 1562. auff den dreyßigsten tag des Winmonats.

Folio. *Elements* 1–6. Wilhelm Holtzman ed. Dedicated (1 October 1562, from Heidelberg) to the ‘Stattpflegern, Burgermaistern und Khatzverwanten’

of Augsburg. The title page statement that the text has been translated from Greek presumably means from **Basel 1533**. Compare **Augsburg 1555**, translated from an unnamed Latin edition.

The colophon date is 30 May. Steck reports a version (III.64) naming Augsburg in the imprint, but we cannot confirm this.

References: Riccardi 1562². Smith 11–12. TS 36. Duarte p. 34. Steck III.63, III.64. USTC 637240. CERE 23.

UK/Irish copies: BL. Cambridge: UL (2). NLW. UCL.

Cologne 1564

EVCLIDIS ELEMENTORVM LIBRI XV. GRAECE ET LATINE, Quibus, cū ad omnem Mathematicæ scientiæ partem, tūm ad quamlibet Geometriæ tractationem, facilis comparatur aditus.

Imprint: COLONIAE, Apud Maternum Cholinum. M. D. LXIII.

Octavo. *Elements* 1–15 (enunciations). Joannes Magnienus, Stephanus Gracilis ed. Reimpression of **Paris 1557/Paris 1558**. Includes the preface of Gracilis dated 10 April 1557. The diagrams are imitated quite closely from the earlier impression, but they are not printed from the same blocks, nor is the re-setting page-for-page (*cf.* the reimpression **Paris 1573**). On the other hand, the occasional use of ω for long o in Latin is retained.

References: Riccardi 1564². TS 31. Steck III.66. USTC 654847, 654848. CERE 20.

UK/Irish copies: BL. Cambridge: Trinity. Eton College. Liverpool. NLW. UCL.

Paris 1564

LES SIX PREMIERS LIVRES DES ELEMENTS D'EVCLIDE, TRADVICTS ET COMMENTEZ PAR PIERRE Forcadel de Bezies, Lecteur ordinaire du Roy és Mathematiques en l'vniuersité de Paris.

Imprint: A PARIS, Chez Hierosme de Marnef, & Guillaume Cauellat, au mont S. Hilaire, à l'enseigne du Pelican. 156[4].

Quarto. *Elements* 1–6. Pierre Forcadel de Beziés ed. The first edition of the

Elements in French. Dedicated to Charles IX of France; the dedication is dated 8 April 1564. Books 2–6 are prefaced by addresses to, respectively, Gaspard de Coligny, Charles de Thelligny, François de la Noue, Pierre de Montdoré and M. Guetauld, each dated 15 April 1564.

No source for the translation is named, but as TS noted (p. 13), the diagrams appear to have been printed from the same blocks as **Paris 1557**, which may indicate that that edition was the basis for the text of the enunciations. Each demonstration is separately attributed to Forcadel, giving the impression that they were freshly composed rather than translated: but it is likely that a printed source was consulted.

TS, in a rare lapse, gives the editor's name as Foscadel.

Many copies lack the last digit of the imprint date; in some it is supplied in manuscript; USTC lists the version without the final '4' as a variant (47204). TS (p. 37) reports that 'In the Libri copy, now in the British Museum, 9 has been added in pen and ink. Hence the edition of 1569 quoted by Brunet'. Unfortunately Brunet's report was taken up by Riccardi (following Brunet and Zakhartchenko) as 1569², by Steck (following Riccardi) as III.75, and by USTC (51657). USTC (60460) also reports a unique copy of what seems to be the same imprint but with a 1565 date.

Furthermore, a number of catalogues – including those of Graesse, Brunet, Riccardi (1564³), Steck following him (III.68) and USTC (51646) – report an edition of books 1–9 by Forcadel in 1564. We cannot confirm this: Forcadel's translation of books 7–9 appears to have been first issued in 1565 (see **Paris 1565** and TS p. 13). Possibly confusion has been caused by copies of the two volumes bound together.

References: TS 37. Steck III.69. USTC 23241, 47204. CERE 24.

UK/Irish copies: NLW.

Strasbourg 1564

ΕΥΚΛΕΙΔΟΥ ΤΩΝ ΠΕΝΤΕ ΚΑΙ ΔΕΚΑ ΣΤΟΙΧΕΙΩΝ, ΕΚ
ΤΩΝ ΤΟΥ ΘΕΩΝΟΣ συνουσιῶν τὸ πρῶτον. EVCLIDIS QVIN-
DECim Elementorum Geometriæ primum: ex Theonis Commentarijs
Græcè, & Latinè. Cui accesserunt Scholia, in quibus quæ ad percipi-
enda Geometriæ Elementa spectant, breuiter & dilucidè explicantur,

authore Cunrado Dasypodio, Scholæ Argentinensis professore.

Imprint: ARGENTORATI EXCVdebat Christianus Mylius, M. D. LXIII.

Octavo. *Elements* 1. Conrad Dasypodius ed. Forms a three-volume set with **Strasbourg 1564a** and **Strasbourg 1564b**. The preface is dated 1 April 1564. The Greek text appears to be that of **Strasbourg 1538/Strasbourg 1559** (comparison is somewhat impeded by different decisions about the use of ligatures in this re-setting), with some amplification of the headings. The same blocks are used for the diagrams. The Latin text, which differs from that of both Campanus and Zamberti, may be a new translation. Steck is not correct to describe this as a continuation of the series of editions begun in 1516 by d'Étaples.

References: Riccardi 1564¹. TS XXII part 1. Steck III.65. USTC 654434. CERE 25.

UK/Irish copies: NLW (2). Cambridge: Christ's, Trinity, UL. Eton College. Oxford: Bodleian (2). UCL. Westminster School.

Strasbourg 1564a

ΕΥΚΛΕΙΔΟΥ ΤΩΝ ΠΕΝΤΕ ΚΑΙ ΔΕΚΑ ΣΤΟΙΧΕΙΩΝ ΕΚ ΤΩΝ ΤΟΥ ΘΕΩΝΟΣ συνουσιῶν τὸ δεύτερον. Καὶ ΒΑΡΛΑΑΜ ΜΟΝΑΧΟΥ ΑΡΙΘΜΗΤΙΚῇ ἀπόδειξις τῶν γραμμικῶς ἐν τῷ δευτέρῳ τῶν στοιχείων ἀποδειχθέντων. Id est, EVCLIDIS QVINDECIM elementorum Geometriæ secundū: ex Theonis commentarijs Græcè, & Latinè. Item, Barlaam monachi Arithmetica demonstratio eorum, quæ in secundo libro elementorum sunt in lineis & figuris planis demonstrata. Item, Octo propositiones Stereometricæ, eiusdem cum præcedentibus argumenti. Per Cunradum Dasypodium, scholæ Argentinensis Professore.

Colophon: ARGENTORATI APVD Christianum Mylium. 1564.

Octavo. *Elements* 2. Conrad Dasypodius ed. Dedicated to Nicolaus Christopherus Radziwil; the dedication is dated 1 June 1564. Forms a set with **Strasbourg 1564** and **Strasbourg 1564b**. The sources for the text are not clear; it is most likely that the Greek text derives from **Basel 1533** and that

the Latin is a new translation by the editor.

Includes Barlaam's *Arithmetica* as well as supplementary propositions by the editor.

References: TS XXII part 2. USTC 654433. CERE 25.

UK/Irish copies: Cambridge: UL; Oxford: Bodleian (2).

Strasbourg 1564b

PROPOSITIOⁿes reliquorum Librorum Geometriæ Euclidis, Græcè, & Latinè, in vsum eorum, qui volumine Euclidis carent. Per Cunradum Dasypodium, scholæ Argentinensis professorem.

Imprint: ARGENTORATI APVD Christianum Mylium. M. D. LXIII.

Octavo. *Elements* 3–13 (enunciations). Conrad Dasypodius ed. Dedicated to Nicolaus Christopherus Radzewil (the dedication is not dated). Forms a set with **Strasbourg 1564** and **Strasbourg 1564a**. The omission of books 14 and 15 may indicate a dependence on **Basel 1533** rather than either of the other previous editions of the Greek enunciations – **Rome 1545** and **Paris 1557**, both of which included those books.

References: Riccardi 1564¹. TS XXII part 2. Steck III.65a. USTC 687748. CERE 25.

UK/Irish copies: Oxford: Bodleian (2).

Wittenberg 1564

ARITHMETICES EVCLIDEAE LIBER PRIMVS. Aliàs in ordine reliquorum SEPTIMVS: Qui citra præcedentium Sex librorum Geometricorum opem eruditè persequitur, cum reliquis duobus sequentibus, uera principia ac solidiora fundamenta Logistiques, id est, ut uocant, Arithmetices Practicæ. Per Ioan. Sthen. Luneb. IN SCHOLARVM VSVM κατὰ τὸ ὅτι tractatus ἐρωτηματικῶς, disquisitione nimirum Dialectica quæ Dialogorum est propria.

Imprint: 1564.

Octavo. *Elements* 7. Joannes Sthen ed. Addressed to the senators of

Wratislavia; the preface is dated 24 June 1564. Contains the definitions and propositions of *Elements* 7 in Greek, with translations into Latin as well as proofs and ample commentary. Some catalogues name the printer as Peter Seitz, but there seems to be no evidence for this within the book. The main text ends with the note – not a printer’s colophon – ‘Perscriptum Mense Iunio. / WITTENBERGAE. / ANNO / 1564.’

Heilbronner, Fabricius and Riccardi (1546²) place this edition in 1546, almost certainly in error; Murhard and Riccardi (1549³) report an edition at Marburg in 1549, likewise probably in error; finally Murhard and Fabricius (followed by Steck, III.71 and Riccardi, 1565⁴) report an issue in 1565 which also seems to be a ghost.

References: Smith p. 240. TS XXV. Duarte p. 34. Steck III.67. USTC 613108. CERE 26.

UK/Irish copies: BL. Cambridge: UL. NLW. UCL.

Paris 1565

LES SEPTIEME, HVICTIEME ET NEVFIEME, LIVRES DES ELEMENS D’EVCLIDE, COMPRENANS TOVTE LA SCIENCe des nombres, traduits & commentez par Pierre Forcadel de Beziés, lecteur ordinaire du Roy és Mathematiques, en l’vniuersité de Paris.

Imprint: A PARIS. Chez Charles Perier, demourant en la rue S. Iean de Beauuais, au Bellerophon. 1565. AVEC PRIVILEGE DV ROY.

Quarto. *Elements* 7–9. Pierre Forcadel de Beziés ed. Books 7 and 8 bear dedications respectively to ‘Monseigneur le tres illustre cardinal de Chastillon, Conte de Beauvais’ and ‘Monsieur Chappelain Conseiller et premier medecin du Roy’, both dated 10 January 1565. A companion to **Paris 1564**. As in that edition, no source for the translation is named, and the demonstrations are attributed to Forcadel.

References: Riccardi 1565³. TS 38. Steck III.70. USTC 30234. CERE 24.

UK/Irish copies: BL (2).

Paris 1565a

LE LIVRE D’ARCHIMEDE DES POIS, QVI AVSSI EST DICT DES CHOSes TOMBANTES EN L’HVMIDE, TRADVICT ET

COMMENTÉ par Pierre Forcadel de Bezies lecteur ordinaire du Roy es Mathematiques en l'Vniuersité de Paris. Ensemble ce qui se trouue du Liure d'Euclide intitulé du leger & du pesant traduict & commenté par le mesme Forcadel.

Imprint: A PARIS. Chez Charles Perier, demourant en la rue S. Iean de Beauuais, au Bellerophon. 1565.

Quarto. *De levi et ponderoso*. Pierre Forcadel ed. The first French translation of the *De levi*, probably translated from the text in **Basel 1537/Basel 1546/Basel 1558**. The main part of the volume contains the text in French of Archimedes' *On floating bodies*.

References: USTC 29458. GMIP Paris 1565.

UK/Irish copies: BL.

Venice 1565

EVCLIDE MEGARENSE PHILOSOPHO, SOLO INTROD-
VITTORE DELLE SCIENTIE MATEMATICHE. DILIGENTE-
MENTE RASSETTATO, ET ALLA integrità ridotto, per il degno
professore di tal Scientie Nicolo Tartalea Brisciano. SECONDO
LE DVE TRADOTTIONI. CON VNA AMPLA ESPOSITIONE
dello istesso tradottore di nuono aggiunta. TALMENTE CHIARA,
CHE OGNI MEDIOCRE ingegno, senza la notitia, ouer suffragio di
alcun'altra scientia con facilità serà capace a poterlo intendere.

Imprint: IN VENETIA, Appresso Curtio Troiano. 1565.

Colophon: IN VENETIA, APPRESSO CVRTIO TROIANO. M. D.
LXVI.

Octavo. *Elements* 1–15; *De levi et ponderoso*. Niccolò Tartaglia ed. Dedicated (by Troiano) to Francesco Labia. Reimpression of **Venice 1543**, with the addition of an Italian version (the first) of *De levi*.

USTC gives the imprint date as 1566, but the older catalogues, the copies we have seen and a selection of individual library catalogues have only the 1565 imprint (with the 1566 colophon). It is possible that there was a 1566 reissue, but we have not seen evidence for it.

'di nuono' appears thus on the title pages of the copies we have seen.

References: Riccardi 1565². TS 39. Duarte p. 36. Steck III.72. USTC 828476. CERE 12.

UK/Irish copies: BL. Cambridge: Christ's, UL. NLW. Oxford: Bodleian, St John's. UCL.

Paris 1566

EVCLIDIS MEGARENSIS MATHEMATICI CLARISSIMI
ELEMENTA GEOMETRICA, LIBRIS XV. AD GERMANAM
GEOMETRIAE INTELLIGENTIAM è diuersis lapsibus temporis iniuria
contractis restituta, adimpletis præter maiorum spem, quæ hactenus
deerant, solidorum regularium conferentiis ac inscriptionibus. His
accessit decimus sextus liber, de solidorum regularium sibi inuicem
inscriptorum collationibus, tum etiam cœptum opusculum de Com-
positis regularibus solidis planè peragendum. AVTHORE Francisco
Flussate Candalla. AD Carolum IX. Christianissimum Galliarum
Regem.

Imprint: PARISIIS, Apud Iohannem Royerium typographum
Regium. Ex iussu & priuilegio Regis. 1566.

Folio. *Elements* 1–16. François de Foix de Candalle ed. Dedicated to Charles IX of France; the dedication is dated 14 August 1565. To the main Euclidean text of fifteen books the volume adds a ‘book 16’ and a further tract ‘de mixtis et compositis regularibus solidis’ composed by Foix. Foix does not make the textual sources of his edition clear.

A variant form of the title page (in, for example, the Bodleian’s copy G 5.5(1) Art.) exists in which (1) the words ‘Galliarum / Regem’ are split across a line; (2) Royer’s device is missing (it consists an image of the Creator with a potter’s wheel, and the motto ‘Stante et currente rota’); and (3) the imprint details read ‘PARISIIS, / Apud Iohannem Royerium typographum Regium, & Iacobum / du Puys, é regione collegij Cameracensis / sub Samaritana. / Iussu & priuilegio Regis. / 1566.’ We have not been able to determine whether there are corresponding differences elsewhere in the volume.

References: Riccardi 1566². TS 17. Steck III.73. USTC 158119. CERE 27.

UK/Irish copies: BL (2). Cambridge: Corpus Christi. Glasgow (2). NLW. Oxford: Bodleian, Christ Church. Senate House Library. UCL. Warburg Institute. York Minster.

Paris 1566a

LES SIX PREMIERS LIVRES DES ELEments d'Euclide, traduitz par PIERRE FORCADEL Lecteur du Roy és Mathematiques.

Imprint: A PARIS. Chez Charles Perier, rue S. Iean de Beauuais au Bellerophon. 1566.

Octavo. *Elements* 1–6 (enunciations). Pierre Forcadel ed. Dedicated to ‘Monsieur de Thelligny, Gentilhomme ordinaire de la chambre du Roy’; the dedication is dated 20 February 1566. The text of the enunciations is extracted from **Paris 1564**, but the definitions appear in a new translation.

References: USTC 59412. CERE 24.

UK/Irish copies: None identified.

Paris 1566b

LE Liure de la Musique d'Euclide traduit par P. Forcadel lecteur du Roy es Mathematiques.

Imprint: A PARIS, Chez Charles Perier, au Bellerophon rue S. Iehan de Beauuais. 1566.

Octavo. *Introductio harmonica; Sectio canonis*. Pierre Forcadel de Beziés ed. Dedicated on 12 November 1566 to ‘Monsieur de Belesbat Consillier & Maistre des Requestes ordinaire de l'hostel du Roy.’ The first edition in French of the *Introductio* and *Sectio*; likely to have been translated from **Paris 1557b**.

Graesse places an earlier version of this edition in 1565, as do Riccardi (1565¹) and USTC (94949); neither cites any extant copy. It seems likely that misreading or mistake is to blame and that 1566 is the (only) correct date. Both Riccardi (1572¹) and USTC (94315) report a 1572 reimpression, which we cannot confirm.

References: Riccardi 1566³. USTC 30241.

UK/Irish copies: BL.

Strasbourg 1566

ANALYSEIS GEOMETRICÆ sex librorum Euclidis. PRIMI ET QVINTI FACTAE À CHRISTIANO HERLINO: RELIQUAE VNÀ CVM COMMENTARIIS, & Scholiis perbreuibibus in eosdem sex libros Geometricos: à Cunrado Dasypodio. CVM Indice Πορισμάτων καὶ λημμάτων: item aliarum rerum atque uerborum memorabilium. PRO SCHOLA ARGENTINENSI.

Imprint: CVM Gratia & Priuilegio Cæsareo ad annos octo. EXCVDEBAT IOSIAS RIHELIVS. M.D.LXVI.

Quarto. *Elements* 1–6. Conradus Dasypodius, Christianus Herlinus ed. Preface (by Dasypodius) addressed to the senate of Schaffhausen and dated 10 August 1566. Contains a brief address to the reader by Ioannes Sturm. Books 1 and 5 edited by Herlinus; after his death 2, 3, 4 and 6 were completed by Dasypodius.

The Euclidean definitions and enunciations are given in Greek and probably use the text from **Strasbourg 1564b/Strasbourg 1564/Strasbourg 1564a**. The blocks for the diagrams from that set of editions are re-used (for volume 1 these were first used in **Strasbourg 1538** and re-used in **Strasbourg 1559**). The Latin translation of this matter, and of the proofs, is based on that of the 1564 editions for books 1 and 2, but the proofs are reduced in length and supplemented by proofs in syllogisms, which are apparently new. The volume also contains indexes and a concluding commentary.

References: Riccardi 1566¹. TS 16. Duarte p. 36. Steck III.74. USTC 611271. CERE 25.

UK/Irish copies: BL. Cambridge: Christ's, St John's (2), Trinity. NLW. Oxford: Balliol, St John's. Royal College of Physicians. UCL (2).

Venice 1569

EVCLIDE MEGARENSE ACVTISSIMO PHILOSOPHO,
SOLO INTRODVTTORE DELLE SCIENTIE MATEMATICHE.

DILIGENTEMENTE RASSETTATO, ET ALLA integrità ridotto, per il degno professore di tal Sciente Nicolò Tartalea Brisciano. SECONDO LE DVE TRADOTTIONI. CON VNA AMPLA ESPOSITIONE dello istesso tradottore di nuouo aggiunta. TALMENTE CHIARA, CHE OGNO MEDIOCRE ingegno, senza la notitia, ouer suffragio di alcun' altra scientia con facilità serà capace a poterlo intendere.

Imprint: IN VENETIA, Appresso Giouanni Bariletto. 1569.

Colophon: IN VENETIA, Appresso Giouanni Bariletto. M. D. LXIX.

Octavo. *Elements* 1–15; *De levi et ponderoso*. Niccolò Tartaglia ed. Dedicated to Beneto Zorzi (but see below). Reimpression of **Venice 1543/Venice 1565**, using the same blocks as the latter for the diagrams.

This appears to be substantially a reissue of **Venice 1565**, with sheets A and Qq re-set in order to modify the title page, dedication and colophon. Curtio Troiano's dedication to Francesco Labia is slightly adapted, substituting the name and title of Beneto Zorzi but leaving most of the text unchanged (including Troiano's name).

References: Riccardi 1569¹. TS 40. Duarte p. 39. Steck III.77. USTC 828477. CERE 12.

UK/Irish copies: Cambridge: UL. Durham. Leicester. Liverpool. Manchester. Newcastle. NLS. NLW. Senate House Library. UCL. Victoria and Albert Museum.

Basel 1570

ANITHI MANLII SEVERINI BOETHI, PHILOSOPHORVM ET THEOLOGORVM PRINCIPIS OPERA omnia, quorum alia antè impressa, nunc denuò per doctos uiros recognita: alia, quæ hactenus latuerunt, nunc primùm emendatiss. in lucem prodeunt. In quibus præter uniuersæ philosophiæ exactissimam doctrinam, plurimorum in diuinis mysteriorum, & difficiliorum locorum in Platone, Aristotele alijsque Græcis & Latinis autoribus luculentissimæ explicationes reperiuntur. PRAETEREA IAM ACCESSERVNT, Ioannis Murmelij in v. Lib. De Consolatione Philosophiæ commentaria. Et

in eosdem Rodolphi Agricolaë Enarrationes. Item, Gilberti Porretæ, Episcopi Pictauiensis in IIII. Lib. de Trinitate commentarij, antè nunquam æditi. Præter reliquos doctiss. uiros, HENRICVS LORITVS GLAREANVS, Arithmeticam & Musicam demonstrationibus & figuris auctiorem redditam, suo pristino nitori restituit: Cui exemplar aureum uenerandæque uetustatis fuit ex monasterio S. Georgij. Et MARTIANVS ROTA, opus de tota differendi ratione, hoc est, organum, Dialecticæ & Rhetoricæ studiosis necessarium, illustrauit. Et huius autoris uitam, cùm ex alijs, tum ex Boëthi munimentis collectam, bona fide descripsit.

Imprint: Cum Cæs. Maiest. Gratia & Priuilegio. BASILEAE, EX OFFICINA HENRICPETRINA.

Colophon: BASILEAE, EX OFFICINA HENRICPETRINA, MENSE MARTIO, ANNO M D LXX.

Folio. *Geometria*. Reimpression of **Basel 1546a**. Contains at pp. 1487–1546 ‘EVCLIDIS MEGARENSIS GEOMETRIÆ, AB ANITIO MANLIO SEVERINO BOETHIO translatus’. See also TS, p. 49.

References: USTC 611576.

UK/Irish copies: BL. Cambridge: Selwyn (2), St John’s, UL. Glasgow (5). Marsh’s Library, Dublin. Oxford: Balliol, Bodleian (3), Merton. St Andrews.

London 1570

THE ELEMENTS OF GEOMETRIE of the most auncient Philosopher EVCLIDE of Megara. Faithfully (now first) translated into the Englishe toung, by H. Billingsley, Citizen of London. Whereunto are annexed certaine Scholies, Annotations, and Inuentions, of the best Mathematicians, both of time past, and in this our age. With a very fruitfull Præface made by M. I. Dee, specifying the chiefe Mathematicall Sciences, what they are, and wherunto commodious: where, also, are disclosed certaine new Secrets Mathematicall and Mechanicall, vntill these our daies, greatly missed.

Imprint: Imprinted at London by Iohn Daye.

Colophon: AT LONDON Printed by Iohn Daye, dwelling ouer

Aldersgate beneath Saint Martins. These Bookes are to be solde at his shop vnder the gate. 1570.

Folio. *Elements* 1–16. Henry Billingsley ed. The first version of the *Elements* printed in England or in English. It is introduced by the translator's preface and the lengthy 'Mathematicall Præface' of John Dee, and a diagram ('Groundplat') of the division of the mathematical sciences. Certain diagrams are provided in a form intended to be cut and pasted to make three-dimensional pop-ups: a unique feature in this period. The elaborate woodcut frontispiece was re-used from William Cunningham's *Cosmographical glass* and would appear again in the musical works of John Dowland.

The preface is dated 9 February and the Groundplat bears the dates 3 and 25 February 1570. To the fifteen books of the *Elements* are added both Foix's 'book 16' and his treatise on regular solids from **Paris 1566**; Foix is styled 'Flussas' in both cases.

The translation is thought to be based on the Greek of **Basel 1533** and the Latin of **Venice 1505** and **Basel 1558**: see Simkins 1966, 231. Several previous translators and commentators are cited or quoted, including Proclus and Foix, and a number of remarks and additions are specifically attributed to Dee.

References: Riccardi 1570¹. TS 41. Duarte p. 39. Steck III.79. USTC 507133. ESTC S106699. CERE 28.

UK/Irish copies: Aberdeen. Cambridge: Trinity, UL (2). Canterbury Cathedral. Dr Williams' Library. Durham (2). Edinburgh: Royal Observatory. Glasgow (3). Lincoln Cathedral. Liverpool. Manchester. Newcastle. NLS. NLW (2). Oxford: Balliol, Bodleian (2), Christ Church, Corpus Christi, New College, Queen's, St John's, Worcester. Royal College of Physicians (2). Royal Society. Science Museum. UCL. Victoria and Albert Museum.

Strasbourg 1570

ΕΥΚΛΕΙΔΟΥ ΣΤΟΙΧΕΙΩΝ ΤΟ ΠΡΩΤΟΝ. ΗΡΩΝΟΣ
ΑΛΕΞΑΝΔΡΕΟΣ ὀνόματα γεωμετρικά. EVCLIDIS ELEMENTorum
Liber primus. HERONIS ALEXANDRIni vocabula geometrica:
antehac nunquam edita. græcè & latinè. Per Cunradum Dasypodium,

in vsum Academiæ Argentinensis.

Imprint: ARGENTORATI Apud hæredes Christiani Mylij. M. D. LXX.

Octavo. *Elements* 1. Conrad Dasypodius ed. Dedicated (1 May 1570) to D. Daniel, archbishop of Mainz. The Euclidean text appears to be reprinted from that of **Strasbourg 1564**, using the same blocks for the diagrams. In addition to *Elements* 1, the volume also contains, in Greek and Latin, a *Vocabula geometrica* and *Vocabula stereometrica* attributed to Heron.

Riccardi's addenda in part 4 of his catalogue provide the information to identify his 1570⁴ with this edition.

References: Riccardi 1570⁴. TS XXIX part 1. Steck III.81. USTC 654431. CERE 25.GMIP Strasbourg 1570.

UK/Irish copies: Cambridge: Trinity. NLW. Oxford: Bodleian.

Strasbourg 1570a

ΕΥΚΛΕΙΔΟΥ ΠΡΟΤΑΣΕΙΣ Στοιχειῶν ιε. Οπτικῶν. Κατοπτρικῶν. Ἀρμονικῶν. Καὶ Φαινομένων. EVCLIDIS Propositiones. Elementorum. 15. Opticorum. Catoptricum. Harmonicorum. Et Apparentiarum. Per Cunradum Dasypodium.

Imprint: ARGENTORATI Apud hæredes Christiani Mylij. Anno M. D. LXX.

Colophon: Excusum Argentorati apud hæredes Christiani Mylij. ANNO M. D. LXX.

Octavo. *Elements* 1–15; *Optics*; *Catoptrics*; *Introductio harmonica*; *Sectio canonicæ*; *Phaenomena* (enunciations in Greek and Latin). Conrad Dasypodius ed. Dedicated (1 July 1570) to D. Salancenus, Archbishop of Cologne. The text and translation of the *Elements* are extracted from **Strasbourg 1564/Strasbourg 1564a/Strasbourg 1564b** with occasional slight changes. The Greek text of the *Phaenomena* is here edited for the first time, but its manuscript sources are not specified; the Latin translation is new.

The texts of the other works are extracted from the editions of la Pène (**Paris 1557a** and **Paris 1557b**); Dasypodius' earlier edition and translation of the *Catoptrics* (**Strasbourg 1557**) are *not* followed. No diagrams are printed.

References: TS XXIX part 2. Steck III.81a. USTC 654429.

UK/Irish copies: BL. Cambridge: Trinity, UL. NLW. Oxford: Bodleian. Stonyhurst College.

Strasbourg 1571

EVCLIDIS ELEMENTORVM Liber primus. Item, HERONIS ALEXANDRINI vocabula quædam geometrica: ante hac nunquam edita, græcè & latinè. Per M. Cunradum Dasypodium.

Imprint: ARGENTINAE, 1571.

Octavo. *Elements* 1. Conrad Dasypodius ed. Reissue of **Strasbourg 1570**, containing a *Vocabula geometrica* and *Vocabula stereometrica* attributed to Heron in addition to the Euclidean text, and retaining the dedication to D. Daniel, archbishop of Mainz, dated 1 May 1570.

References: Riccardi 1571¹. TS XXX part 1. Steck III.82. USTC 654841. CERE 25.GMIP Strasbourg 1571.

UK/Irish copies: BL (2). Cambridge: UL. Eton College. Manchester. Oxford: Bodleian. UCL.

Strasbourg 1571a

EVCLIDIS OMNES OMNIVM LIBRORVM PROPOSITIO^{nes}, græcè & latinè: editæ per M. Cunradum Dasypodium.

Imprint: Cum gratia & priuilegio Cæsareo, Regisque Galliæ, ad sexennium. ARGENTINAE, 1571.

Colophon: ARGENTORATI APVD Christianum Mylium. 1571.

Octavo. *Elements* 1–15; *Optics*; *Catoptrics*; *Introductio harmonica*; *Sectio canonis*; *Phaenomena*; *Data* (enunciations). Conrad Dasypodius ed. Reimpression/reissue of **Strasbourg 1570a** with additions. Sheet a, containing the title page and dedication to D. Salancenus, Archbishop of Cologne, has been re-set, adding a table of contents, but the original date of dedication (1 July 1570) is retained. In the Greek text, sheet m is re-set, containing the end of the *Phaenomena* and start of the *Data*; sheet n, containing the remainder of the *Data*, is new in this issue. Similarly in the Latin text which follows, sheet m is

re-set and n is new. We believe that the remaining sheets (b–l in the Greek text, a–l in the Latin) may be a reissue of those of **Strasbourg 1570a**.

This appears to be the first printing in Greek of any part of the *Data*. The Latin translation differs from that of Zamberti/Herlin and is probably new.

Steck's report (VIII.5) of a separate issue of the two optical works seems likely to derive from a separately bound section from this issue.

References: Riccardi 1571¹. TS XXX part 2. Steck III.82a. USTC 654851.

UK/Irish copies: Cambridge: Trinity, UL. Eton College. Manchester. Oxford: Bodleian.

Pesaro 1572

EVCLIDIS ELEMENTORVM LIBRI XV. Vnà cum Scholijs antiquis. À FEDERICO COMMANDINO VRBINATE NVPER IN LATINVM conuersi, commentarijsque quibusdam illustrati.

Imprint: PISAVRI, M D LXXII. Cum Priuilegio Pont. Max.

Colophon: PISAVRI. CVM LICENTIA SVPERIORVM. APVD CAMILLVM FRANCISCHINVM. M. D. LXXII.

Folio. *Elements* 1–15. Federico Commandino ed. Dedicated to Francisco Maria II of Urbino. The privilege is dated 5 September 1572. A new translation of the *Elements* into Latin, for which manuscript sources were consulted as well as **Basel 1533**. In addition to the dedication and prolegomena, the volume contains an ‘index eorum, quæ in his libris demonstrantur præter ea, quæ Euclidis sunt’.

Steck (III.80) reports a 1570 impression of this translation, but we know of no independent evidence for this.

References: Riccardi 1572¹. TS 18. Duarte p. 39. Steck III.83. USTC 828478. CERE 29.

UK/Irish copies: Aberdeen. Cambridge: Trinity, UL (4). Glasgow (2). King's College London. Liverpool. NLW. Oxford: Bodleian, Exeter, Oriel, Queen's, St John's, Worcester. Royal College of Physicians. Science Museum. St Andrews. UCL.

Strasbourg 1572

SPHAERICAE DOCTRINÆ PROPOSITIONES GRÆCÆ ET

LATInæ: nunc primùm per M. Cunradum Dasypodium in lucem editæ. quorum authores sequens indicat pagina.

Imprint: ARGENTORATI Excudebat Christianus Mylius: M. D. LXXII.

Octavo. *Phaenomena* (enunciations). Conrad Dasypodius ed. The list of authors on the reverse of the title page mentions only Theodosius, Autolycus and Barlaam, but in fact the definitions and enunciations of Euclid's *Phaenomena* are given at pp. 50–61 of the Greek text and 52–64 of the Latin; they are extracted from the version of Dasypodius, **Strasbourg 1570a/Strasbourg 1571a**.

The Greek text of Theodosius is preceded by dedications to Ioannes Cratonus and Ioannes Sambuco, both dated 1 December 1571; that of Baarlam (which has a separate title page) by a dedication to Andrea Sbardellato dated 3 December. The Latin text of Theodosius is preceded by a dedication to Petrus Ramus dated 4 December and that of Barlaam (which also has a separate title page) by a dedication to Robert Renousson dated 5 December.

References: USTC 694359. GMIP Strasbourg 1572.

UK/Irish copies: Cambridge: Trinity.

Florence 1573

LA PROSPETTIVA DI EVCLIDE, Nella quale si tratta di quelle cose, che per raggi diritti si veggono: & di quelle, che con raggi reflexi nelli SPECCHI appariscono. Tradotta dal R. P. M. Egnatio Danti Cosmographo del Seren. Gran Duca di Toscana. Con alcune sue Annotationi de'luoghi piu importanti. INSIEME CON LA PROSPETTIVA DI Eliodoro Lariſseo Cauata della Libreria Vaticana, e tradotta dal medesimo nuouamente data in luce.

Imprint: IN FIRENZA. Nella Stamperia de'Guinti. MDLXXIII.

Colophon: In FIRENZE. Nella stemperia de'Giunti. M D LXXIII.

Quarto. *Optica; Catoptrica*. Egnatio Danti ed. Addressed (15 June 1573) by the Guinti to 'gli Accademici del Disegno di Pervgia'. The first edition of the *Optics* or *Catoptrics* in a modern language.

Riccardi states that he owns a copy dated 1574, but we have seen no other

confirmation and suspect a mistake or misprint. USTC reports the imprint ‘nella stamperia de’ haer. Bernardo I Giunta’, but we have not seen an example of this.

References: Riccardi 1574¹. Duarte p. 42. Steck VIII.6. USTC 828479. GMIP Florence 1573.

UK/Irish copies: BL. Cambridge: Christ’s, UL, Whipple Museum. Glasgow (2). Leicester. NLW. Oxford: Bodleian (4), Jesus, St John’s. Senate House Library. UCL (4). Wellcome Library.

Paris 1573

EVCLIDIS ELEMENTORVM LIBRI XV. GRAECè & Latinè, Quibus, cùm ad omnem Mathematicæ scientiæ partem, tùm ad quamlibet Geometriæ tractationem, facilis comparatur aditus.

Imprint: PARISIIS, Apud Hieronymum de Marnef, & Gulielmum Cauellat, sub Pellicano, monte D. Hilarij. 1573.

Octavo. *Elements* 1–15 (enunciations). Joannes Magnienus, Stephanus Gracilis ed. Reimpression of **Paris 1557/Paris 1558**. Includes the preface of Gracilis dated 10 April 1557. The text is re-set page-for page and frequently line-for-line, and the blocks for the diagrams are re-used. Long o in the Latin text is once again occasionally printed as ω .

Steck reports the imprint as ‘Parisiis – Argentorati’, but it seems likely this is the result of confusion between this and the ghost edition reported by Riccardi (1573¹) from Strasbourg 1573. Steck (III.91) and Riccardi (1578²) both report a reimpression in 1578, mentioned also by Heath (vol. 1, p. 101–2). We cannot confirm it, and suspect a misreading of the imprint date.

References: TS 32. Duarte p. 42. Steck III.84. USTC 160185. CERE 20.

UK/Irish copies: Aberdeen. BL. Cambridge: Christ’s, King’s, Trinity, UL. Leicester. Marsh’s Library, Dublin. NLW (2). Oxford: All Souls, Bodleian (2), Christ Church (2). Senate House Library. UCL.

Rome 1574

[*vol. 1*]: EVCLIDIS ELEMENTORVM LIBRI XV. ACCESSIT XVI. DE SOLIdorum Regularium comparatione. OMNES

PERSPICVIS DEMONSTRATIONIBUS, accuratisque scholijs illustrati.
AVCTORE CHRISTOPHORO CLAVIO BAMBERGENSI. SOCI-
ETATIS IESV.

[vol. 2]: EVCLIDIS POSTERIORES Libri sex a x. ad xv. AC-
CESSIT XVI. DE Solidorum Regularium comparatione. OMNES
PERSPICVIS DEMONSTRATIONIBUS, accuratisque scholijs illustrati.
AVCTORE CHRISTOPHORO CLAVIO BAMBERGENSI. SOCI-
ETATIS IESV.

Imprint: [vols 1 & 2] ROMAE, Apud Vincentium Accoltum. 1574.

Colophon: [vol. 2] ROMAE, Apud Vincentium Accoltum. M.D.LXXIII.
Cum licentia Superiorum.

Two volumes, octavo. *Elements* 1–16. Christoph Clavius ed. Dedicated (1 February 1574) to Emanuel Philiberto. A new version of the *Elements*, using the texts of Campanus, Zamberti and Commandino as well as material from the editions of Peletarius (Lyon 1557) and Fine (Paris 1536), from works by Pappus and Proclus, from the Arabic tradition of the *Elements*, and from Cardano. Foix's book 16 is also included, from Paris 1566. The total number of proofs is as a result much larger than in any predecessor.

References: Riccardi 1574². TS 19. Duarte p. 42. Steck III.85. USTC 828480. CERE 30.

UK/Irish copies: Aberdeen. BL. Cambridge: Trinity, UL. NLW. Oxford: Balliol, Bodleian, History of Science Museum, University College. UCL (3).

Urbino 1575

DE GLI ELEMENTI D'EVCLIDE LIBRI QVINDICI. CON
GLI SCHOLII ANTICHI. TRADOTTI PRIMA IN LINGVA
LATINA DA M. FEDERICO COMMANDINO DA VRBINO, &
con Commentarij illustrati, ET HORA D'ORDINE DELL'ISTESSO
TRASPORTATI NELLA NOSTRA VVLGARE, & da lui riueduti.

Imprint: CON PRIVILEGIO. JN VRBINO, APPRESSO
DOMENICO FRISOLINO. M. D. LXXV. Con licentia de' Su-
periori.

Colophon: JN VRBINO IN CASA DI FEDERICO COM-
MANDINO, CON LICENTIA DE'SUPERIORI. M D LXXV.

Folio. *Elements* 1–15. Federigo Commandino, Valerio Spacchioli ed. Translation of **Pesaro 1572**. The diagrams appear to have been printed from the same blocks as the original. The dedication to Francesco Maria Feltrio della Rovere is signed by Valerio Spacchioli. The papal privilege from the Latin edition here appears in an Italian translation, without change of date ('Non. Septembr. Anno primo.' of Gregory XIII, *i.e.* 5 September 1572).

References: Riccardi 1575¹. TS 42. Duarte p. 46. Steck III.86. USTC 828481. CERE 29.

UK/Irish copies: NLW (2). Cambridge: Christ's, UL (2). Glasgow. Oxford: Bodleian, Christ Church; Corpus Christi, Magdalen, St John's, Worcester. Royal Society. St Andrews. UCL.

Venice 1575

D. FRANCISCI MAVROLYCI, ABBATIS MESSANENSIS, Opuscula Mathematica; Nunc primum in lucem ædita, cum rerum omnium notatu dignarum. INDICE LOCVPLETISSIMO. PAGELLA HVIC PROXIME CONTIGVA, eorum Catalogus est.

Imprint: CVM PRIVILEGIO. Venetijs, Apud Franciscum Franciscum Senensem. M D L XXV.

Quarto. *Elements* 13–15. Francesco Maurolico ed. Dedicated (26 July 1575) to Francesco Maria II of Urbino; the dedication is signed by Franceschini. Contains eight opuscula of Maurolico including at 103–44 a Latin text designated *Elements* 13–15. Book 13 follows Zamberti for its enunciations, although with some rearrangement and renumbering; books 14 and 15 are so rearranged and supplemented as to be substantially new compositions. Throughout, the original proofs are replaced by new explanations and numerical calculations.

The Euclidean material is introduced by a separate preface describing some of the changes to the text, and a dedicatory letter of Maurolicus to Hieronymus Barresius, which is dated at Messina on 9 July 1532. We are not aware of any previous printing of this work.

Steck (III.94), following Riccardi (1580²), reports a reimpression in 1580, which we cannot confirm.

References: Riccardi 1575². TS XXXIII. Duarte p. 42/46. Steck III.87. USTC 841633.

UK/Irish copies: NLW (2). Senate House Library. UCL.

Seville 1576

LOS SEIS LIBROS PRIMEROS DELA GEOMETRIA DE EVCLIDES. Traduzidos en lengua Española por Rodrigo çamorano Astrologo y Mathematico, y Cathedratico de Cosmographia por su Magestad en la casa de la Contratacion de Seuilla Dirigidos al jllustre señor Luciano de Negron, Canonigo dela sancta yglesia de Seuilla.

Imprint: Con licencia del Consejo Real. En Seuilla en casa de Alonso de la Barrera. 1576.

Quarto. *Elements* 1–6. Rodorigo de Zamorano ed. Dedicated to Luciano de Negron; the license is dated 24 March 1574. The first edition of the *Elements* printed in Spanish or in Spain. Sources are not specified, but the text resembles Zamberti's more than that of Campanus or the Greek of Grynæus.

An edition of 1516 reported by Riccardi (1516²) following Graesse is surely a mistake for this edition: see TS p. 16.

On the title page below the imprint are printed the words 'Esta tassado en'; in some copies this is completed by hand: 'ocho pezetas'.

References: Riccardi 1576¹. TS 43. Duarte p. 46. Steck III.88. USTC 336161. CERE 31.

UK/Irish copies: BL. Cambridge: UL (2). NLW.

Leipzig 1577

Εὐκλείδου στοιχείων βιβλία ἕξ. EVCLIDIS ELEMENTORVM GEOMETRICORVM LIBRI SEX conuersi in latinum sermonem à Ioach. Camerario. QVIBUS ADIECTÆ SVNT trium priorum librorum Demonstrationes, atque editæ in gratiam & vtilitatem studiosorum Mathematices in Acad. Lips. à Mauritio Steinmetz Gersb. Medicinæ Licentiato.

Imprint: LIPSIÆ Anno M. D LXXVII.

Colophon: LIPSIAE, IMPRIMEBAT IOHANNES STEINMAN.
Anno M. D. LXXVII.

Octavo. *Elements* 1–6 (enunciations only in 4–6). Joachim Camerarius, Moritz Valentin Steinmetz ed. Dedicated by Steinmetz to Heinricus à Bila (25 May 1577); a proem is dated 9 November. Expanded version of **Leipzig 1549**. Definitions, petitions, common notions and enunciations are given in Greek and Latin; proofs in Latin only.

References: Riccardi 1577¹. TS 20. Steck III.90. USTC 654437. CERE 15.

UK/Irish copies: NLW.

Paris 1578

EVCLIDIS MEGARENSIS MATHEMATICI CLARISSIMI
ELEMENTA, LIBRIS XV. AD GERMANAM GEOMETRIÆ intel-
ligentiam è diuersis lapsibus temporis iniuria contractis restituta,
Adimpletis præter maiorum spem, quæ hactenus deerant, solidorum
regularium conferentiis ac inscriptionibus. Accessit decimussextus
liber, de solidorum regularium sibi inuicem inscriptorum collationibus.
Nouissimè collati sunt decimusseptimus & decimusoctauus, priori edi-
tione quodammodo polliciti, de componendorum, inscribendorum, &
conferendorum compositorum solidorum inuentis, ordine & numero
absoluti. AVTHORE D. Francisco Flussate Candalla. AD CAROLVM
IX. CHRISTIANISSIMVM GALLIARVM REGEM.

Imprint: LVTTETIÆ, APVD IACOBVM DV PVYS. M. D. LXXVIII.

Colophon: LVGDVNI, EX OFFICINA IOANNIS TORNÆSII,
TYPOGRAPHI REGII. M. D. LXXVIII.

Folio. *Elements* 1–18. François de Foix de Candalle ed. New edition of **Paris 1566**, retaining the dedication to Charles IX of France dated 14 August 1565. Nine new theorems are added to Foix's book 16, and books 17 and 18, newly composed, are added. The separate tract 'de mixtis et compositis regularibus solidis' does not appear.

The discrepancy between colophon and imprint, and the fact that the sheets were reissued at both Cologne and Paris in 1602, suggests that the sale

of this issue may have been interrupted.

References: Riccardi 1578¹. TS 21. Steck III.92. USTC 141560. CERE 27.

UK/Irish copies: Cambridge: Christ's, Sidney Sussex, Trinity, UL. Chetham's School. Edinburgh: Royal Observatory. Glasgow. NLS. NLW. Oxford: Bodleian, Christ Church. Senate House Library. UCL.

Cologne 1580

EVCLIDIS ELEMENTORVM LIBRI XV. Quibus, cùm ad omnem Mathematicæ scientiæ partem, tùm ad quamlibet Geometriæ tractationem, facilis comparatur aditus.

Imprint: COLONIÆ. Apud Maternum Cholinum. M. D. LXXX. Cum Gratia & Priuilegio Cæs. Maiest.

Octavo. *Elements* 1–15 (enunciations). Joannes Magnienus, Stephanus Gracilis ed. Reprints the Latin text of **Cologne 1564** (thus ultimately of **Paris 1557**), without the Greek. The blocks for the diagrams are re-used from that edition, and the original preface is retained, with the date 10 April 1557. Long o is once again occasionally printed as ω .

Duarte reports copies with some differences of orthography on the title page.

References: Riccardi 1580¹. Duarte p. 50. Steck III.95. USTC 654844.

UK/Irish copies: Cambridge: King's, Trinity. NLW.

Madrid 1585

LA PERSPECTIVA, Y ESPECVLARIA DE Euclides. Traduzidas en vulgar Castellano, y dirigidas a la S. C. R. M. del Rey don Phelippe nuestro Señor. Por Pedro Ambrosio Onderiz su criado.

Imprint: EN MADRID. En casa de la viuda de Alonso Gomez. Año. M.D.LXXXV.

Colophon: EN MADRID. En casa de la viuda de Alonso Gomez. Año. M.D.LXXXIII.

Quarto. *Optica; Catoptrica*. Pedro Ambrosio Ondériz ed. Dedicated to

Philip II of Spain; the first Spanish translation of the *Optics* and *Catoptrics*. The royal permission to print, signed by Antonio de Erasso on behalf of the king, is dated 5 September 1584. There follows a second permission, signed by Fernando Paterno S.J. on 21 December 1584, and a third signed by Miguel de Ondarça on 21 January 1585. Finally the list of errata is dated 14 January 1585 by Iuan Vazquez del Marmol.

The foliation is continuous through the volume, and the *Perspectiva* has no separate colophon, but the *Especularia* has a separate title page, with title ‘LA ESPECVLARIA DE EVCLIDES TRADVZIDA EN LENGVA CASTELLANA. Por Pedro Ambrosio Onderiz criado de su Magestad.’ and imprint (matching the colophon) ‘EN MADRID. En casa de la viuda de Alonso Gomez Año. M.D.LXXXIII.’ USTC (345697) reports a version dated 1584, presumably as a result.

References: Riccardi 1585². Duarte p. 50. USTC 336160.

UK/Irish copies: BL. NLS. NLW. UCL.

Venice 1585

EVCLIDE MEGARENSE ACVTISSIMO PHILOSOPHO SOLO INTRODVTTORE DELLE SCIENTIE MATHEMATICHE. DILIGENTEMENTE RASSETTATO, & alla integrità ridotto, per il degno professore di tal Scientie Nicolò Tartalea Brisciano. SECONDO LE DVE TRADOTTIONI. CON VNA AMPLA ESPOSITIONE DELLO ISTESSO tradottore di nuouo aggiunta, talmente chiara, che ogni mediocre ingegno, senza la notitia, ouer suffragio di alcun'altra scientia con facilità serà capace a poterlo intendere. Di nuouo con ogni diligenza ben corretto, e ristampato.

Imprint: IN VENETIA, Appresso gli Heredi di Troian Nauo, alla libreria dal Leone. M D LXXXV.

Quarto. *Elements* 1–15; *De levi et ponderoso*. Niccolò Tartaglia ed. Dedicated (15 December 1585) by the heirs of Troiano to Federico Contarini. Reimpression of **Venice 1543/Venice 1565/Venice 1569**; in fact a page-for-page reimpression of the last. The blocks for the diagrams are re-used from **Venice 1565/Venice 1569**.

References: Riccardi 1585¹. TS 44. Duarte p. 50/52. Steck III.97. USTC 828482.

UK/Irish copies: BL. NLW. Oxford: St John's. UCL.

Venice 1586

EVCLIDE MEGARENSE ACVTISSIMO PHILOSOPHO SOLO INTRODVTTORE DELLE SCIENTIE MATHEMATICHE. DILIGENTEMENTE RASSETTATO, & alla integrità ridotto, per il degno professore di tal Scienze Nicolò Tartalea Brisciano. SECONDO LE DVE TRADOTTIONI. CON VNA AMPLA ESPOSITIONE DELLO ISTESSO traduttore di nuouo aggiunta, talmente chiara, che ogni mediocre ingegno, senza la notitia, ouer suffragio di alcun' altra scientia con facilità serà capace a poterlo intendere. Di nuouo con ogni diligenza ben corretto, e ristampato.

Imprint: IN VENETIA, Appresso gli Heredi di Troian Nauo, alla libreria dal Leone. M D LXXXVI.

Quarto. *Elements* 1–15; *De leui et ponderoso*. Niccolò Tartaglia ed. Reissue of **Venice 1585** with cancel title page. Thus a reimpression of **Venice 1543/Venice 1565/Venice 1569** – a page-for-page reimpression of the last – re-using the blocks for the diagrams from **Venice 1565/Venice 1569**. The dedication to Federico Contarini, dated 15 December 1585, is retained.

References: Riccardi 1586¹. TS 45. Steck III.98. USTC 828483. CERE 12.

UK/Irish copies: Aberdeen. Cambridge: UL. Glasgow (2). NLW. St Andrews.

Cologne 1587

EVCLIDIS ELEMENTORVM LIBRI XV. Quibus, cùm ad omnem Mathematicæ scientiæ partem, tùm ad quamlibet Geometriæ tractationem, facilis comparatur aditus.

Imprint: COLONIAE, Apud Maternum Cholinum. M. D. LXXXVII. Cum Gratia & Priuilegio Cæs. Maiest.

Octavo. *Elements* 1–15 (enunciations). Joannes Magnienus, Stephanus Gracilis ed. Page-for-page reimpression of **Cologne 1580**, thus containing the Latin text of **Paris 1557** and Gracilis’ preface to that edition, dated 10 April 1557. The blocks for the diagrams are re-used from **Cologne 1564/Cologne 1580**. Long o is once again occasionally printed as ω .

Steck (III.103) and Riccardi (1592¹) list a 1592 Cologne issue of the Gracilis *Elements*, a report which seems to go back to Zakhartchenko. We have seen no evidence for it, nor for the 1592 Rome issue which Steck more tentatively suggests.

Steck (III.107) and Riccardi (1597¹) also report a 1597 Cologne impression of this text, again on what seems to be the basis of a report by Zakhartchenko. A mistake for the present impression seems likely.

References: Riccardi 1587¹. TS 33. Steck III.99. USTC 654845. CERE 20.

UK/Irish copies: BL. Cambridge: UL, Whipple Museum. Durham. NLW.

Rome 1589

[*vol. 1*]: EVCLIDIS ELEMENTORVM LIB. XV ACCESSIT XVI. DE SOLIDORVM. Regularium cuiuslibet intra quodlibet comparatione. OMNES PERSPICVIS DEMONstrationibus, accuratisque scholijs illustrati: nunc iterum editi, ac multarum rerum accessione locupletati: AVCTORE CHRISTOPHORO CLAVIO BAMBERGENSI È SOCIETATE IESV

[*vol. 2*]: EVCLIDIS POSTERIORES LIB. IX ACCESSIT XVI. DE SOLIDORVM. Regularium cuiuslibet intra quodlibet comparatione. OMNES PERSPICVIS DEMONstrationibus, accuratisque scholijs illustrati: nunc iterum editi, ac multarum rerum accessione locupletati: AVCTORE CHRISTOPHORO CLAVIO BAMBERGENSI È SOCIETATE IESV

Imprint: [*Vol. 1 & 2*] ROMÆ APVD BARTHOLOMAEVM Grassium; M D L XXXIX. PERMISSV SVPERIORVM.

Colophon: [*vol. 1 & 2*] ROMAE, Apud Sanctium, & Soc. M. D. LXXXIX.

Two volumes, octavo. *Elements* 1–16. Christoph Clavius ed. Dedicated to Charles Emmanuel of Savoy. New version of **Rome 1574**, with some revisions to the text.

The engraved title page of vol. 1 appears to have been re-used with minor alterations for vol. 2.

References: Riccardi 1589¹. TS 22. Duarte p. 52. Steck III.100. USTC 828484. CERE 30.

UK/Irish copies: Cambridge: Trinity, UL (2). Edinburgh: Royal Observatory. Glasgow. NLS. NLW. Oxford: History of Science Museum, University College. Senate House Library. UCL.

Cologne 1591

[vol. 1]: EVCLIDIS ELEMENTORVM LIBRI XV. Accessit XVI. de SOLIDORVM REGVLARIVM cuiuslibet intra quodlibet comparatione. Omnes perspicuis DEMONSTRATIONIBVS, accuratisque SCHOLIIS illustrati, ac multarum rerum accessione locupletati: Nunc tertio editi, summaque diligentia recogniti, atque emendati. Auctore CHRISTOPHORO CLAVIO BAMBERGENSI, è Societate IESV.

[vol. 2]: EVCLIDIS POSTERIORES LIBRI IX. Accessit XVI. de SOLIDORVM REGVLARIVM cuiuslibet intra quodlibet comparatione. Omnes perspicuis DEMONSTRATIONIBVS, accuratisque SCHOLIIS illustrati: Nunc tertio editi, ac multarum rerum accessione locupletati. Auctore CHRISTOPHORO CLAVIO BAMBERGENSI, è Societate IESV.

Imprint: [vols. 1 & 2] COLONIAE, Expensis IOH. BAPTISTAE CIOTTI M D XCI.

Two volumes, ?quarto in 8s. *Elements* 1–16. Christoph Clavius ed. Reimpression of **Rome 1589**, retaining the dedication to Charles Emmanuel dated 1 September 1589. A report of Zakhartchenko (see Riccardi 1617¹) of an issue at Cologne in 1617 could possibly be a mistake for this edition.

The place of imprint is given as Cologne in both title pages and colophons, but it seems Ciotti is only known to have worked in Venice.

Steck and TS describe this as a folio; catalogues variously describe it as

folio or quarto. There are eight leaves to each signature.

References: Riccardi 1591¹. TS 23. Steck III.102. USTC 654843. CERE 30.

UK/Irish copies: Aberdeen. Cambridge: Caius, Trinity. Eton College. Exeter. NLW. Nottingham. Oxford: Bodleian, Merton, New College, Pembroke, St John's, Wadham. Royal College of Physicians. Senate House Library. UCL. Westminster School. Winchester College.

Rome 1591

EVCLIDIS PHAENOMENA Post Zamberti: & Maurolyci editionem, nunc tandem de VATICANA. BIBLIOTHECA deprompta. Scholijs antiquis: & figuris optimis illustrata: & de Græca lingua in Latinam conuersa. A IOSEPHO. AVRIA. NEAPOLITANO His additæ sunt Maurolyci breues aliquot annotationes. AD. ILLVSTRISS. ET. REVERENDISS. D.M. ANTONIVM. COLVMNAM. S.R.E. CARD. EPISCOPVM. PRAENESTINVM ET. BIBLIOTHECARIVM. APOSTOL.

Imprint: ROMÆ. Apud Ioannem Martinellum. M. D. XCI. SVPERIORVM. PERMISSV

Quarto. *Phaenomena*. Guiseppe Auria ed. Dedicated (15 March 1591) to Marcus Antonius Columna; also contains a verse addressed to Marcus Antonius Columna by Joseph Castalionis. A new Latin version of the *Phaenomena*, differing from that of Zamberti (**Venice 1505/Venice 1510**) and Herlin (**Basel 1537/Basel 1546/Basel 1558**), and adding scholia and alternative and additional propositions translated from manuscripts in the Vatican, and some readings from Maurolico (**Messina 1558**).

References: Riccardi 1591². Steck VIII.7. USTC 828485.

UK/Irish copies: BL. Cambridge: Corpus Christi, St John's, UL. Oxford: Balliol, Bodleian (3), Worcester. Royal College of Physicians. UCL.

Rome 1593

[*Vol. 1*]: ANTONII POSSEVINI SOCIETATIS IESV BIBLIOTHECA SELECTA Qua agitur DE RATIONE STVDIORVM In

Historia, In Disciplinis, In Salute omnium procuranda.

[Vol. 2]: ANTONII POSSEVINI SOCIETATIS IESV BIBLIOTHECAE SELECTAE Pars Secunda. QVA AGITVR DE RATIONE STVDIORVM In Facultatibus, quæ in pagina sequenti indicantur.

Imprint: [Vol. 1] Cum Diplomate CLEMENTIS VIII. PONT. MAX. ROMÆ Ex Typographia APOSTOLICA VATICANA. M. D. XCIII.

[Vol. 2] Superiorum Permissu, Vna cum CLEMENTIS VIII. PONT. MAX. Priuilegio ad decennium. ROMÆ, Ex Typographia APOSTOLICA VATICANA. M. D. XCIII.

Folio. *Introductio harmonica; Sectio canonis.* Antonio Possevino ed. Dedicated to Pope Clement VIII (vol. 1) and Sigismund III of Poland and Sweden (vol. 2). The ecclesiastical approbation is signed by Vestrius Barbianus on 3 June 1592, and the permission of Claudius Aquaviva (Possevino's superior in the Society of Jesus) on 16 April that year. The second dedication (only) is dated 1 July 1593.

The two works attributed to Euclid appear in vol. 2 (Book 15, Cap. 6): the *Introductio* at pp. 187ff. and the *Sectio* at pp. 197ff. Each has a separate title page, reading respectively 'EVCLIDIS MVSICA, Quæ olim mutila Græcè, et Latinè prodierat in lucem per Ioannem Penam Regium Mathematicum; Nunc ab Antonio Posseuino Societatis IESV multis in locis restituta è Vaticanæ Bibliothecæ ac Fuluij Vrsini manuscriptis Codicibus Græcis: Notæ item ad marginem additæ.' and 'EVCLIDIS, SECTIO REGVLÆ HARMONICÆ.'

Evidently **Paris 1557b** was consulted in conjunction with manuscripts in the Vatican for the texts. Compare **Rome 1591**, Auria's new edition of the *Phaenomena*.

References: Steck VIII.8[1]. USTC 851076.

UK/Irish copies: BL.

Rome 1594

كتاب تحرير اصول لاولقليدس من تاليف خوجه نصير الدين الطوسي

EVCLIDIS ELEMENTORVM GEOMETRICORVM Libri Tre-

decim. EX TRADITIONE DOCTISSIMI NASIRIDINI TVSINI
Nunc primum Arabicè impressi.

Imprint: ROMAE In Typographia Medicea. M.D.XCIV. Cum
licentia Superiorum.

Folio. *Elements* 1–13. The first printing of any version of the *Elements* in Arabic; the text is that of a redaction once (but no longer) generally attributed to al-Tusi. See Barbarics-Hermanik 2015 (pp. 403–4) and Jones 1994. The Arabic portion of the title page is transliterated Kitāb Taḥrīr Uṣūl li-Ūqlidis min taʿlīf khwajah Naṣīr al-Dīn al-Ṭūsī, and may be translated ‘The Book of the Principles (Elements) of Euclid from the edition of master Naṣīr al-Dīn al-Ṭūsī.

The final sheet contains a *firman* of Sultan Murad III authorizing the export of Arabic books to the Ottoman Empire, dated in 1588: see Murphy 1995. This seems to have given rise to some confusion about the date of imprint; as Riccardi reports (1588¹, 1594¹, 1598³), various older bibliographers give a date of 1588, and some of 1587 or 1598. Meanwhile, both Graesse and Zakhartchenko (see Riccardi 1657¹) report a London issue in 1657 of this Arabic text; we have seen no evidence for it.

Imperfect copies are not uncommon; we have seen two which lack pages 401–453.

A variant exists in which the first four leaves are re-set and the title page is laid out differently, without the Latin portion of the text (see TS 46a).

References: Riccardi 1594¹. TS 46 and 46a. Duarte p. 52. Steck III.104. USTC 828486. CERE 32.

UK/Irish copies: BL (3). Cambridge: Queen’s (2), St John’s (3), UL (3). Edinburgh: Royal Observatory. Manchester. Marsh’s Library, Dublin. NLW. Oxford: Bodleian (5), Christ Church (2), Corpus Christi, Lincoln, St John’s, Trinity. Royal College of Physicians. Royal Society. Saint Andrews (2). SOAS. Society of Antiquaries. UCL. Westminster School.

Paris 1598

EVCLIDIS ELEMENTORVM LIBRI XV. GRAEcè & Latinè,
Quibus, cū ad omnem Mathematicæ scientiæ partem, tūm ad

quamlibet Geometriæ tractationem, facilis comparatur aditus.

Imprint: PARISIIS, Apud Viduam Guilielmi CAVELLAT, sub Pellicano, monte D. Hilarij. 1598.

Octavo. *Elements* 1–15 (enunciations). Joannes Magnienus, Stephanus Gracilis ed. Reimpression of **Paris 1557/Paris 1558/Paris 1573**, including the preface dated 10 April 1557 and retaining the occasional use of ω for long o. Compared with **Paris 1573** it is re-set page-or page and nearly always line-for-line, using (again) the blocks from the diagrams of **Paris 1557**.

References: Riccardi 1598¹. TS 24. Steck III.108. USTC 146637. CERE 20.

UK/Irish copies: Aberdeen. Birmingham. BL. Cambridge: Trinity, UL. Exeter. National Trust properties. NLW. Oxford: All Souls, Bodleian, Wadham. Science Museum. UCL.

Paris 1598a

LES SIX PREMIERS LIVRES DES ELEMENS D'EVCLIDE:
TRADVICTS & commentez PAR I. ERRARD de Bar-le-duc, Inge-
nieur du Tres-chrestien ROY de France & de Nauarrre. Dediez à sa
MAIESTÉ.

Imprint: A PARIS, Chez GVILLAVME AVVRAY, au haut de la ruë
saint Jean de Beauuais au Bellerophon couronné M.D.XCVIII. Auec
Priiilege du Roy.

Octavo. *Elements* 1–6. Jean Errard ed. Dedicated (August 1598) to Henri IV of France. Books 2–6 bear separate dedications to, respectively, Henry de Rohan, Guy de Laval, Henry de Coligny, Odet de la Noüe and René Potier.

The text of the enunciations appears to be substantially the same as that of **Paris 1564/Paris 1566a**, but the definitions and proofs are new and use a distinctive lettering. Their source is not known; it is possible that **Rome 1594** was consulted.

References: Riccardi 1598². Steck III.109. USTC 30448. CERE 33.

UK/Irish copies: NLW.

Leiden 1599

EVCLIDIS Optica & Catoptrica è Græco versa PER IOANNEM

PENAM Regium Mathematicum. AD Illustrissimum Principem Carolum Lotharingum Cardinalem.

Imprint: LVGDVNI BATAVORVM Ex Typographeio Christophori Gijotij. M. D. IC.

Quarto. *Optica; Catoptrica* (enunciations). Jean de la Pène ed. A new printing of the enunciations from the Latin texts of **Paris 1557a**, that is the translations by la Pène, including the initial statement that the translation is dedicated to Carolus Lotharingus but excluding la Pène's preface on the use of optics. This appears to be the first printing of a Euclidean work in the Dutch Republic.

References: Riccardi 1599². USTC 424559.

UK/Irish copies: None identified.

Strasbourg 1599

ΕΥΚΛΕΙΔΟΥ ΣΟΙΧΕΙΟΝ ΠΡΩΤΟΝ. EVCLIDIS ELEMENTVM primum. PRO ACADEMIA ARgentinensi.

Imprint: ARGENTORATI TYPIS IOSiæ Rihelij, per Andream Rietschium. Anno 1599.

Octavo. *Elements* 1 (enunciations). No editor is named. The text appears to follow that of **Strasbourg 1564**, *i.e.* the edition of Dasypodius, or that one of the editions which reprinted its text of the enunciations of *Elements* 1: **Strasbourg 1566** or **Strasbourg 1570**. Where the enunciations-only reimpression **Strasbourg 1570a** makes changes, however, the present edition does not adopt them. No diagrams are printed.

References: None identified.

UK/Irish copies: NLW.

Cologne 1600

EVCLIDIS ELEMENTORVM LIBRI XV. QVIBVS, CVM AD OMNEM MATHEMATICAE SCIENTIAE PARTEM, TVM AD QVAMLlibet Geometriæ tractationem facilis comparatur aditus.

Imprint: COLONIAE Apud Gosuinum Cholinum M. D. C. Cum Gratia & Privilegio.

Octavo. *Elements* 1–15 (enunciations). Joannes Magnienus, Stephanus Gracilis ed. Reimpression (roughly page-for-page) of **Cologne 1580/Cologne 1587**, thus containing the Latin text from Gracilis’ edition **Paris 1557**. The preface from that edition is included, dated 10 April 1557 and the diagram blocks from **Cologne 1564** are re-used. In this printing, however, long o is not printed as ω .

References: Riccardi 1600². TS 25. Duarte p. 56. Steck III.110. USTC 654846. CERE 20.

UK/Irish copies: Edinburgh: Royal Observatory. NLW (2). UCL.

Cologne 1602

EVCLIDIS MEGARENSIS MATHEMATICI CLARISSIMI ELEMENTA, LIBRIS XV. AD GERMANAM GEOMETRIAE INTELLIGENTIAM, E DIVERSIS LAPSIBVS TEMPORIS INIVRIA CONTRACTIS RESTITUTA, ADIMPLETIS PRAETER MAIORVM SPEM, QUAE HACTENUS deerant, solidorum regularium conferentijs ac inscriptionibus. Accessit decimussextus liber, ac solidorum regularium sibi inuicem inscriptorum collationibus. Nouissimè collati sunt decimusseptimus & decimusoctauus, priori editioni quodammodo polliciti, de componendorum, inscribendorum, & conferendorum compositorum solidorum inuentis, ordine & numero absoluti. AVTHORE D. FRANCISCO FLVSSATE CANDALLA. AD CAROLVM IX. CHRISTIANISSIMVM GALLIARVM REGEM.

Imprint: COLONIAE VBIORVM, ANNO 1602.

Colophon: LVGDVNI, EX OFFICINA IOANNIS TORNÆSII, TYPOGRAPHI REGII. M. D. LXXVIII.

Folio. *Elements* 1–18. François de Foix de Candalle ed. Reissue of **Paris 1578** with cancel title page, thus retaining the dedication to Charles IX of France dated 14 August 1565 and Foix’s books 16–18. *Cf.* **Paris 1602**. In some copies ‘ac solidorum’ is changed by hand to ‘de solidorum’, the reading of the 1578 title page.

References: Riccardi 1602¹. USTC 6000135. CERE 27.

UK/Irish copies: None identified.

Paris 1602

EVCLIDIS MEGARENSIS MATHEMATICI CLARISSIMI ELEMENTA, LIBRIS XV. AD GERMANAM GEOMETRIAE INTELLIGENTIAM, E DIVERSIS LAPSIBVS TEMPORIS INIVRIA CONTRACTIS RESTITVTA, ADIMPLETIS PRAETER MAIORVM SPEM, QVAE HACTENUS deerant, solidorum regularium conferentijs ac inscriptionibus. Accessit decimussextus liber, ac solidorum regularium sibi inuicem inscriptorum collationibus. Nouissimè collati sunt decimusseptimus & decimusoctauus, priori editioni quodammodo polliciti, de componendorum, inscribendorum, & conferendorum compositorum solidorum inuentis, ordine & numero absoluti. AVTHORE D. FRANCISCO FLVSSATE CANDALLA. AD CAROLVM IX. CHRISTIANISSIMVM GALLIARVM REGEM.

Imprint: LVTETIAE PARISIORVM, ANNO 1602.

Colophon: LVGDVNI, EX OFFICINA IOANNIS TORNÆSII, TYPOGRAPHI REGII. M. D. LXXVIII.

Folio. *Elements* 1–18. François de Foix de Candalle ed. Reissue of **Paris 1578** with cancel title page, thus retaining the dedication to Charles IX of France dated 14 August 1565 and Foix's books 16–18. *Cf. Cologne 1602.* Mentioned by Steck at III.92.

References: Riccardi 1602¹. USTC 6000135. CERE 27.

UK/Irish copies: Edinburgh. Senate House.

Arnhem 1603

C. DIBVADII IN GEOMETRIAM EVCLIDIS prioribus sex Elementorum libris comprehensam Demonstratio Linealis. AD CHRISTIANVM IV. Serenissimum Daniae & Septentrionis Regem.

Imprint: ARNHEMII GELDRIÆ, Apud IOHANNEM IANSONIVM. M. D. C. III.

Quarto. *Elements* 1–6. Christoffer Dybvad ed. A new version of the Latin text, dedicated to Christian IV of Denmark. A companion to this volume provided numerical explanations of many propositions; its title page reads: C.

DIBVADII IN GEOMETRIAM EVCLIDIS prioribus sex Elementorum libris comprehensam Demonstratio Numeralis. AD CHRISTIANVM FRIIS Cancellarium Regium. LVGDVNI BATAVORVM, Ex Typographeo Christophori Guyotij. Impensis Ioannis Ioannidis Bibliopolæ Arnemensis. M. D. C. III.

References: Riccardi 1603². Steck IV.3. USTC 1016168, 1010221. CERE 34.

UK/Irish copies: Aberdeen. Cambridge: Christ's. Edinburgh. NLW. Oxford: Balliol, Bodleian, Christ Church. RS. Senate House. UCL (2). Westminster School.

Rome 1603

[*Vol. 1*]: EVCLIDIS ELEMENTORVM LIBRI XV. Accessit LIBER XVI. De Solidorum Regularium cuiuslibet intra quodlibet comparatione. OMNES PERSPICVIS DEMONSTRATIONIBVS, accuratisque scholijs illustrati: nunc quarto editi, ac multarum rerum accessione post primam editionem locupletati. Auctore CHRISTOPHORO CLAVIO BAMBERGENSI e Societate IESV.

[*Vol. 2*]: EVCLIDIS POSTERIORES LIBRI IX. Accessit LIBER XVI. De Solidorum Regularium cuiuslibet intra quodlibet comparatione. OMNES PERSPICVIS DEMONSTRATIONIBVS, accuratisque scholijs illustrati: nunc quarto editi, ac multarum rerum accessione post primam editionem locupletati. Auctore CHRISTOPHORO CLAVIO BAMBERGENSI e Societate IESV.

Imprint: [*Both volumes*] ROMAE, Apud Aloysium Zannettum. MDCIII. PERMISSV SVPERIORVM.

Colophon: [*Both volumes*] ROMAE, Apud Aloysium Zannettum. MDCIII. SVPERIORVM PERMISSV.

Two volumes, octavo. *Elements* 1–16. Christoph Clavius ed. Reimpression of **Rome 1574/Rome 1589/Cologne 1591**.

An otherwise unknown edition of the Clavius Euclid reported by Riccardi (1605²) at Rome in 1605, based on a single library catalogue, is perhaps a mistake for this edition. USTC gives the printer (of volume 2) as Luigi Zannetti.

References: Riccardi 1603¹. Duarte p. 56. Steck IV.1. USTC 4036646, 4029203. CERE 30.

UK/Irish copies: Maynooth. NLS. NLW. UCL. Wellcome Library.

Venice 1603

[Vol. 1]: ANTONII POSSEVINI Mantuani, Societatis Iesu BIBLIOTHECA SELECTA DE RATIONE STVDIORVM, Ad Disciplinas, & ad Salutem omnium gentium procurandam. RECOGNITA NOVISSIME AB EODEM, ET AVCTA, & in duos Tomos distributa. TRIPLEX ADDITVS INDEX. ALTER LIBRORVM, ALTER Capitum vniuscuiusq. Libri, vt vniuersa ipsorum materia statim incurrat in oculos. TERTIVS Verborum, & Rerum. Quid autem in quolibet Tomo contineatur, Vide post Epistolam Dedicatoriam AD CLEMENTEM VIII. PONT. MAX. Concessu Superiorum, Cum Priuilegijs.

[Vol. 2]: ANTONII POSSEVINI SOCIETATIS IESV BIBLIOTHECAE SELECTÆ DE RATIONE STVDIORVM In Facultatibus, quæ in pagina sequenti indicantur. TOMVS SECVNDVS.

Imprint: [both volumes] VENETHIS, M DC III. Apud Altobellum Salicatum.

Folio. *Introductio harmonica; Sectio canonis.* Antonio Possevino ed. New version of **Rome 1593**, still containing the two works attributed to Euclid in vol. 2 at Book 15, Cap. 6. The dedications to Clement VIII and Sigismond III are retained.

References: Steck VIII.8[2].

UK/Irish copies: BL.

Paris 1604

EVCLIDIS OPTICA ET CATOPTRICA E GRÆCO VERSA PER IOAN. Penam Mathematicum Regium. His præposita est eiusdem Ioannis Penæ de vsu Optices præfatio, AD ILLVSTRISSIMVM PRINCIPEM CAROLVM LOTHARINGVM CARDINALEM.

Imprint: PARISIIS, Ex officina Dionysii Duvallii, via Bellovaca. M.DC.III.

Quarto. *Optica; Catoptrica*. Jean de la Pène ed. Reimpression of the Latin text of **Paris 1557a**, including the preface on the use of optics addressed to Carolus Lotharingus. The main text is re-set page-for-page and often line-for-line, and may use the same diagram blocks.

Some library catalogues misread the imprint date as MDCIII.

References: Riccardi 1604¹. Steck VIII.9. USTC 6000478, 6014591.

UK/Irish copies: BL. Cambridge: Christ's, Trinity. Edinburgh: Royal Observatory. Exeter; Glasgow. Oxford: All Souls, Bodleian. Royal College of Physicians. UCL.

Arnhem 1605

C. DIBVADII IN ARITHMETICAM RATIONALIVM EVCLIDIS Septimo, Octavo & Nono Elementorum libris comprehensam Demonstratio. AD IACOBVM I. Magnæ Britanniae Franciae & Hyberniae Regem.

Imprint: ARNHEMII GELRDIÆ, Apud IOHANNEM IANSONIVM. ANNO M. D. C. V.

Quarto. *Elements* 7–9. Christoffer Dybvad ed. A companion to **Arnhem 1603**, dedicated to James I of England.

References: Riccardi 1605¹. Steck IV.3a. CERE 34.

UK/Irish copies: BL. Royal College of Physicians. UCL.

Arnhem 1605a

C. DIBVADII IN ARITHMETICAM IRRATIONALIVM EVCLIDIS Decimo Elementorum libro comprehensam Demonstratio Linealis & Numeralis. AD HENRICVM Walliae Principem; Regnorumque Britanniae Magnae, Franciae & Hyberniae heredem.

Imprint: ARNHEMII GELDRIÆ, Apud IOHANNEM IANSONIVM. ANNO M. D. C. V.

Quarto. *Elements* 10. Christoffer Dybvad ed. A further companion to

Arnhem 1603 and **Arnhem 1605**, dedicated to Henry Frederick, Prince of Wales.

References: CERE 34.

UK/Irish copies: BL. Cambridge: UL (2). Edinburgh (2). Glasgow. Oxford: Christ Church. Royal College of Physicians. UCL.

Paris 1605

LES NEVF PREMIERS LIVRES DES ELEMENS D'EVCLIDE:
TRADVITS & commentez PAR I. ERRARD de Bar-le-duc, Inge-
nieur du Tres-chrestien ROY de France & de Nauarre. Dediez à sa
MAIESTÉ. Reueus & corrigez par l'Autheur.

Imprint: A PARIS, Chez GVILLAVME AVVRAY, au haut de la ruë
saint Iean de Beauuais, au Bellerophon couronné. M. DCV. Auec
Priuilege du Roy.

Octavo. *Elements* 1–9. Jean Errard ed. New edition of **Paris 1598a**, retain-
ing the dedication to Henri IV dated August 1598 (but not the separate dedi-
cations of each book), and re-using the diagram blocks. Books 7–9 are added
for this impression; once again, their enunciations are very close to those of
Forcadel (**Paris 1565**) but the proofs are different.

References: Riccardi 1605³. CERE 33.

UK/Irish copies: Aberdeen. BL. Oxford: Jesus. Royal College of Physicians.
Senate House Library.

Leiden 1606

De ses eerste boucken EVCLIDIS, Van de beginselen ende fon-
damenten der Geometri. Mitsgaders een cort byvouchsel in vvelck,
ten eersten eenighe nutticheyden uyt de selve boucken verclaert
vvorden: Daer nae oock de specien in Geometrische figueren, alst
maken, veranderen, tsamen-voughen, af-trecken, vermenichfuldighen,
ende deelen. Over-gheset, verclaert, ende uytgheleyt DOOR IAN
PIETERSZOOM DOV, der stadt Leyden Lantmeter ende Wijn-
roeyer.

Imprint: TOT LEYDEN, By Ian Bouvvensz. vvoonende opte Hooghelantsche Kerckgracht. Anno 1606.

Quarto. *Elements* 1–6. Jan Pieterszen Dou ed. Dedicated (19 May 1606) to Jan van Hout. The first publication of the *Elements* in Dutch. The address to the reader mentions the editions of Holtzman (**Basel 1562**, in German) and Errard (**Paris 1598a**, in French) as sources. The book is concluded by a ‘Cort byvouchsel totte ses eerste boucken Euclidis’.

Steck (IV.4) places this issue in Rotterdam, most likely in error.

References: Riccardi 1606¹. USTC 1011368. CERE 35.

UK/Irish copies: None identified.

Beijing 1607

幾何原本

Elements 1–6. Translated from **Rome 1574** by Xu Guangqi 徐光 and Matteo Ricci, and printed at the Jesuit residence in Beijing. The translation was begun in the second half of 1606 and published in the fifth month of 1607; its genesis is described in detail by Engelfriet. The title is transliterated ‘Jihe yuanben’ and translated ‘Treatise on Geometry’ in the secondary literature.

Steck dates the edition 1603–1607, Riccardi 1608 (following Zakhartchenko). Both also report an edition of 1595 (Steck III.106; Riccardi 1595¹), apparently a reference to a non-extant, and probably never-published, translation of book 1 by Qu Taisu (see Engelfriet, p. 132).

References: Riccardi 1608¹. Steck IV.2.

UK/Irish copies: None identified.

Cologne 1607

EVCLIDIS ELEMENTORVM LIBRI XV. ACCESSIT LIBER XVI. DE QVINQVE SOLIDORVM REGVLARIVM inter se comparatione. AD EXEMPLARIA R.P. CHRISTOphori Clauij è Societ. IESV, & aliorum collati, emendati & aucti.

Imprint: COLONIAE Apud Gosuinum Cholinum M. D. CVII. Cum Gratia & Priuilegio.

Octavo. *Elements* 1–16 (enunciations). Despite the mention of Clavius on the title page and in the introduction (dated 8 June 1607), this is a reimpression of **Cologne 1580/Cologne 1587/Cologne 1600**, thus containing the Latin text from Gracilis’ edition **Paris 1557** and once again re-using the diagram blocks from **Cologne 1564**. The reimpression is not quite page-for-page, and the preface from that edition is not included; instead there is an introductory ‘Matheseos et geometriae divisio’. Following the scholium to book 15, proposition 5 with which the Gracilis text ends, there are given propositions 6–21 of book 15, and the 31 propositions of Foix’s book 16, six lemmas and one proposition from Pappus, and a scholium from Clavius.

References: Riccardi 1607¹. Duarte p. 58. Steck IV.5. USTC 2183553.

UK/Irish copies: Marsh’s Library, Dublin. Middle Temple. National Trust properties. NLW. Stirling.

Cologne 1607a

[*Vol. 1*]: ANTONII POSSEVINI MANTVANI SOCIETATIS IESV BIBLIOTHECA SELECTA DE RATIONE STVDIORVM, Ad Disciplinas, & ad Salutem omnium gentium procurandam. RECOGNITA NOVISSIME AB EODEM, ET AVCTA, & in duos Tomos distributa. TRIPLEX ADDITVS INDEX. ALTER Librorum, ALTER Capitum, TERTIVS Verborum, et Rerum. Quid autem in quolibet Tomo contineatur, Vide post Epist. Dedicatoriam. PERMISSV AVCTORIS NVNC PRIMVM IN GERMANIA EDITA

[*Vol. 2*]: ANTONII POSSEVINI SOCIETATIS IESV BIBLIOTHECAE SELECTÆ, DE RATIONE STVDIORVM JN Facultatibus, quæ in pagina sequenti indicantur, TOMVS SECVNDVS.

Imprint: [*Vol. 1*] COLONIE AGRIPPINÆ Apud Ioannem Gymnicum sub Monocerote. M.D.CVII. Cum gratia et priuileg. S. Cæs. Maies

[*Vol. 2*] COLONIAE AGRIPPINAE, Apud Ioannem Gymnicum sub Monocerote. ANNO M. DC. VII. Cum gratia & Priuileg. S. Cæs. Maiest.

Folio. *Introductio harmonica; Sectio canonis.* Antonio Possevino ed. New

version of **Rome 1593/Venice 1603**. The dedications to Clement VIII and to Sigismond III are retained; the approbation of Possevin's superior Claudius Aquaviva, dated 16 April 1592, is also retained, but a further ecclesiastical approbation and imprimatur are new (and not dated). The two works attributed to Euclid now appear in vol. 2 at pp. 224ff., as chapter 7 of book 15: 'EVCLIDIS MVSICA. Quæ olim mutila Græcè, & Latinè prodierat in lucem per Ioannem Pennam Regium Mathematicum; Nunc ab Antonio Posseuino Societatis IESV multis in locis restituta è Vaticana Bibliotheca, ac Fuluij Vrsini manuscriptis Codicibus Græcis: Notæ item ad marginem additæ.' and 'EVCLIDIS SECTIO REGVLÆ HARMONICÆ.'

References: Riccardi 1607⁴. Steck VIII.8[3].

UK/Irish copies: BL.

Frankfurt 1607

[*Vol. 1*]: EVCLIDIS ELEMENTORVM LIBRI XV. Accessit liber XVI. De Solidorum Regularium cuiuslibet intra quodlibet comparatione. OMNES PERSPICVIS DEMONSTRATIONIBUS, accuratissime scholiis illustrati: nunc quartò editi, ac multarum rerum accessione post primam editionem locupletati. Auctore CHRISTOPHORO CLAVIO Bambergensi è Societate IESV.

[*Vol. 2*]: EVCLIDIS POSTERIORES LIBRI IX. Accessit liber XVI. De Solidorum Regularium cuiuslibet intra quodlibet comparatione. OMNES PERSPICVIS DEMONSTRATIONIBUS, accuratissime scholiis illustrati: nunc quarto editi, ac multarum rerum accessione post primam editionem locupletati. Auctore CHRISTOPHORO CLAVIO Bambergensi è Societate IESV.

Imprint: [*Vol. 1*] FRANCOFVRTI, Ex Officina Typographica Nicolai Hoffmanni, Sumptibus Jonæ Rhodii. M. DC. VII.

[*Vol. 2*] FRANCOFVRTI Ex officina typographica Nicolai Hoffmanni, sumptibus IONÆ RHODII. M. DC VII.

Two volumes, octavo. *Elements* 1–16. Christoph Clavius ed. Dedicated (10 April 1607) to Johannes Hartmann Beyer. Reimpression of **Rome 1574/Rome 1589/Cologne 1591/Rome 1603**.

References: Riccardi 1607². Duarte p. 56/58. Steck IV.6. USTC 2027435, 2027482, 2014403, 2066579. CERE 30.

UK/Irish copies: Aberdeen (2). BL. Cambridge: Caius, Trinity (2), UL (3). Edinburgh. Leeds. Manchester. Middle Temple. NLW. Oxford: Christ Church, Hertford, Merton, Queen's (3). Science Museum. Stirling. UCL (3). Wellcome Library. York.

Leiden 1607

De ses eerste Boucken EVCLIDIS, Van de beginselen ende foudamenten der Geometri. VVaer by gevoecht sijn eenige nuttigheden, uyt de selve Boecken ghetrocken; Mitsgaders de Specien in Geometrische figuren, als 'tmaecken, veranderen, 't samenvougen, aftrecken, vermenichvuldigen, ende deelen. Overgheset, verclaert, ende uytgheleyt, tot vorderinge, ende oeffeninge, van alle leergierige, liefhebbers der selver vryer Conste, DOOR IAN PIETERSZOOM DOV, der stadt Leyden Lantmeter ende Wijnroeyer.

Imprint: TOT LEYDEN, Voor Ian Iansz. Orlers, Boeckvercooper in den Duytschen Bybel, 1607.

Quarto. *Elements* 1–6. Jan Pieterszen Dou ed. Reissue of **Leiden 1606** with cancel title page

References: USTC 1011370.

UK/Irish copies: None identified.

Leipzig 1607

EVCLIDIS OPTICA & CATOPTRICA, Cum Programmate CHRISTOPHORI MEURERI D. Mathematicum Professoris.

Imprint: LIPSIAE, Excudebat Abraham Lamberg, An. 1607.

Octavo. *Optica*; *Catoptrica* (enunciations). Christoph Meurerus ed. Dedicated to Leonhart Oelhafius (Jr.), 'Pro felici novi anni auspicio'; the preface is dated 1 November 1606.

No diagrams are included. The texts are extracted from la Pène, with very slight changes. It is not clear which impression (**Paris 1557a**, **Strasbourg**

1570a/Strasbourg 1571a, Leiden 1599, Paris 1604) was used as a source.

References: Riccardi 1607³.

UK/Irish copies: None identified.

Rome 1609

EVCLIDIS PHAENOMENA Post Zamberti, & Maurolyci editionem, nunc tandem de VATICANA BIBLIOTHECA deprompta: Scholijs antiquis, & figuris optimis illustrata: & de Græca lingua in Latinam conuersa. A IOSEPHO AVRIA NEAPOLITANO His addita sunt Maurolyci breues aliquot annotationes. AD SERENISSIMUM FRANCISCVM MARIAM VRBINI DVCEM VI. &c.

Imprint: ROMAÆ, Sumptibus Ioannis Martinelli. Apud Iacobum Mascardum. M. DC. IX. SVPERIORVM PERMISSV.

Quarto. *Phaenomena*. Guiseppe Auria ed. Reissue of **Rome 1591**. The three initial sheets of that edition are replaced by two in this issue, containing a new title page and dedication (by Martinelli, to Francisco Maria VI, dated 1 January 1609) and, re-set from the first edition, a selection of ancient texts bearing on the life of Euclid. The original preface and epistle to the reader are omitted.

References: USTC 4033584.

UK/Irish copies: None identified.

Wittenberg 1609

EVCLIDIS ELEMENTORUM LIBRI XIII. Succinctis & perspicuis demonstrationibus comprehensi à M. AMBROSIO RHODIO Kembergense, Mathematicum Professore extraordinario in Academia Leucorea.

Imprint: Typis Gormanianis, Impensis Pauli Helvvigij. M. DC. IX.

Octavo. *Elements* 1–13. Ambrosius Rhodius ed. Dedicated (23 July 1609) to Elector Christian II of Saxony; the dedication is dated from Wittenberg. The demonstrations were composed by Rhodius; the Greek or Latin sources of the text are not specified, but the text seems to depend on that of Clavius.

References: Riccardi 1609¹. Steck IV.7. USTC 2093245, 2119139.

UK/Irish copies: BL. Leeds. Marsh's Library, Dublin. Middle Temple. Oxford: Christ Church, Jesus. Wellcome Library.

Geneva 1610

IACOBI PELETARII CENOM. IN EVCLIDIS ELEMENTA GEOMETRICA Demonstrationum Libri sex. Ad Carolum Lotharingum, Principem, Cardinalémque amplissimum. Secunda editio, auctior & emendatio: cui & textus Euclidis Græcus additus est. Quid autem præcipuè ad Euclidem contulerit Peletarius, id ad finem libri habes.

Imprint: APVD IOANN. TORNÆSIVM. M. DC. X.

Quarto. *Elements* 1–6. Jacques Peletier ed. Uses the Latin text from **Lyon 1557**, with added Greek texts of the enunciations, definitions and common notions. The dedication to Carlous Lotharingus is retained, as are the other addresses; the address to the editor's brother dated from Lyon on 9 April is now placed immediately after the dedication. The life of Euclid of Megara from the *Suida* is appended, with two Greek epigrams to Euclid.

In some copies 'Geneuæ' is stamped onto the title page above the imprint; some of the copies of this impression that lack this feature are catalogued with Lyon (where De Tournes had previously worked), Lugduni or Leiden as the presumed place of printing.

References: CERE 21.

UK/Irish copies: BL. Cambridge: UL. Marsh's Library, Dublin. NLW. Oxford: Bodleian. Royal College of Physicians. Royal Society. UCL.

Ansbach 1610

Die Ersten Sechs Bücher Elementorum EVCLIDIS, In welchen die Anfang vnd Gründe der Geometria ordenlich gelehret, vnd gründtlich erwiesen werden, Mit sonderm Fleiss vnd Mühe auss Griechischer in vnserer Hohe deutsche Sprach übersetzt, vnd mit verständtlichen Exempeln in Linien vnd gemeinen Rational Zahlen, Auch mit Newen

Figuren, auff das leichtest vnd aigentlichest erkläret: Alles zu sondern Nutzden jenigen, so sich der Geometria, im Rechnen, Kriegsswesen, Feldtmässen, Bauen, vnd andern Künsten vnnd Handtwerckern zugebrauchen haben: Auss Befehl Dess Edlen vnd Gestrengen Herrn, Hanss Philip Fuchss von Bimbach, zu Möhrn, Alten Rechenberg vnd Schwaningen, Obristen: Durch SIMONEM MARIUM Guntzenhusanum Franc. Fürstlichen Brandenb: bestalten Mathematicum, vnd Medicinæ Utriusq; Studiosum.

Imprint: CUM PRIVILEGIO, Onoltzbach, Gedruckt durch Paulum Böhem, Im Jahr Christi, M. D C X.

Colophon: Gedruckt zu Onoltzbach, durch Paulum Böhem, ANNO M. D C X.

Folio. *Elements* 1–6. Simon Marius ed. Apparently a new translation into German. Dedicated to Christian and Joachim Ernst of Brandenburg; the dedication by Marius is dated 6 January 1610. A second address to the same dedicatees by Hans Philip Fuchs von Bimbach is dated on New Year’s Day that year.

References: Riccardi 1610^{1*}. Steck IV.8. USTC 2080687.

UK/Irish copies: BL. NLW. UCL.

Paris 1610

LES ELEMENS DE LA GEOMETRIE D’EVCLIDES MEGARIEN. Traduicts & restitués à leur ancienne breueté, selon l’ordre de Theon. Ausquels ont esté adioutez les quatorze & quinziesme d’Ipsicles Alexandrien. Le tout par DOVNOT DE BAR-LE-DVC, Docteur és Droicts, & Professeur en la diuine Mathematique aux Academies du Roy.

Imprint: A PARIS, Chez IACQVES LE ROY, à l’Esperance deuant le College de Cambray. M DC. X.

Quarto. *Elements* 1–15. Didier Dounot ed. For books 10–15 this is the first published translation into French. For books 1–9 the translation appears to be new, although the definitions are similar to those of **Paris 1598a/Paris 1605**, the edition of Jean Errard de Bar-le-Duc.

A 1609 impression is listed in USTC (6026094) on the basis of a single copy at the Bibliothèque nationale de France, but the online catalogue of that library seem to does not confirm its existence.

References: Riccardi 1610⁴. Duarte p. 58. USTC 6017315.

UK/Irish copies: Edinburgh: Royal Observatory. NLW. Royal Society.

Beijing 1611

幾何原本

Elements 1–6. Xu Guangqi, Matteo Ricci ed. Slightly revised reimpression of **Beijing 1607**. It is listed here on the basis of Engelfriet’s account (pp. 133–4).

References: None identified.

UK/Irish copies: None identified.

Geneva 1611

LES SIX PREMIERS LIVRES DES ELEMENTS GEOMETRIQUES D’EVCLIDE, AVEC LES DEMONSTRATIONS de Jaques Peletier, du Mans. Traduits en françois, et dédiés à la Noblesse françoise.

Imprint: De l’Imprimerie DE IEAN DE TOVRNES. M. DC. XI.

Quarto. *Elements* 1–6. Jacques Peletier, Jean de Tournes ed. A French translation of **Lyon 1557/Geneva 1610**; the diagram blocks appear to be those of **Geneva 1610**.

An address ‘à la noblesse françoise’ is dated 28 May 1611 ‘De mon Imprimerie’, implying that both it and ‘ceste mienne traduction’ are by de Tournes.

As with **Geneva 1610**, some copies have ‘A GENEVE’ stamped onto the title page above the imprint; copies lacking this features are occasionally catalogued with Lyon (de Tournes’ previous location) as the place of printing.

References: CERE 21.

UK/Irish copies: Oxford: St John’s.

Mainz 1611/1612

[*General title page*]: CHRISTOPHORI CLAVII BAMBERGENSIS E Societate IESV OPERA MATHEMATICA V. Tomis distributa. Ab auctore nunc denuo correcta, et plurimis locis aucta. Ad Reverendiss. et Illustriss. Principem ac Dominum, D. JOANNEM GODEFRIDVM EPISCOPum Bambergensem &c.

[*Additional title page for vol. 1*]: CHRISTOPHORI CLAVII BAMBERGENSIS E SOCIETATE IESV, OPERVM MATHEMATICORVM TOMVS PRIMVS. Complectens Commentaria In Euclidis Elementa Geometrica, In Sphærica Theodosij, Sinuum, Tangentium & Secantium rationem & Canones: Tractationem triangulorum, tum rectilineorum, tum sphæricorum.

Imprint: [*General title page*] MOGVNTIAE Sumptibus Antonij Hierat Excudebat Reinhardus Eltz Cum gratia et privilegio Sac. Cæs. Maiest. Anno M. DCXII.

[*Additional title page for vol. 1*] MOGVNTIÆ, Sumptibus ANTONII HIERAT, excudebat REINHARDVS ELTZ. Cum Gratia & priuilegio Sacræ Cæsareæ Maiestatis. ANNO M. DC. XI.

Folio. *Elements* 1–16. Christoph Clavius ed. Dedicated to Joannes Godefridus, bishop of Bamberg, the dedication dated at Rome on 1 May 1611. Reprints Clavius’s edition of *Elements* 1–16, *i.e.* **Rome 1574/Rome 1589/Cologne 1591/Rome 1603/Frankfurt 1607**, in its entirety, including both the prolegomena ‘in disciplinas mathematicas’ and the preface ‘in Euclidis Elementa’. The diagram blocks appear to be those of **Cologne 1591**.

Riccardi’s report (1612²), from Zakhartchenko, of a 1612 issue at Frankfurt of the Clavius Euclid could be a mistake for this one; Steck’s report (III.96a) of a 1583 impression of Clavius’ *Opera* is hard to explain.

References: Riccardi 1612³. Steck IV.13. CERE 30.GMIP Mainz 1612.

UK/Irish copies: Chetham’s School. Oxford: Christ Church, Corpus Christi, Magdalen, St John’s. UCL. Worth Library, Dublin.

Cologne 1612

EVCLIDIS ELEMENTORVM LIBRI XV. QVIBVS, CVM AD OMNEM MATHEMATICAE SCIENTIAE PARTEM, TVM AD

QVAMLlibet Geometriæ tractationem facilis comparatur aditus.

Imprint: COLONIAE Apud Gosuinum Cholinum M. D. CXII. Cum Gratia & Priuilegio.

Octavo. *Elements* 1–15. Stephanus Gracilis ed. Page-for-page reimpression of **Cologne 1580/Cologne 1587/Cologne 1600**, thus containing the Latin text from **Paris 1557**, and including the preface dated 10 April 1557 from that edition. The diagram blocks from **Cologne 1564** are re-used.

The matter added in the reimpression **Cologne 1607** (a supplement to book 15, book 16, and the ‘Matheseos et geometriae divisio’) is not included.

References: Riccardi 1612¹. Steck IV.11. USTC 2055082.

UK/Irish copies: Aberdeen. Edinburgh: Royal Observatory. NLW. Oxford: Bodleian. St Andrews.

Paris 1612

EVCLIDIS ELEMENTVM DECIMVM, IN QVO SINGVLARVM DEMONSTRATIONum lineæ, & superficies, tam Commensurabiles, & Incommensurabiles, Quam Rationales, & Irrationales, accuratè numeris exprimuntur. AVTHORE FLORIMONDO PVTEANO, VATANI DOMINO.

Imprint: PARISIIS, Apud IOANNEM DE HEVQVEVILLE, via Iacobæa, sub Signo Pacis. M. DCXII. CVM PRIVILEGIO REGIS.

Folio. *Elements* 10. Florimond du Puy ed. Provides new demonstrations, using numerical examples and algebraic notation, together with quotations from the edition of Clavius. The *privilegium* is dated 28 April 1612.

References: Riccardi 1612⁴, 1612⁵. Duarte p. 58. Steck IV.10. USTC 6000926.

UK/Irish copies: Edinburgh. Oxford: Balliol, Bodleian, Queen’s. Royal College of Physicians. Royal Society. UCL.

Paris 1613

LES ELEMENS DE LA GEOMETRIE D’EVCLIDES MEGARIEN. TRADVITS ET RESTITVEZ A LEVR ancienne

breueté, selon l'ordre de Theon. Auquels ont esté adioustez les quatorze & quinziesme d'Ipsicles Alexandrien. SECONDE EDITION. Reueuë & augmentée par l'Autheur.

Imprint: A PARIS, Chez IACQVES LE ROY, à l'Esperance, deuant le College de Cambray. M. DC. XIII.

Quarto. *Elements* 1–15. Didier Dounot ed. New version of **Paris 1610**, re-using the diagram blocks from that edition. To the original text are added some new prefatory matter, and new commentary on the definitions and axioms and certain theorems, based in part on the commentary of Proclus and nearly doubling the page count.

Steck states incorrectly that this is a reimpression of **Paris 1598a** (*i.e.* Steck III.109).

References: Riccardi 1613². Steck IV.14. USTC 6010567.

UK/Irish copies: Aberdeen. NLW.

Paris 1615

LES QUINZE LIVRES DES ELEMENTS D'EVCLIDE. Traduits de Latin en François: Auec vn Sommaire & Abbregé de l'Algebre, qui sert à faciliter l'intelligence du dixiesme Liure. Par D. HENRION Mathemat.

Imprint: A PARIS, Chez Iean Anthoine Ioallin, ruë S. Iean de Latran, deuant la bonne Foy. M. DC. XV. Auec Priuilege du Roy.

Colophon: Ces Elements d'Euclide ont esté acheuez d'imprimer le 15. Octobre de ladicte annee 1614.

Octavo. *Elements* 1–15. Denis Henrion ed. A new translation into French: *cf.* that of Dounot (**Paris 1610/Paris 1613**), which Henrion disparages in a preface. There are in fact frequent overlaps between the wording of the two editions; in the epistle to **Paris 1622**, Pierre le Mardelé would allege that this edition was a mere 'transcription ou coppie' of that of Dounot. The *privilege* is dated 26 September 1614.

In addition to the text there is a prolegomena in the style of Commandino and Clavius, ultimately dependent in part on Proclus, as well as Henrion's commentary on certain definitions and propositions. For book 10 these

include algebraic translations of the propositions (cf. **Paris 1612**); that book is prefaced by a 67-page ‘Sommaire de l’algebre’.

Riccardi reports (1615²) a second edition at Paris in the same year, with extra material by Pietro Antonio Cataldi: we have not seen direct evidence for this.

References: Riccardi 1615¹. Steck IV.16. USTC 6017453.

UK/Irish copies: BL. NLW. Oxford: Queen’s.

Amsterdam 1616

De ses eerste Boucken EVCLIDIS, Van de beginselen ende fondamenten der Geometrie. Waer by ghevoecht zijn eenighe nutticheden, uyt de selve Boecken ghetrocken; Mitsgaders de Specien in Geometrische figueren, als ’tmaken, veranderen, ’tsamen-voughen, af-trecken, vermenichvuldighen, ende deelen. Overgeset, verclaert, ende uytgeleyt, tot vorderinghe, ende oeffeninghe, van alle leergierighe, lief hebbers der selver vryer Conste. Door IAN PIETERSZOOM DOV, der stadt Leyden Landtmeter ende Wijnroeyer. Van nieuw oversien, ende verbeterd: Mitsgaders de bygevouchde nutticheden mette spetien in Geometrische figueren breeder verclaert ende vermeerderd deur den selven Auteur.

Imprint: TOT AMSTERDAM, By Willem Iansz. op’t Water, in de vergulde Sonnewijser. Anno 1616.

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reimpression of **Leiden 1606/Leiden 1607**, retaining the dedication to Jan van Hout dated 19 May 1606 and the concluding ‘byvoechsel’, and reusing the same diagram blocks.

References: Duarte p. 58/60. USTC 1012670.

UK/Irish copies: None identified.

Ingolstadt 1617

EVCLIDIS ELEMENTORVM GEOMETRICORVM LIBRI SEX PRIORES. Noua interpretatione in vsum studiosæ iuuentutis in lucem dati. A IOANNE LANZ SOCIETATIS IESV.

Imprint: ANNO M.DC.XVII. Cum facultate Superiorum. INGOLSTADII, Ex Typographeo Ederiano apud Elisabetham Angermariam, viduam.

Octavo. *Elements* 1–6. Ioan Lanz ed. A new Latin translation, presumably based on the Greek of **Basel 1533**. The epistle is dated 29 December 1616.

Elisabeth was the widow of the printer Wolfgang Eder; following her remarriage to Andreas Angermaier the print shop continued to be known as Eder's.

References: Riccardi 1617². Steck IV.17. USTC 2133554.

UK/Irish copies: Leeds.

Leiden 1617

DE PROPOSITIEN vande xv. Boucken der Elementen Euclidis, Overgeset en tsamenghestelt, met corte verclaringen sommiger propositionen, DOOR F.V. SCHOOTEN, Professor Matheseos tot Leyden.

Imprint: TOT LEYDEN, BY GOVERT BASSON, 1617.

Duodecimo. *Elements* 1–15 (enunciations). Frans van Schooten ed. Dedicated to Nicolao Seystio. Apparently independent of Dou's Dutch version of the *Elements* (**Leiden 1606/Leiden 1607/Amsterdam 1616**), and for books 7–15 the first Dutch printing.

References: Riccardi 1617³. USTC 1028043.

UK/Irish copies: None identified.

Utrecht n. d.

DE Vijfthien Boecken EVCLIDES. Uyt den Latijnsche spraecke overgeset in nederduyts, verciert met schoone verclaringen ende leringen van de outste naturalisten ende conflag Schrijvers. MITS-GADERS. Het Fondament der Surdische, ende Binomische getallen, alles eenvoudelijck tot dienst vanden leersamen int licht ghegheven. Door C.V.N. Liefhebber der Mathematica.

Imprint: TOT UYTRECHT. Door den Autheur, woonende in't

Schoonhuys.

Octavo. *Elements* 1–15 (enunciations). Cornelis van Nienrode ed. A new Dutch translation of the *Elements*, with appendices on astronomical terms, on the arithmetic of surds and the measurement of quadrilaterals. The introduction is signed by Nienrode; ‘conflige’ on the title page is so printed, evidently by mistake for ‘constige’.

The book gives no direct indication of its date of printing; it is sometimes catalogued *c.* 1615, sometimes *c.* 1630, but the evidence on which these conjectures are based is not clear. The introduction mentions the six-book version of Dou (1606) and the fifteen-book version of van Schooten (1617) as well as the earlier Latin versions of Ramus, Proclus, Commandino, Peletarius and Clavius: thus it can be placed no earlier than 1617. It is perhaps unlikely to have been printed after the 1662 reimpression of the van Schooten edition. The only other published work of (this) Cornelis van Nienrode appears to be a work on the circle, *Volkomen proportie des cirkels diameter teghen synen ronden om-loop* printed at Utrecht in 1628.

References: USTC 1012100.

UK/Irish copies: None identified.

Amsterdam 1618

Die sechs ersten Bücher EVCLIDIS, Desz höchgelärten weiterübten, Griechischen Philosophi und Mathematici: Von den anfängen vnd fundamenten der Geometriæ. Dabey dann mancherley auss disen Büchern gezogene nutzbarkeiten angefüget seind: sampt den Speciebus inn Geometrischen figur, als machen, verändern, zusammenfügen, abziehen, vielfältigen vnnnd theilen: Per Demonstrationes Lineales. Auss H. Ioann Petersz Dou. Niederlandischen andern Edition verteutschet, Durch Sebastianum Curtium, Arithmeticum & G. Verordneten Inspector vnd Visitator der Teütschen Schuln in Nurnberg.

Imprint: Gedruckt zu Amsterdam bey Wilhelm Janss. 1618.

Quarto. *Elements* 1–6. Jan Pieterszen Dou, Sebastian Curtius ed. Dedicated to the Burgermeisters of Rotenberg; the dedication is dated

from Nürnberg on 20 February 1617. Translation of **Leiden 1606/Leiden 1607/Amsterdam 1616**, retaining the epistle to the reader and the concluding ‘byvoechsel’, here translated as an ‘Anhang und Erweiterung’. The diagram blocks from those impressions are re-used.

Riccardi (1615²) reports a 1615 issue at Amsterdam, which we cannot confirm; Riccardi’s report of another German edition at Amsterdam in 1618 (1618¹) seems to be a simple duplicate record.

References: Riccardi 1618². Duarte p. 60. Steck IV.18. USTC 1012744.

UK/Irish copies: NLW. UCL.

Pesaro 1619

EVCLIDIS ELEMENTORVM LIBRI XV. VNA CVM SCHOLIIS ANTIQVIS A FEDERICO COMMANDINO Vrbinatē in latinum conuersi. Ac nuper a multis mendis quibus antea scatebat vendicati. ILLVSTRISSIMO, ET REVERENDISSIMO D. D. CAROLO MEDICEO S.R.E. CARD. AC PRINCIPI AMPLISSIMO DICATI.

Imprint: PISAVRI, Typis Flaminij Concordiæ, MDCXIX. DE CONSENSV SVPERIORVM. Expensis Guilielmi Ingenieri Forosempronienensis.

Folio. *Elements* 1–15. Federico Commandino ed. Dedicated to Carolus Medici; the dedication is signed by Guilielmo Ingenieri, from Forisempronius (Fossombrone) on 8 July 1619. A page-for-page reimpression of **Pesaro 1572**. Many of the diagrams appear to have been printed from the same blocks as that edition (and thus as **Urbino 1575**), but some show slight differences.

References: Riccardi 1619². Steck IV.19. USTC 4026539.

UK/Irish copies: BL. Cambridge: Trinity, UL (3). Chetham’s School. Glasgow (2). NLS. NLW. Oxford: Bodleian (2), Christ Church (2), Magdalen. Royal Society. UCL. Winchester College.

Pesaro 1619a

DE GLI ELEMENTI D’EVCLIDE LIBRI QVINDICI. CON GLI SCHOLII ANTICHI. Volgarizzati già d’ordine del famosissimo

Matematico FEDERIGO COMMANDINO DA VRBINO; e con
Commentarij illustrati. Et hora con diligenza reuisti, e ristampati.
DEDICATI AL SERENISSIMO DON FEDERIGO FELTRIO
DELLA ROVERE PRENCIPE D'VRBINO.

Imprint: IN PESARO, Appresso Flaminio Concordia, MDCXIX.
CON LICENZA DE' SVPERIORI. Ad istanza di Gio. Antonio
Ingegneri da Fossombrone.

Colophon: In PESARO, M. DC. XIX. Nella Stamperia di Flaminio
Concordia. CON LICENZA DE' SVPERIORI.

Folio. *Elements* 1–15. Federigo Commandino, Valerio Spacciuoli ed.
Dedicated to Federigo Feltrio Della Rovere of Urbino; the dedication is
signed by Giovanni Antonio Ingenieri, from Fossombrone, on 8 July 1619.
Although this volume accompanies **Urbino 1619** it appears to be substantially
a page-for-page reimpression of **Urbino 1575**, the translation of **Pesaro 1572**
by Valerio Spacciuoli, not a fresh translation. The diagram blocks are (mostly)
re-used from those three predecessors.

References: Riccardi 1619¹. Duarte p. 60. Steck IV.20. USTC 4024834.

UK/Irish copies: Cambridge: UL (2). Glasgow. Leeds. Liverpool. NLW.
Oxford: Bodleian. Royal Society. Senate House Library. UCL (2).

Douai 1620

EVCLIDIS ELEMENTORVM LIBRI SEX PRIORES. Quorum
demonstrationes tum alibi sparsim, tum maximè libro quinto ad facil-
iorem captum accommodauit CAROLVS MALAPERTIVS Montensis
è Societate IESV.

Imprint: DVACI, Typis BALTAZARIS BELLERI sub Circino Aureo
ANNO 1620.

Octavo. *Elements* 1–6. Carolus Malapertius Montensis ed. Apparently a
new translation or version; no sources are named. The permission to print is
signed by Florentius de Montmorenci and dated 9 November 1619. The ec-
clesiastical approbation is signed by Georgius Colvenerius of Douai, and dated
20 December 1619.

References: Riccardi 1620³. Steck IV.22. USTC 1117810.

UK/Irish copies: BL.

London 1620

ΕΥΚΛΕΙΔΟΥ ΣΤΟΙΧΕΙΩΝ ΒΙΒΛΙΑ ἑγ. ELEMENTORVM
EVCLIDIS LIBRI TREDECIM. SECVNDVM VETERA exemplaria
restituti. EX VERSIONE LATINA FEDERICI COMMANDINI
aliquam multis in locis castigata.

Imprint: LONDINI, Excudebat Gulielmus Iones. M.DC.XX.

Folio. *Elements* 1–6. Henry Briggs ed. The first substantially new edition of the Greek *Elements* since **Basel 1533**. Despite the assertion on the title page, only books 1–6 are included. The Latin translation is based on that of Commandino (**Pesaro 1572**), with modifications. There is no preface or dedication or other introductory matter.

This edition is not noticed by Steck.

References: Riccardi 1620². Duarte p. 62. USTC 3009476. ESTC S121362.

UK/Irish copies: Aberdeen. BL. Cambridge: Caius, St John's (2), Trinity, UL. Cardiff. Charterhouse School. Durham. Eton College. Glasgow. Leeds. Lincoln Cathedral. NLS. NLW. National Trust properties (2). Oxford: All Souls, Bodleian (4), Christ Church, Corpus Christi, Merton, New College, St Edmund Hall, St John's (2), Worcester. Senate House Library. St Andrews. UCL (2). Westminster School. Winchester College (2). Windsor Castle. Worth Library, Dublin.

Paris 1621

LES QVINZE LIVRES DES ELEMENS D'EVCLIDE. Traduits de Latin en François: Par D. HENRION Mathematicien, SECONDE EDITION, Reveuë, corrigée & augmentée.

Imprint: A PARIS, Chez IEAN ANTHOINE IOALLIN, dans la cour du Palais, entre les deux grandes portes, proche la barriere du Tresor. M. DC. XXI. Auec Priuilege du Roy.

Colophon: Ceste seconde Edition a esté acheuée d'imprimer, le sixiesme Mars 1621. Par Fleury Bourriquant.

Octavo. *Elements* 1–15. Denis Henrion ed. Dedicated to Charles Descoubleau; the privilege is dated 27 January 1621. Reimpression of **Paris 1615**,

reusing the diagram blocks from that edition. The prolegomena is retained, but the ‘Sommaire de l’algebre’ is not.

References: Riccardi 1621³. Steck IV.24. USTC 6013102.

UK/Irish copies: Oxford: Bodleian. Senate House Library.

Paris 1622

LES QVINZE LIVRES DES ELEMENTS GEOMETRIQUES
D’EVCLIDE MEGARIEN: Traduicts de Grec en François, et aug-
mentez de plusieurs figures et demonstrations, avec la correction des
erreurs commises es autres traductions: Dediez A MONSEIGNEVR
L’illustrissime & Reuerendissime Cardinal de la ROCHEFOUCAULT.
Le tout par P. LE MARDELE Professeur es Mathematiques

Imprint: Avec Priuilege Du Roy A. PARIS Chez Denys Moreau rue
St Jacques à La Salamandre 1622.

Octavo. *Elements* 1–15. Pierre le Mardelé ed. Dedicated to the Cardinal
de la Rochefoucault; the *privilege* is dated 12 April 1622. Presented as a new
translation of the *Elements* into French from the Greek; the dedication refers
to ‘le vray texte de l’Auteur’ and the correction of errors of which ‘les editions
vulgaires’ have been guilty; in an epistle to the reader le Mardelé castigates
Henrion in particular (*cf.* **Paris 1615/Paris 1621**). Henrion would respond in
Paris 1623 with a strenuous denunciation of this edition in turn.

The main text is much expanded with scholia and supplementary results
and proofs; book 10 has numerical explanations using some algebraic notation.
There is also a preface in the style of Commandino and Clavius (and ultimately
Proclus), structured in the same sequence of sections as that of Henrion.
The diagrams, which appear to be new, are modelled on those of the Clavius
editions (**Cologne 1591/Mainz 1611**).

References: Riccardi 1622¹. Duarte p. 62. Steck IV.25. USTC 6002412.

UK/Irish copies: Edinburgh. NLW.

Paris 1623

Les Qvinze livres des elements d’Evclide. Traduicts de Latin
en François. Avec un Sommaire de l’Algebre, qui sert à faciliter

l'intelligence du dixiesme Liure. Reueu & augmenté en ceste seconde edition. Ensemble la response Apologetique, pour les Traducteurs dudit Euclide. Par D. Henrion Mathematicien.

Imprint: À Paris, chez I. Ant. Ioallin. M.DC.XXIII

Colophon: Ceste seconde Edition a esté acheuée d'imprimer, le sixiesme Mars 1621. Par Fleury Bourriquant.

Octavo. *Elements* 1–15. Denis Henrion ed. A reissue of **Paris 1621**, with new title page and two added sections, each with a separate title page. The first reads:

SOMMAIRE DE L'ALGEBRE, TRES-NECESSAIRE pour faciliter l'interpretation du dixiesme Liure d'Euclide. Ensemble la response Apologetique, pour les traducteurs & interpretes des Elements Geometriques d'Euclide. Par D. HENRION Mathematicien. A PARIS, Chez IEAN ANTHOINE IOALLIN, dans la Court du Palais, proche la barriere du Thresor, entre la ville & perle de Venise. M. DC. XXIII.

The second reads:

RESPONSE APOLOGETIQUE POVR LES TRADVCTEVRS ET INTERPRETES DES Elemens Geometriques d'Euclide, A VN QVIDAN QVI SOVS le nom de P. le Mardelé, a mis en lumiere vne pretenduë traduction d'iceux Elemens. Par D. HENRION Professeur és Mathematiques. A PARIS, Chez IEAN ANTHOINE IOALLIN, dans la Cour du Palais, entre les deux grandes portes, proche la barriere du Thresor. M. DC. XXIII.

The first (96 pages) was a new edition of the 'Sommaire de l'algebra' that preceded book 10 of the *Elements* in **Paris 1615**. The second responded to the accusation by le Mardelé – in the epistle to the reader in **Paris 1622** – that Henrion had merely copied the translation of Dounot (**Paris 1610**); it also impugned at length le Mardelé's own translation. The 'Sommaire' and 'Response' are sometimes found bound separately.

References: Riccardi 1623¹.

UK/Irish copies:

Douai 1625

Euclidis ELEMENTORVM LIBRI SEX PRIORES. Quorum demonstrationes tum alibi sparsim, tum maximè libro quinto ad facilitiorem captum accommodauit CAROLVS MALAPERTIVS Montensis è Societate IESV. Editio altera emendatior.

Imprint: DVACI, Typis BALTAZARIS BELLERI, sub Circino aureo. ANNO 1625. Cum Priuilegio.

Duodecimo. *Elements* 1–6. Carolus Malapertius Montensis ed. Reimpression of **Douai 1620**, retaining the permission to print of Florentius de Montmorenci (9 November 1619) and the ecclesiastical approbation of Georgius Colvenerius (20 December 1619). The diagrams are new, of smaller size and inferior quality compared with the original (which was an octavo).

References: Riccardi 1625². USTC 1118280.

UK/Irish copies: Oxford: Bodleian. UCL.

Paris 1625

ΕΥΚΛΕΙΔΟΥ ΔΕΔΟΜΕΝΑ. ΚΑΙ ΜΑΡΙΝΟΥ ΦΙΛΟΣΟΦΟΥ ΕΙΣ ΔΕΔΟΜΕΝΑ ΕΥΚΛΕΙΔΟΥ ΥΠΟΜΝΗΜΑ. EVCLIDIS DATA. OPVS AD VETERVM GEOMETRIÆ Autorum Archimedis, Apollonij, Pappi, Eutocij, cæterorúmque non modo lectionem, sed ad Geometricæ quoque Analyseos instaurationem planè necessarium, & à multis diu desideratum. CLAVDIVS HARDY SEBAST. FIL. in supremâ Parisiensi Curiâ Aduocatus, è Regis Christianissimi Bibliothecâ Græcè nunc primùm edidit, Latinè vertit, scholijsq; illustrauit. Adiectus est ex eadem Bibliothecâ MARINI PHILOSOPHI Commentarius Græcè & Latinè, quo Dati natura, Datorúmque Euclideorum vtilitates explicantur.

Imprint: LVTTETIÆ PARISIORVM, Impensis MELCHIORIS MONDIERE, in insulæ Palatinæ vico Harlæo, ad insigne Viperarum. Anno M D C XXV. Cum Priuilegio Regis Christianissimi.

Quarto. *Data*. Claude Hardy ed. Dedicated (1 January 1625) to Sebastian Hardy, the editor's father; the *privilegium* is dated 1 August 1624. The first complete edition of the Greek text of the *Data*: the enunciations had been

printed in Greek by Dasypodius in **Strasbourg 1571a**, while Latin texts had been given by Zamberti (**Venice 1505/Venice 1510**) and following him Herlin (**Basel 1537/Basel 1546/Basel 1558**). Hardy's Latin is a new translation. As well as the main text, the *Protheoria* of Marinus is included.

References: Riccardi 1625¹. Duarte p. 62. Steck VIII.10. USTC 6018927.

UK/Irish copies: BL. Cambridge: Caius (2), Christ's, Corpus Christi, Trinity (2), UL. Edinburgh. Glasgow (4). Leeds. NLW. National University of Ireland. Oxford: Balliol, Bodleian (4), Christ Church. Royal College of Physicians. Royal Society. Senate House Library. St Andrews. York. UCL (2).

Amsterdam 1626

De ses eerste Boecken EVCLIDIS, Van de beginselen ende fondamenten der Geometrie. Waer by ghevoecht zijn eenighe nutticheden, uyt de selve Boecken ghetrocken; Mitsgaders de Specien in Geometrische figueren, als 'tmaken, veranderen, t'samen-voeghen, af-trecken, vermenichvuldighen, ende deelen. Overgheset, verclaert, ende uytgheleyt, tot vorderinghe, ende oeffeninghe, van alle leergierighe liefhebbers der selver vryer Conste. Door IAN PIETERSZOOM DOV, der stadt Leyden Landtmeter ende Wijnroeyer. Van nieuw oversien, ende verbeterd: Mitsgaders de byghevoechde nutticheden, mette specien in Geometrische figueren breeder verclaert ende vermeerderd deur den selven Autheur.

Imprint: TOT AMSTERDAM By Willem Iansz. Blaeuw op't Water, in de vergulde Sonnewijser. Anno 1626.

Octavo. *Elements* 1–6. Jan Pieterszoon Dou ed. Reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616**, retaining the dedication to Jan van Hout dated 19 May 1606 and the concluding 'byvoechsel', and re-using the same diagram blocks; more than half the text is re-set page-for-page and often line-for-line from **Amsterdam 1616**.

References: Riccardi 1626¹. Steck IV.28. USTC 1012884.

UK/Irish copies: NLW.

Paris 1626

ELEMENTORVM EVCLIDIS LIBRI XVI. CVM ADDITION-

IBVS MAVROLYCI ET CANDALLÆ. ET OPTICORVM LIBRI V.

Imprint: LVTETIÆ, Ex officina ROB. STEPHANI. M. DC. XXVI.

Octavo. *Elements* 1–18; *Optica*; *Phaenomena* (enunciations). Dedicated to Ludovico de Champagne by G. Bavdry. As far as we have been able to check, these are the same Euclidean texts that appeared in **Paris 1644c** attributed to Mersenne.

In addition to the Euclidean works, the volume contains enunciations in Latin from the works on the sphere by Theodosius, Menelaus, Maurolico and Autolycus, and from the *De Habitationibus* of Theodosius.

References: Riccardi 1626³. GMIP Paris 1626.

UK/Irish copies: NLW.

Paris 1626a

SYNOPSIS MATHEMATICA. Ad Reuerendiss. Patrem SIMONEM BACHELIER, Ordinis Minimorum Generalem.

Imprint: LVTETIÆ, Ex officina ROB. STEPHANI. M. DC. XXVI.

Quarto. *Phaenomena*. Latin, enunciations only. Text extracted from **Paris 1626**, that is the translations of Maurolico (**Messina 1558**). Dedication by Mersenne to Simon Bachelier, dated at Paris in 1626. Privilège signed on 1 and 20 April 1626. Also contains Theodosius, *Spherics*; Menelaus, *Spherics*; and Theodosius, *On habitations*.

References: GMIP Paris 1626c.

UK/Irish copies: None identified.

Cologne 1627

EVCLIDIS ELEMENTORVM LIBRI XV. ACCESSIT LIBER XVI. DE QVINQUE solidorum Regularium inter se comparatione. AD EXEMPLARIA R.P. CHRISTOPHORI Clauij è Societ. IESV, & aliorum hac postrema editione collati, emendati & aucti.

Imprint: COLONIAE Apud Petrum Cholinum M. DC. XXVII. Cum gratia & Priuilegio.

Octavo. *Elements* 1–16. A page-for-page reimpression of **Cologne 1607**,

retaining its preliminary ‘Matheseos et geometriae divisio’ dated 8 June 1607, its extended book 15 and its book 16. It is thus a reimpression of the series of editions **Cologne 1580/Cologne 1587/Cologne 1600** and contains the Latin text from Gracilis’ edition **Paris 1557**; it once again re-uses the diagram blocks from **Cologne 1564**.

According to Riccardi (1627²), Brunet and Zakhartchenko report an impression of the Clavius *Elements* at Frankfurt in 1627, but this seems likely to be a mistake for this edition.

References: Riccardi 1627¹. Steck IV.29. USTC 2020353.

UK/Irish copies: NLW. Westminster School.

Ferrara 1628

EVCLIDIS ELEMENTORVM Libri VI Ad PerIllm. et Eccum. D.D. Ioannem Libiolam Philosophū. ac Medicum. insignum:

Imprint: Ferrariae Ad instantiam Catharini Doini. Apud Franciscum Succium Superiorum permissu. 1628.

Duodecimo. *Elements* 1–6. Caterino Doino ed. Dedicated (26 September 1628) to Joannes Libiola. This edition names no sources and contains no commentary.

References: Riccardi 1628¹. USTC 4000569.

UK/Irish copies: NLW.

Geneva 1628

LES SIX PREMIERS LIVRES DES ELEMENTS GEOMETRIQUES D’EVCLIDE, Avec LES DEMONSTRATIONS DE IACQUES PELETIER du Mans.

Imprint: De l’Imprimerie & frais de Iean de Tournes. M. DC. XXVIII.

Octavo. *Elements* 1–6. Jacques Peletier, Jean de Tournes ed. Reimpression of **Geneva 1611**, retaining the address ‘à la noblesse françoise’ dated 28 May 1611; thus a translation of the edition of Peletier (**Lyon 1557/Geneva 1610**). The index that appeared in the 1611 impression is omitted.

As with previous de Tournes impressions, some copies have, and some lack, the words ‘A GENEVE.’ above the imprint. Those lacking it have sometimes been catalogued as issuing from Lyons.

References: Riccardi 1628². CERE 21.

UK/Irish copies: None identified.

Beijing 1629

天學初函

Elements 1–6. Xu Guangqi, Matteo Ricci, Li Zhizao ed. A collection edited by Li Zhizao 李之藻, incorporating the text of **Beijing 1611**; it is listed here on the basis of Engelfriet’s account (pp. 86, 133–7). The title is transliterated ‘Tianxue chuhan’ and translated ‘First collection of writings on heavenly learning’.

References: None identified.

UK/Irish copies: None identified.

Bologna 1629

EVCLIDIS ELEMENTORVM GEOMETRICORVM, LIBRI SEX PRIORES. Noua interpretatione in vsum studiosæ iuuentutis in lucem dati A IOANNE LANZ SOCIETATIS IESV. Et nunc recens impressi. NOBILISSIMIS ACADEMIAE A PORTV ARDENTIBVS DICATI.

Imprint: Bononiæ, apud Hæredes Ioannis Rossij, & C. 1629. Superiorum permissu.

Colophon: BONONIAE, Apud Hæredes Ioannis Rossij, & C. M. DC. XXIX.

Octavo. *Elements* 1–6. Ioan Lanz ed. Reimpression of **Ingolstadt 1617**, adding an initial address ‘Nobilissimis academi... a Portv Ardentibvs’, dated from Bologna on 13 November 1629. The epistle to the reader is retained, now also dated from Bologna, with the date 9 November 1629. The diagrams are newly cut for this edition.

Steck (IV.42) and Riccardi (1648²) report a 1648 reimpression of this

edition, which Steck places at ‘Boniae’, presumably meaning Bologna. We have seen no confirmation.

References: Riccardi 1629^{1*}. USTC 4000588.

UK/Irish copies: None identified.

Paris 1629

LES NEVF PREMIERS LIVRES DES ELEMENS D’EVCLIDE:
TRADVITS & commentez PAR I. ERRARD de Bar-le-duc, Inge-
nieur du Tres-Chrestien Roy de France & de Nauarre. Dediez à sa
MAIESTÉ. Reueuz & corrigez par l’Auteur.

Imprint: A PARIS, Chez CARDIN BESONGNE, au second pillier
de la grande Salle du Palais. M. DC. XXIX.

Quarto. *Elements* 1–9. Jean Errard ed. Reimpression of **Paris 1598a/Paris 1605**, reusing their diagram blocks and retaining the dedication ‘Au Roy’ but without its date (the original dedicatee, Henri IV, had died in 1610).

Steck links this incorrectly with **Paris 1613** (as well as, correctly, with **Paris 1598a**).

References: Steck IV.31. USTC 6022912.

UK/Irish copies: None identified.

Rome 1629

EVCLIDIS Sex primi ELEMENTORVM GEOMETRICORVM
Libri cum parte Vndecimi Ex maioribus CLAVII Commentariis
in commodiorem formam contracti. RERVMQ. MATHEMATI-
CARVM CHRISTOPHORI GRIENBERGERI OENOHALLENSIS
è Societate IESV OPUSCVLVM PRIMVM.

Imprint: ROMAE, Apud Hæredem Bartholomæi Zannetti. 1629.
Superiorum permissu.

Duodecimo. *Elements* 1–6. Christoph Clavius, Christoph Grienberger
ed. Dedicated to Iacobus Boncompagnus; permissions are dated 7 and
28 June 1629. An abridged version of *Elements* 1–6, based on the text of
Clavius (**Rome 1574/Rome 1589/Cologne 1591/Rome 1603/Frankfurt**

1607/Mainz 1611). The diagrams are new and simplified compared with those predecessors.

Following book 6 there is a summary of the remaining books of the *Elements*, together with selections from books 11 and 12 and a list of the propositions of books 1–6.

References: Riccardi 1629⁴.

UK/Irish copies: None identified.

Paris 1630

LES SIX PREMIERS LIVRES DES ELEMENS D'EVCLIDE,
Extraits & tirez de ses Oeuures Mathematiques, Traduits de Latin en
François, Par D. HENRION Mathematicien.

Imprint: A PARIS, Chez SAMVEL THIBOVST, au Palais en la
gallerie des Prisonniers. M. DC. XXX. Auec Priuilege du Roy.

Octavo. *Elements* 1–6. Denis Henrion ed. The text of *Elements* 1–6 is taken from **Paris 1615/Paris 1621/Paris 1623**. The dedication and prolegomena are not included, and Henrion provides a new, briefer epistle to the reader making no mention of Dounot's allegedly inferior edition. The diagrams seem to be new, and in some cases show the clear influence of the Clavius editions **Cologne 1591/Mainz 1611**.

The *privilege*, covering various works by Henrion, is dated 24 December 1624 and states that printing was complete in January 1630. The (undated) epistle states that the present work is extracted from Henrion's edition of the whole works of Euclid in French, which he had printed at his own expense: 'i'ay fait imprimer à mes propres cousts & despens toutes lesdites Oeuures d'Euclide en grand volume'. But the printer's epistle to the posthumous edition **Paris 1632** implies that the project in fact remained in manuscript at the time of his death; thus that this statement was made in anticipation of a printing which never took place.

Steck (IV.37) reports a reimpression of Henrion's six-book *Elements* in 1634, but we have found no confirmation of it.

References: Riccardi 1630². Steck IV.33. USTC 6003127.

UK/Irish copies: Cambridge: UL.

Paris 1631

LES QVINZE LIVRES DES ELEMENS D'EVCLIDE. Traduicts de Latin en François: Par D. HENRION Mathematicien QVATRIESME EDITION, Reueue, corrigée, & de beaucoup augmentée.

Imprint: A PARIS, Imprimé par Isaac Dedin pour ledict Sieur HENRION demeurant en l'isle du Palais à l'Image S. Michel. M. DC. XXXI. Avec priuilege du Roy.

Octavo. *Elements* 1–15. Denis Henrion ed. New edition of **Paris 1615/Paris 1621/Paris 1623**, somewhat augmented with new commentary and additional propositions. There are now numerical explanations in books 13 and 14 as well as in book 10. The diagrams in books 1–6 appear to use the blocks from **Paris 1630**; those for books 7–15 appear to be new. The Prolegomena is included in a shortened form and the ‘Sommaire de l'algebre’ is reinstated to its position before book 10, but the response to le Mardelé is not included. Both commentary and diagrams in fact show clear unacknowledged debts to le Mardelé (**Paris 1622**).

The *privilege*, covering various works by Henrion and dated 24 December 1624, is included; here it is stated that the printing of this volume was completed in May 1631. A new, undated epistle to the reader states that Henrion was printing (‘faisons ...imprimer’) the whole works of Euclid in French, perhaps acknowledging implicitly that the ‘i’ay fait imprimer’ of **Paris 1630** was not strictly true. In fact the printing had not taken place by Henrion’s death (see **Paris 1632**).

References: Riccardi 1631¹. USTC 6021652.

UK/Irish copies: Marsh’s Library, Dublin.

Paris 1632

LES QVINZE LIVRES DES ELEMENTS GEOMETRIQUES D'EVCLIDE. Traduicts en François par D. HENRION Professeur és Mathematiques, imprimez, reueus & corrigez du viuant de l'Autheur: avec des Commentaires beaucoup plus amples & faciles, & des figures en plus grand nombre qu'en toutes les impressions precedentes. Plus le Liure des DONNEZ du mesme Euclide aussi traduit en François

par ledit Henrion, & imprimé de son vivant.

Imprint: A PARIS, De l’Imprimerie d’Isaac Dedin. Et se vendent en l’Isle du Palais, à l’Image S. Michel, par la veufue dudit Henrion. M. DC. XXXII. AVEC PRIVILEGE DV ROY.

Quarto. *Elements* 1–15; *Data*. Denis Henrion ed. Reimpression of **Paris 1615/Paris 1621/Paris 1623/Paris 1631**, omitting the prolegomena and adding a French version – the first – of the *Data*, together with the *Protheoria* of Marinus. The ‘Sommaire de l’algebre’ is included, preceding *Elements* 10. The diagrams are those of **Paris 1631**. The *privilege*, covering various works by Henrion and dated 24 December 1624, is once again included; here it is stated that the printing of this volume was completed on 24 July 1632.

Henrion’s epistle is replaced with one signed by the printer, which states that Henrion had completed, before his death, translations of all the works of Euclid, and had planned a publication of which the present volume would be the first, and the second would contain the remaining works (*Optics*, *Catoptrics*, *Phaenomena*, ‘la Musique’ and the *De levi*). The first sheet of this second volume is said to have been printed, but we have not seen evidence that it was ever completed and published. Compare the statements made in epistles to **Paris 1630** and **Paris 1631**.

References: Riccardi 1632². Duarte p. 64. USTC 6032546, 6003420.

UK/Irish copies: Wellcome Library.

Paris 1632a

LES QVINZE LIVRES DES ELEMENTS GEOMETRIQVES
D’EVCLIDE MEGARIEN: Traduits de Grec en François, et aug-
mentez de plusieurs figures et demonstrations, avec la correction des
erreurs commises es autres traductions: Dediez A MONSEIGNEVR
L’illustriissime & Reuerendissime Cardinal de Lyon Le tout par P.
LE MARDELÉ Professeur es Mathematiques seconde edition. Avec
Priuilege Du Roy

Imprint: A PARIS Chez Denys Moreau ruë St Iacques à La Saleman-
dre. 1632.

Octavo. *Elements* 1–15. Pierre le Mardelé ed. Dedicated to the Cardinal

of Lyon; the privilege is dated 7 October 1631. Reimpression of **Paris 1622** with some augmentation of proofs and modification of diagrams (most of the diagrams are those of 1622). A new epistle alludes to the errors of others but does not name Henrion.

The pages from 1100 to 1169 (the last numbered page in the volume) are wrongly numbered 2000–2069; several catalogues report an incorrect page count as a result.

References: Riccardi 1632¹. Duarte p. 64. Steck IV.34. USTC 6032167.

UK/Irish copies: Cambridge: UL. NLW. UCL. Wellcome Library.

Rotterdam 1632

De ses eerste Boecken EVCLIDIS, Van de beginselen ende fondamenten der Geometrie. Waer by ghevoeght zijn eenighe nuttigheden, uyt de selve Boecken ghetrocken; Mitsgaders de Specien in Geometrische figueren, als 'tmaken, veranderen, t'samen-voeghen, aftreken, vermenighvuldighen, ende deelen. Overgheset, verklaert, ende uytgheleyt, tot vorderinghe, ende oeffeninghe, van alle leergierighe lief hebbers der selver vryer Konste. Door IAN PIETERSZ: DOU, der stadt Leyden Lant-meter ende Wijnroeyer. Van nieuus oversien ende verbeteret: Mitsgaders de byghevoeghde nuttigheden, met de specien in Geometrische figueren breeder verklaert ende vermeerderet, door den selven Autheur

Imprint: TOT ROTTERDAM, By de Weduwe van Matthijs Bastiaensz, Boeck-verkooper, Op't Steygher, In Iosephus. Anno 1632.

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626**, retaining the dedication to Ian van Hout dated from Leiden on 19 May 1606 and the concluding 'by-voeghsel' (so spelled). The blocks for the diagrams are new.

References: Riccardi 1632³.

UK/Irish copies: None identified.

Douai 1633

Euclidis ELEMENTORVM LIBRI SEX PRIORES. Quorum

demonstrationes tum alibi sparsim, tum maximè libro quinto ad faciliorem captum accommodavit CAROLVS MALAPERTIVS Montensis è Societate IESV. Editio altera emendatior.

Imprint: DVACI, Typis BALTAZARIS BELLERI, sub Circino aureo. Anno 1633. Cum Priuilegio.

Duodecimo. *Elements* 1–6. Carolus Malapertius Montensis ed. Reimpression of **Douai 1620/Douai 1625**, indeed a page-for-page reimpression of the latter, retaining the permission to print of Florentius de Montmorenci (9 November 1619) and the ecclesiastical approbation of Georgius Colvenerius (20 December 1619), and re-using the blocks for the diagrams from 1625.

References: Riccardi 1633¹. Steck IV.35. USTC 1118719.

UK/Irish copies: Cambridge: UL. NLW.

Hamburg 1633

EVCLIDES ZES EERSTE BOEKKEN, VANDE BEGINSELEN DER VViskonsten. IN NEERDVYTS VERTAELT door Iacob VVillemsz: Verrotten van Haerlem.

Imprint: En voor hem gedrukt tot HAMBURG, By VOLRAD GAUBISCH, in't Iaer 1633.

Quarto. *Elements* 1–6. Iacob Willemszen ed. Dedicated (1 October 1633) to Willem van Ludinkhuyzen. This appears to be a fresh translation into Dutch, with the special feature that the parts of each proof are labelled after the manner of Proclus. The diagrams bear stylistic similarities to those of Dou's translation (**Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626/Rotterdam 1632**).

References: USTC 1018902.

UK/Irish copies: None identified.

Amsterdam 1634

Die sechs ersten Bücher EVCLIDIS, Dess hochgelährten weiterbühmbten, Griechischen Philosophi vnd Mathematici: Von den Anfängen vnd fundamenten der Geometriæ. Dabey dann mancherley

auss diesen Büchern gezogene Nutzbarkeiten angefüget seind: sampt den Speciebus in Geometrischen Figuren, alss machen, verändern, zusammenfügen, abziehen, vielfältigen vnd theilen: Per Demonstrationes Lineales. Auss H. Ioann Petersz Dou Niederländischen andern Edition verteutscht, Durch Sebastianum Curtium, Arithmeticum & G. Verordneten Inspector vnd Visitator der Teuschen Schuln in Nürnberg.

Imprint: Gedruckt zu Amsterdam bey Ioann Iansz. Im Jahr 1634.

Octavo. *Elements* 1–6. Jan Pieterszen Dou, Sebastian Curtius ed. Reimpression of **Amsterdam 1618**, retaining the dedication to the Bugermeisters of Rotenberg, dated from Nürnberg on 20 February 1617, the epistle to the reader and the ‘Anhang’. The blocks for the diagrams are those of **Rotterdam 1632**, the most recent reimpression of **Amsterdam 1618**.

References: Riccardi 1634¹. Duarte p. 64. Steck IV.36. USTC 1013333.

UK/Irish copies: UCL.

Paris 1634

CVRSVS MATHEMATICVS, NOVA, BREVI, ET CLARA METHODO DEMONSTRATVS, Per NOTAS reales & vniuersales, citra vsum cuiuscunque idiomatis intellectu faciles. COVRs MATH-EMATIQUE, DEMONSTRÉ D’VNE NOVELLE, BRIEFVE, ET CLAIRE METHODE, Par NOTES reelles & vniuerselles; qui peuuent estre entenduës facilement sans l’vsage d’aucune langue. Par PIERRE HERIGONE, Mathematicien.

Imprint: A PARIS, M. DC. XXXIV. Chez l’Auteur, en l’Isle du Palais, à l’enseigne de l’Anguille, & Chez HENRY LE GRAS, au troisieme pilier de la grande Salle du Palais. Auec Priuilege du Roy.

Four volumes, octavo. *Elements* 1–15; *Data*. Pierre Hérigone ed. Dedicated to Francisco Bassompetre, the dedication dated at the start of (‘ineunte Anno’) 1634; the *privilege* is dated 29 December 1633. The French and Latin texts appear in parallel columns; the Euclidean material comprises the majority of volume 1.

The *Elements* is prefaced by a ‘Prolegomena’ covering some of the same

ground as those of Commandino and Henrion. The diagrams are in the tradition of those of Clavius, possibly *via* the editions of Henrion or le Mardelé. The *Protheoria* of Marinus is not included, by contrast with previous editions of the *Data*. Although there are frequent similarities and overlaps of wording, neither the Latin nor the French text appears to be identical to that of any predecessor. The proofs, given in a highly compressed algebraic notation, are new.

The original four volumes all bear the imprint date 1634. A fifth ('and last') volume was added in 1637 (see **Paris 1637**) and a sixth ('and last') in 1644. For the 1644 volume the publisher was 'Simeon Piaget, ruë S. Iacques, à l'enseigne de la Fontaine'. Volumes 1–5 were reissued in 1644 (see **Paris 1644b**) with cancel title pages; it is not uncommon for sets of the work to contain a mix of 1634 and 1644 imprints.

The French text of *Elements* 1–6 was extracted as **Paris 1639** and was also reissued in 1644; it is sometimes found bound in to sets of the *Cursus*: the British Library's set, for instance, has copies bound in to both the front of vol. 6 and the back of vol. 4. This has sometimes led to confusion in library catalogues.

References: None identified.

UK/Irish copies: BL (2). Durham. Oxford: Christ Church, St John's. UCL.

Wittenberg 1634

EVCLIDIS ELEMENTORUM LIBRI XIII. Succinctis & perspicuis demonstrationibus comprehensi à D. AMBROSIO RHODIO Kembergensi, Mathematicum Super: Professore publico in Academia Leucorea. Editio postuma, priore Correctior & Emendatior.

Imprint: VVITTEBERGÆ, Impensis Hæred. Pauli Helwigii, Bibliop. Excudebatur ad AMBROSIO ROTHIO. Anno M. DC. XXXIV.

Octavo. *Elements* 1–13. Ambrosius Rhodius ed. Page-for-page reimpression of **Wittenberg 1609**, retaining the dedication to Christian II of Saxony dated from Wittenberg on 23 July 1609.

Steck mentions this impression at IV.7 but does not list it in his catalogue.

References: Riccardi 1634². USTC 2022190.

UK/Irish copies: NLW. Oxford: Bodleian (2). Trinity College, Dublin. Westminster School.

Graz 1636

EVCLIDIS SEX PRIMI ELEMENTORUM GEOMETRICORUM LIBRI CUM PARTE UNDECIMI Ex majoribus Clavij commentarijs in commodiorem formam contracti Per P. CHRISTOPHORUM GRIENBERGERUM è SOCIETATE JESU Accessit, item ferme ex Clavio BREVIS TRIGNONOMETRIA planorum, cum Tabulis Sinuum, Tangentium, & Secantium, ad partes Radij 100000 per sex prima scrupula graduum Per P. JACOBVM HONORATVM DVRANDVM EIVSDEM SOCIETATIS.

Imprint: GRÆCII, Apud Hæredes ERNESTI WIDMANSTADII. ANNO M. DC. XXXVI.

Duodecimo. *Elements* 1–6. Christoph Clavius, Christoph Grienberger, Jacobus Honoratus Durandus ed. Dedicated to the Duke of Styria; the dedication is signed by Jacobus Honoratus Durandus. Reimpression of **Rome 1629**. The diagrams are collected into foldout leaves, with instructions that these are to be bound at particular places in the book. This is the first Euclidean edition with this particular feature, though the rearranged *Elementa geometrica* of Eberhard Welper did so in 1620.

Following the selections from *Elements* 11 and 12 and the list of propositions, there is a selection of trigonometrical material including a table of sines, tangents and secants.

References: Riccardi 1636¹. Steck IV.38. USTC 2113792.

UK/Irish copies: None identified.

Alcala 1637

ELEMENTOS GEOMETRICOS DE EVCLIDES PHILOSOPHO MEGARENSE SVS SEYS PRIMEROS LIBROS. AL EXmo Sr D. GASPAR DE GVZMAN CONDE DE OLIBARES DVCq DE S. LVCAR LA MAYOR CAMARERO Y CABALLERICO

MAYOR DE SV MAG &. Traducido el texto y comentado por LVIS CARDVCHI Mathematico de su Magestad

Imprint: EN ALCALA POR ANTONo DVPLASTE AÑO DE 1637

Quarto. *Elements* 1–6. Luis Carduchi ed. Dedicated (25 December 1637) to Gaspar de Guzman. The dedication is dated 25 December 1637; the prefatory matter also contains an ecclesiastical approbation dated 31 January 1637, a privilege to print dated 17 May 1637, statements that printing was completed and errata compiled on 20 December 1637 and statements of taxation dated 29 December 1637. The statement concerning printing places the impression in Madrid.

The diagrams are contained in fold-out plates.

The second translation of *Elements* 1–6 into Spanish; this seems to be independent of Zamorano’s version (Seville 1576), and indeed to be based on a different underlying version of the text.

References: Riccardi 1637¹. USTC 5015385, 5001295, 5001296.

UK/Irish copies: NLW. UCL.

Paris 1637

CVRSVS MATHEMATICI TOMVS QVINTVS AC VLTIMVS. Continens Opticam, Catoptricam, Dioptricam, Perspectiuam, Sphæricorum Trigonometriam, Theoricas Planetarum, tam secundum stantis, quàm motæ terræ hypothesim, Gnomonicam, & Musicam. CINQVIESME ET DERNIER TOME DV COVRS MATHEMATIQUE. Contenant l’Optique, la Catoptrique, la Dioptrique, la Perspective, la Trigonometrie des Spheriques, la Theorie des Planetes, tant selon l’hypothese de la terre immobile, que mobile, la Gnomonique, & la Musique. Par PIERRE HERIGONE, Professeur és Mathematiques.

Imprint: A PARIS, M. DC. XXXVII. Chez l’Auteur, en l’Isle du Palais, à l’enseigne de l’Anguille, & Chez HENRY LE GRAS, au troisieme pilier de la grand’ Salle du Palais, à L couronnée.

Octavo. *Optics, Catoptrics, Introductio harmonica, Sectio Canonis*, French and Latin.. Ed. Pierre Hérigone. Also contains the *Spherics* of Theodosius. Demonstrations are new, in Hérigone’s symbolic style. Dedication to François

de Bassompierre, undated. A concluding note states that the printing of the volume was concluded on 14 August 1637.

This is a supplementary (fifth) volume to Hérigone's *Cursus mathematicus* (see **Paris 1634**). It retains from there a privilège dated 29 December 1633.

References: USTC 6004102. GMIP Paris 1637.

UK/Irish copies:

Hamburg 1638

EUKLIDES ZES EERSTE BOEKKEN, VANDE BEGINSELEN DER WISKONSTEN. In Neerduids vertaald door JACOB WILLEMSZ: VERROOTEN van Haerlem.

Imprint: En voor hem gedrukt tot HAMBURG, Bij HENDRIK WERNER, in't Jaer 1638.

Quarto. *Elements* 1–6. Reissue of **Hamburg 1633**. Sheet A is re-set, containing the title page, dedication to Willem van Ludinkhuyzen (now dated 10 September 1638) and epistle.

References: Riccardi 1638¹. USTC 2101108, 1019288.

UK/Irish copies: None identified.

Paris 1639

LES SIX PREMIERS LIVRES DES ELEMENTS D'EVCLIDE, Demonstrez par Notes, d'une methode tres-brieve & intelligible. Avec les principales parties des Mathematiques expliquées succinctement sans Notes. Et de plus, vn petit Dictionnaire, contenant les etymologies & significations des noms & termes plus obscurs des Mathematiques. Par PIERRE HERIGONE, Professeur és Mathematiques.

Imprint: A PARIS. M. DC. XXXIX. Chez l'Auteur, en l'Isle du Palais, à l'enseigne de l'Anguille, & Chez HENRY LE GRAS, au troisieme pilier de la grande Sale du Palais.

Octavo. *Elements* 1–6. Pierre Hérigone ed. The Euclidean text is extracted from **Paris 1634**, vol. 1; the diagram blocks are reused. The dedication is not present. The Euclidean text occupies less than half of the volume;

the remainder comprises sections on practical arithmetic, trigonometry, fortifications and gnomics. The errata leaf contains the statement that printing was concluded on 2 July 1642.

Often found bound – at various positions – into sets of **Paris 1634** or **Paris 1644b**, which has led to bibliographic confusion.

References: Riccardi 1639¹. USTC 6029224.

UK/Irish copies: UCL.

Venice 1641

EVCLIDIS ELEMENTORVM Libri VI Ad Per Illm. et Eccum. D.
D. Ioannem Libiolam Philosophum. ac Medicum. insignum:

Imprint: VENETHIS M.D. C.XLI. APVD TVRRINVM.

Duodecimo. *Elements* 1–6. Caterino Doino ed. Dedicated to Joannes Libiola. A reimpression of **Ferrara 1628**. Not to be confused with the edition reported by Riccardi on the basis of Fabricius and Murhard of an impression of the Coetsius edition at Leiden in this year, for which we have seen no direct evidence.

USTC (4045890) reports a 1637 impression of what seems to be this edition, but lists no copies.

References: Riccardi 1641¹. USTC 4047541.

UK/Irish copies: None identified.

Paris 1643

EVCLIDIS SEX PRIMI ELEMENTORVM GEOMETRICORVM LIBRI, In commodiorem formam contracti & demonstrati.
A P. GEORGIO FOVRNIER è societate IESV.

Imprint: PARISIIS, Apud MATHVRINVM HENAVLT, via Iacobæâ, sub signo Angeli Custodis, propè Collegium Societatis IESV.
M. DC. XLIII. Cum Priuilegio Regis.

Octavo. *Elements* 1–6. Georges Fournier ed. Dedicated to Nicolaus Foucquet. No sources are named and the (small) diagrams appear to be a new set.

Some catalogues, including USTC, describe this as a duodecimo, Riccardi – who owned a copy – as a 16°.

References: Riccardi 1643¹. USTC 6040197.

UK/Irish copies: BL. Cambridge: Christ's, UL.

Genoa 1644

EVCLIDIS ELEMENTORVM Priores Libri VI In Gratiam Mathematicæ Studiosorum

Imprint: GENVÆ Superiorum Permissu 1644

Duodecimo. *Elements* 1–6. The epistle is unsigned and there appears to be no statement of the editor or printer's name anywhere in the volume. The diagrams appear on foldout leaves at the back of the book and are derived from those of Clavius.

Some catalogues report the imprint location as Geneva. USTC states this is an 18° and Duarte mentions that at 9.5 by 5 cm it is the smallest copy he describes.

References: Riccardi 1644⁵. USTC 4014749.

UK/Irish copies: Senate House Library.

Paris 1644

LES SIX PREMIERS LIVRES DES ELEMENTS D'EVCLIDE, Demonstrez par Notes, d'une Methode tres-brieve & intelligible. Avec les principales parties des Mathematiques, expliquées succinctement sans Notes. Et de plus, vn petit Dictionnaire, contenant les etymologies & significations des noms & termes plus obscures des Mathematiques. Par PIERRE HERIGONE, Professeur és Mathematiques.

Imprint: A PARIS, Chez SIMEON PIGET, rue S. Jacques, à l'enseigne de la Fontaine. M. DC. XLIV. Avec Priuilege du Roy.

Octavo. *Elements* 1–6. Pierre Hérigone ed. Reissue of **Paris 1639**. Sometimes found bound uniformly with sets of **Paris 1644b** or bound into one of its volumes, which has led to confusion: occasionally with a cancel title page styling it a 'supplementum' to the *Cursus* (the only instances of this we

have seen are badly mutilated).

References: Riccardi 1644³. Steck IV.39. USTC 6036670, 6005157.

UK/Irish copies: Cambridge: UL. National Trust properties. Oxford: Bodleian. Senate House Library. Winchester College.

Paris 1644a

EVCLIDIS SEX PRIMI ELEMENTORVM GEOMETRICORVM LIBRI, In commodiorem formam contracti & demonstrati. A P. GEORGIO FOVRNIER è societate IESV.

Imprint: PARISIIS, Apud MATHVRINVM HENAVLT, viâ Iacobæâ, sub signo Angeli Custodis, propè Collegium Societatis IESV. M. DC. XLIV. Cum Priuilegio Regis.

Octavo. *Elements* 1–6. Georges Fournier ed. Reissue of **Paris 1643**.

References: Riccardi 1644⁴. USTC 6041560.

UK/Irish copies: NLW. Oxford: Bodleian (2), Christ Church. Senate House Library. UCL.

Paris 1644b

CVRSVS MATHEMATICVS, NOVA, BREVI, ET CLARA METHODO DEMONSTRATVS. Per NOTAS reales & vniuersales, citra vsum cuiuscunque idiomatis, intellectu faciles. COVRS MATHÉMATIQUE, DEMONSTRÉ D'VNE NOVELLE, BRIEVE, ET CLAIRE METHODE, Par NOTES reelles & vniuerselles, qui peuuent estre ententuës facilement sans l'vsage d'aucune langue. Par PIERRE HERIGONE, Mathematicien.

Imprint: A PARIS, Chez SIMEON PIGET, ruë Saint Iacques, à l'enseigne de la Fontaine. M. DC. XLIV. Auec Priuilege du Roy.

Six volumes, octavo. *Elements* 1–15, *Data*, *Optics*, *Catoptrics*, *Introductio harmonica*, *Sectio Canonis*. Pierre Hérigone ed. Reissue of **Paris 1634**, retaining the dedication to Francisco Bassompetreio dated at the start of 1634, and including a reissue of volume 5 (i.e. **Paris 1637**); also included is volume 6, which is new in this version of the *Cursus*.

References: Riccardi 1644¹. GMIP Paris 1644b.

UK/Irish copies: Exeter. Oxford: Bodleian. UCL.

Paris 1644c

VNIVERSÆ GEOMETRIÆ, MIXTÆQVE MATHEMATICÆ
SYNOPSIS, ET BINI REFRACTIONVM DEMONSTRATARVM
TRACTATVS. Studio & Operâ F. M. MERSENNI M.

Imprint: PARISIIS, Apud ANTONIVM BERTIER, viâ Iacobæâ,
sub signo Fortunæ. M. DC. XLIV.

Quarto. *Elements* 1–18 (enunciations); *Phaenomena*; *Data* (enunciations).
Marin Mersenne ed. Dedicated to Ludovico Valesi. For *Elements* 1–15 the
text is that of Commandino (**Pesaro 1572/Pesaro 1619**); for books 16–18 it
is that of Foix (**Paris 1566/Paris 1578**); for the *Data* it is the Latin of Hardy
(**Paris 1625**). The *Phaenomena* are in the version of Maurolico (see **Messina**
1558 and **Paris 1626a**). This volume may be a new version of **Paris 1626**.

References: Riccardi 1644⁵. GMIP Paris 1644.

UK/Irish copies: BL. UCL.

Antwerp 1645

EVCLIDIS ELEMENTORVM GEOMETRICORVM LIBROS
TREDECIM ISIDORVM ET HYPsicLEM & Recentiores de
Corporibus Regularibus, & PROCLI PROPOSITIONES GEO-
METRICAS Immissionemque duarum rectarum linearum continué
proportionalium inter duas rectas, tam secundum Antiquos, quam se-
cundum Recentiores Geometras, nouis vbique ferè demonstrationibus
illustrauit, & multis definitionibus, axiomatibus, propositionibus,
corollariis, & animaduersionibus, ad Geometriam rectè intelligen-
dam necessariis, locupletauit CLAVDIVS RICHARDVS E Societate
IESV Sacerdos, patria Ornacensis in libero Comitatu Burgundiæ,
& Regius Mathematicarum Professor: dicauitque PHILIPPO IIII.
HISPANIARVM ET INDIARVM REGI CATHOLICO.

Imprint: ANTVERPIÆ, Ex Officina HIERONYMI VERDVSSII.

M. DC. XLV. Cum Gratiâ & Priuilegio.

Folio. *Elements* 1–16. Claude Richard ed. Dedicated to Philipp IV of Spain. The Euclidean text largely follows that of Clavius, and includes the sixteenth book by Foix as well as propositions taken from what he calls books 3 and 4 of Proclus’s Euclidean commentary, and a supplementary book containing fourteen constructions of lines in continued proportion. The running heads characterise the volume as a ‘commentary’ on these various works.

The *facultas* signed by the Jesuit provincial is dated 12 April 1643, the *approbatio* at Antwerp on 27 January ‘M. DC. LXV.’ – presumably an error – and the *privilegium* at Brussels on 24 December 1643.

USTC (1512503) reports a 1644 issue; we have not seen direct evidence for this and suspect a mistake.

References: Riccardi 1645². Duarte p. 64/66. Steck IV.40.

UK/Irish copies: Cambridge: Trinity, UL. Durham. Oxford: Christ Church. Royal College of Physicians. Westminster School.

Lyon 1645

LES QVINZE LIVRES DES ELEMENTS GEOMETRIQVES D’EVCLIDE MEGARIEN. Traduits de Grec en François, & augmentez de plusieurs figures & demonstrations, avec la correction des erreurs commises és autres traductions. Dediez à MONSEIGNEVR l’Illustissime & Reuerendissime CARDINAL de Lyon. Par PIERRE MARDELÉ, Professeur és Mathematiques.

Imprint: A LYON, Chez SIMON RIGAVD, Marchand Libraire, ruë Merciere, à l’Escu de Venize. M. DC. XLV.

Octavo. *Elements* 1–15. Pierre le Mardelé ed. Dedicated to the Cardinal of Lyon. Reimpression of **Paris 1622/Paris 1632a**, including the epistle of 1632 alluding to Henrion without naming him. The *privilege* is not included. The diagrams are closely copied from those of the earlier impressions, but appear to have been newly cut.

References: USTC 6905250.

UK/Irish copies: None identified.

Lyon 1646

LES QVINZE LIVRES DES ELEMENTS GEOMETRIQVES D'EVCLIDE MEGARIEN. Traduits de Grec en François, & augmentez de plusieurs figures & demonstrations, avec la correction des erreurs commises és autres traductions. Dediez à MONSEIGNEVR l'Illustrissime & Reuerendissime CARDINAL de Lyon. Par PIERRE MARDELÉ Professeur és Mathematiques.

Imprint: A LYON, Chez SIMON RIGAVD, Marchand Libraire, ruë Merciere, à l'Escu de Venize. M. DC. XLVI.

Octavo. *Elements* 1–15. A reissue of Lyon 1645. Sheet ā, which contained the title page, dedication, epistle to the reader, two commendatory verses and the preface, has been re-set with just four leaves (numbered 1–4), containing only the preface. The remainder of the book appears to consist of the original sheets.

References: Riccardi 1646¹.

UK/Irish copies: None identified.

Rotterdam 1647

De ses eerste Boecken EUCLIDIS, Van de beginselen ende fondamenten der Geometrie. Waer bygevoeght zijn eenige nuttigheden, uyt de selve Boecken getrocken; Mitsgaders de Specien in Geometrische figuren, als 'tmaken, veranderen, t'samenvoegen, aftrecken, vermenigvuldigen ende deelen. Overgeset, verklaert, ende uytgeleyt, tot vorderinge *ende* oeffeninge van alle leergierige liefhebbers der selver vrye Konste. DOOR JAN PIETERSE DOU: der stadt Leyden Lantmeter *ende* Wijnroyer. Van nieuw oversien ende verbeteret: Mitsgaders de bygevoegde nuttigheden, met de specien in Geometrische figuren breeder verklaert ende vermeerdert, door den selven Auteur.

Imprint: TOT ROTTERDAM, By Pieter van Waesberghe Boeckverkooper op't Steygher inde swarte Klock, Anno 1647,

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626/Rotterdam 1632**, retaining the dedication to Jan van Hout dated 19 May 1606 and the

concluding 'byvoegsels' (so spelt). This impression was also issued with a title page naming Utrecht as the place of publication (see below).

References: Riccardi 1647². USTC 1030057.

UK/Irish copies: NLW.

Utrecht 1647

De ses eerste Boecken EUCLIDIS, Van de beginselen ende fundamenten der Geometrie. Waer bygevoeght zijn eenige nuttigheden, uyt de selve Boecken getrocken; Mitsgaders de Specien in Geometrische figuren, als 'tmaken, veranderen, t'samenvoegen, aftrecken, vermenigvuldigen ende deelen. Overgeset, verklaert, ende uytgeleyt, tot vorderinghe ende oeffeninge van alle leergierige liefhebbers der selver vrye Konste. DOOR JAN PIETERSE DOU, der stadt Leyden Lantmeter ende Wijnroyer. Van nieuw oversien ende verbeteret: Mitsgaders de bygevoegde nuttigheden, met de specien in Geometrische figuren breeder verklaert ende vermeerderet, door den selven Autheur.

Imprint: TOT UTRECHT; By Jan van Waesberge, Boekverkooper over het Stadthuys, Anno 1647.

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626/Rotterdam 1632**, retaining the dedication to Jan van Hout dated 19 May 1606 and the concluding 'byvoegsels' (so spelt). This impression was also issued with a title page naming Rotterdam as the place of publication (see above).

References: USTC 1012257, 1513260.

UK/Irish copies: None identified.

Venice 1647

EVCLIDIS ELEMENTORVM Libri VI

Imprint: Venetijs Apud Turinum MDCXXXVII

Octavo. *Elements* 1–6. Caterino Doino ed. The title page is engraved. A reimpression of **Ferrara 1628/Venice 1641**, re-using the blocks for the diagrams, but lacking the dedication and bearing no statement of the editor's identity.

Riccardi, who owned a copy, states that the format is 24°-in-8°. He also reports copies with a 1648 imprint, which we cannot confirm.

USTC record 4045890 appears to describe this edition, but gives its date as 1637.

References: Riccardi 1647¹. USTC 4018514.

UK/Irish copies: Cambridge: UL (2). Leeds. NLW. National Trust properties. UCL.

Rouen 1649

LES QVINZE LIVRES DES ELEMENTS D'EVCLIDE.
Traduits de Latin en François: Par D. HENRION Mathématicien.
CINQVIESME EDITION. Reueuë, corrigée, & de beaucoup augmentée.

Imprint: A ROVEN, Chez CLEMENT MALASSIS, près le grand Portail nostre Dame. M. DC. XLIX.

Octavo. *Elements* 1–15. Denis Henrion ed. Reimpression of **Paris 1615/Paris 1621/Paris 1623/Paris 1631**, retaining the shortened form of the prolegomena and Henrion's epistle to the reader with its claim that he was printing the whole works of Euclid. The diagrams are newly cut, based on those of 1631. This edition appears to be independent of **Paris 1632** (which, if counted, would have made this the sixth, not the fifth, edition of Henrion's 15-book Euclid); it takes no account of the statement in the printer's epistle to that edition that only the first sheet of the planned Works of Euclid had been printed by Henrion's death, nor does it include the *Data*.

References: Riccardi 1649¹. USTC 6811239.

UK/Irish copies: NLW. UCL.

S. L. c. 1650

EVCLIDIS ELEMENTORVM LIBRI SEX PRIORES, Qui in Scholis legi solent. Ex editione CHRISTOPHORI CLAVII Bambergensis è Societate IESV.

Octavo. *Elements* 1–6. Extracted presumably from **Rome 1629/Graz**

1636. The only copy known to us, at the Sächsische Landesbibliothek – Staats- und Universitätsbibliothek Dresden, lacks a title page; we transcribe as its title the heading at the beginning of the main text. The library gives its date as ‘circa 1650’; we have not found any further relevant evidence.

References: USTC 2052056.

UK/Irish copies: None identified.

Bologna 1651

DE GLI ELEMENTI DI EVCLIDE Li Primi sei Libri Tradotti in lingua Italiana. ALL’ILLVSTRIS. SENATO DI BOLOGNA.

Imprint: In Bologna, presso Gio. Batt. Ferroni 1651. Con licenza de’ Superiori.

Octavo. *Elements* 1–6. Giovanni Ricci ed. Dedicated to the senate of Bologna; the dedication is signed on 8 March 1651 by ‘F. Gio. Ricci Carm. Publico Matematico’. Apparently a new translation of *Elements* 1–6 into Italian; no sources are named. The translation was reprinted within the year; see **Bologna 1651a**.

References: Riccardi 1651¹. Steck IV.44.

UK/Irish copies: UCL.

Bologna 1651a

DE GLI ELEMENTI DI EVCLIDE Li Primi sei Libri Tradotti in lingua Italiana ALL’ILLVSTRIS. SENATO DI BOLOGNA.

Imprint: In Bologna, per Gioseffo Longhi. Con licenza de’ Superiuri.

Octavo. *Elements* 1–6. Giovanni Ricci ed. Page-for-page and usually line-for-line reimpression of **Bologna 1651**, using the same blocks for the diagrams and retaining the dedication dated 8 March 1651. In place of the original imprimatur signed by Casimir de Cremona there is a new ‘reimprimatur’ signed by Angelo Gulielmo Molus.

References: Riccardi 1651¹. Steck IV.44.

UK/Irish copies: NLW.

London 1651

EUCLIDES ELEMENTS OF GEOMETRY: The first VI Books: In a compendious form contracted and Demonstrated. By Captain THOMAS RUDD, Chiefe Engineer to his late Majesty. Whereunto is added, The Mathematicall Preface of MR. JOHN DEE.

Imprint: LONDON: Printed by ROBERT and WILLIAM LEYBOURN for RICHARD TOMLINS and ROBERT BOYDELL, at the Sun & Bible neer Pie-corner, and at the Bulwark neer the Tower. M DC LI.

Quarto. *Elements* 1–6. Thomas Rudd ed. Includes John Dee’s preface from **London 1570**. The title page exists in (at least) three states, with slight differences in the imprint (only). After ‘BOYDELL’, ESTC R234864 has a line break followed by ‘at’; ESTC R234863 has ‘at’ followed by a line break, and ESTC R12790 lacks ‘at’ altogether.

References: Riccardi 1651³. Duarte p. 66. ESTC R12790, R234863, R234864.

UK/Irish copies: Birmingham. Cambridge: St John’s (2), Trinity, UL. Durham. Glasgow (2). Leicester. Manchester. NLW. Newcastle (2). Nottingham. Oxford: Bodleian, Christ Church, St John’s. UCL (2). Wellcome Library. Westminster School.

Amsterdam 1652

ANTIQVÆ MVSICÆ AVCTORES SEPTEM. GRÆCE ET LATINE. MARCVS MEIBOMIVS Restiuit ac Notis explicavit.

Imprint: AMSTELODAMI, Apud Ludovicum Elzevirium, M DC LII.

Two volumes, quarto. *Introductio harmonica; Sectio canonis*. Marcus Meibom ed. Dedicated to Queen Christina of Sweden. Vol. 2 contains an epistle dated 21 March 1652. A new edition of these works, based on manuscripts, and a new Latin translation. Both are attributed to Euclid. The other authors edited in these volumes are Aristoxenus, Nicomachus, Alypius, Gaudentius, Bacchius, Aristides and Martianus Capella (it has generally escaped comment that the ‘septem’ of the title page is incorrect).

References: Riccardi 1652². Steck VIII.11. GMIP Amsterdam 1652.

UK/Irish copies: BL. Birmingham. Cambridge: Pendlebury music library, Trinity (3). Chetham's School. Durham: Ushaw College. King's College, London. Leeds. Marsh's Library, Dublin (2). Maynooth. NLW (2). National Trust properties. Oxford: Balliol, Brasenose, Christ Church, Corpus Christi, Jesus, Magdalen, Queen's, St John's, Trinity, University College, Worcester. Royal Society. Senate House Library. Sheffield. Trinity College, Dublin. UCL (2). Victoria and Albert Museum.

Antwerp 1654

ELEMENTA GEOMETRIÆ PLANÆ AC SOLIDÆ. QVIBVS ACCEDVNT SELECTA EX ARCHIMEDE THEOREMATA. AVCTORE ANDREA TACQVET SOCIETATIS IESV Sacerdote & Matheseos Professore. Quid noui in utrisque præstitum sit, præfatio ad Lectorem indicabit.

Imprint: ANTVERPIÆ, Apud IACOBVM MEVRSIVM. ANNO M. DC. LIV.

Octavo. *Elements* 1–6, 11–12. Andrea Tacquet ed. Dedicated to Philipp Eugenius of Hornes. A new Latin version of these books. The *approbatio* is dated 9 April 1654, the *facultas* 18 March and the *privilegium* 29 October. The selections from Archimedes have a separate title page reading as follows: ANDREÆ TACQVET E SOCIETATE IESV SELECTA EX ARCHIMEDE THEOREMATA. Via faciliori ac breuiori demonstrata, & nouis inuentis aucta. ANTVERPIÆ, Apud IACOBVM MEVRSIVM.

References: Riccardi 1654⁴. Steck IV.46.

UK/Irish copies: Marsh's Library, Dublin. Oxford: Bodleian (2).

Frankfurt 1654

[*vol. 1*]: EUCLIDIS ELEMENTORUM LIBRI XV. Accessit liber XVI. De Solidorum Regularium cuiuslibet intra quodlibet comparatione. OMNES PERSPICVIS DEMONSTRATIONIBUS accuratissime scholiis illustrati: nunc quartò editi, ac multarum rerum accessione post

primam editionem locupletati. Auctore CHRISTOPHORO CLAVIO Bambergensi è Societate IESV.

[*vol. 2*]: EUCLIDIS POSTERIORES LIBRI IX. Accessit liber XVI. De Solidorum Regularium cujuslibet intra quodlibet comparatione. OMNES PERSPICUIS DEMONSTRATIONIBUS, accuratisque scholiis illustrati: nunc quarto editi, ac multarum rerum accessione post primam editionem locupletati. Auctore CHRISTOPHORO CLAVIO Bambergensi è Societate IESU.

Imprint: [*vol. 1*] FRANCOFVRTI, Sumptibus hæredum JONÆ ROSÆ ANNO M.DC.LIV.

[*vol. 2*] FRANCOFURTI, Sumtibus hæredum IONÆ ROSÆ, Anno M. DC. LIV.

Two volumes, octavo. *Elements* 1–16. Christoph Clavius ed. Reimpression of **Rome 1574/Rome 1589/Cologne 1591/Rome 1603/Frankfurt 1607**, re-set page-for-page and often line-for-line from the 1607 impression; the diagrams are newly cut, in close imitation of those of that edition. The dedication is omitted, but the remaining prefatory matter is included.

References: Riccardi 1654¹. Steck IV.45 and IV.45a.

UK/Irish copies: Cambridge: UL (2). Glasgow. Marsh's Library, Dublin. Maynooth. NLW. National Trust properties. Newcastle. Oxford: Exeter, Queen's (2). Royal College of Physicians. St Andrews. UCL.

London 1654

EUCLIDIS SEX PRIMI ELEMENTORUM GEOMETRICORUM LIBRI, In commodiorem formam contracti & demonstrati. A P. GEORG: FOURNIER è societate JESU. Editio prioribus auctor atq; castigatior.

Imprint: LONDINI, Excudebat J. F. impensis Edwardi Story, apud quem prostant venales in celeberrima Academia Cantabrigiensi. MDC L IV.

Duodecimo. *Elements* 1–6. Georges Fournier ed. Reimpression of **Paris 1643/Paris 1644a**, including the dedication to Nicolaus Foucquet. The diagrams are new woodcuts in close imitation of those of 1643.

Frequently bound with Joannes Duhamel's *Elementa astronomica*, issued by the same printer and publisher in the same year.

Steck (wrongly) gives the printer's name as Stary.

References: Steck IV.47. ESTC R215390.

UK/Irish copies: BL. Cambridge: St John's, UL. Glasgow. NLW. National Trust properties. Oxford: Bodleian, Christ Church. Royal Society (2). UCL.

Paris 1654

EVCLIDIS ELEMENTORVM GEOMETRICORVM LIBRI Sex priores breuius demonstrati A.P. GEORGIO FOVRNIER è Societate IESV. SECVNDA EDITIO correctior.

Imprint: PARISIIS, Apud IOANNEM HENAVLT, Bibliopolam iuratum viâ Iacobæâ: ad insigne S. Raphaëlis. M. DC. LIV. Cum Priuilegio Regis.

Octavo. *Elements* 1–6. Georges Fournier ed. Reimpression of **Paris 1643/Paris 1644a**, using the same blocks for the diagrams and retaining the dedication to Nicolaus Fouquet.

Not catalogued by Steck but mentioned under his IV.47.

References: Riccardi 1654². Duarte p. 66.

UK/Irish copies: Glasgow. Marsh's Library, Dublin (2). Oxford: Corpus Christi, Merton, Queen's. Royal College of Physicians. Westminster School.

Paris 1654a

LES ELEMENTS D'EVCLIDE, EXPLIQUEZ Par le R. P. G. FOVRNIER, de la Compagnie de IESVS. Dediés A MONSIEVR LE CHEVALIER DE MESMES.

Imprint: A PARIS, Chez IEAN HENAVLT, Imprimeur Libraire Iuré, ruë saint Iacques, à l'Ange Gardien, & à l'Image saint Raphaël. M. DC. LIV. Auec Priuilege du Roy.

Octavo. *Elements* 1–6. Georges Fournier ed. Dedicated to Claude de Mesmes by Jean Henault. It is stated in the dedication that the French translation is by Fournier himself, evidently from his **Paris 1643/Paris**

1644a/Paris 1654. The same blocks are used for the diagrams.

References: None identified.

UK/Irish copies: Edinburgh.

Cambridge 1655

EUCLIDIS ELEMENTORUM Libri xv. breviter demonstrati,
Operâ IS. BARROW, CANTABRIGIENSIS Coll. TRIN. Soc.

Imprint: CANTABRIGIÆ: Ex celeberrimæ Academiae Typographeo.
Impensis Guilielmi Nealand Bibliopolæ. ANN. DOM. MDCLV.

Sexto. *Elements* 1–15. Isaac Barrow ed. Dedicated to Edward Cecil, John Knatchbul and Francis Willoughby. A new version of the *Elements*, with symbolic proofs composed by Barrow. We do not know of scholarship bearing on its detailed relationship with the similar project by Hérigone (see **Paris 1634**), to which Barrow was certainly indebted.

References: Riccardi 1655². Duarte p. 66. Steck IV.48. ESTC R213651.

UK/Irish copies: BL. Cambridge: Girton, Peterhouse, St John's, Trinity, UL (3). Exeter. Lincoln Cathedral. King's College, London. Marsh's Library, Dublin. NLW. Newcastle. Nottingham. Oxford: Bodleian, Christ Church. Royal Society. Senate House Library. Wellcome Library.

Rome 1655

EVCLIDIS SEX PRIMI ELEMENTORVM GEOMETRI-
CORVM Libri cum parte Vndecimi Ex maioribus CLAVII Com-
mentarijs in commodiorem formam contracti. RERV MQVE
MATHEMATICARVM CHRISTOPHORI Grienbergeri Oenohal-
lensis è Societate IESV OPVSCVLVM PRIMVM. Accessere ISAACI
MONACHI In sex eosdem Libros Scholia.

Imprint: ROMAE, Typis Nicolai Angeli Tinassij. 1655. Superiorum
permissu. Sumptibus Dominici Grialdi.

Duodecimo. *Elements* 1–6. Christoph Clavius, Christoph Grienberger ed.
Reimpression of **Rome 1629/Graz 1636**, Grienberger's abridgement based
on Clavius's edition, with the addition of the scholia of Isaac Monachus.

References: Riccardi 1655¹. Steck IV.49.

UK/Irish copies: None identified.

Cambridge 1657

EUCLIDIS DATA succinctè demonstrata: Unà cum Emendationibus quibusdam & Additionibus ad Elementa EUCLIDIS nuper edita. Operâ Mri. IS. BARROVV, CANTABRIGIENSIS Coll. Trin. Soc.

Imprint: CANTABRIGIÆ; Ex officina JOANN. FIELD, celebratissimæ Academiæ Typographi. Impensis Guilielmi Nealand Bibliopolæ. ANNO DOM. 1657.

Octavo. *Data*. Isaac Barrow ed. Dedicated to James Stock. Pages 45–56 at the end of the volume comprise ‘annotationes’ to Barrow’s edition of the *Elements* (**Cambridge 1655**), with which this volume is often found bound, and to which it was evidently intended as a companion, similar in mathematical style and physical format. Like Barrow’s *Elements*, this is a new version of its text, with new symbolic proofs.

References: Riccardi 1657³. Steck VIII.12. ESTC R31452.

UK/Irish copies: BL. Cambridge: Christ’s, Corpus Christi, Trinity, UL. Marsh’s Library, Dublin. Oxford: Bodleian. Royal Society. Senate House Library. Westminster School.

London 1659

EUCLIDIS ELEMENTORUM Libri xv. breviter demonstrati, Opera IS. BARROW, Cantabrigiensis, Coll. TRIN. Soc.

Imprint: LONDINI, Excudebat R. DANIEL, Impensis GUIL. NEALAND Bibliopolæ Cantabrig. M D C LIX.

Octavo. *Elements* 1–15; *Data*. Isaac Barrow ed. Reimpression of **Cambridge 1655** and **Cambridge 1657**, retaining the dedications to Cecil, Knatchbul and Willoughby (*Elements*) and Stock (*Data*) and reusing the diagram blocks from those editions. Barrow’s ‘annotationes’ on the *Elements* appear on pages 343–52, preceding the *Data*. The *Data* has a separate title page and is sometimes catalogued separately, as by Riccardi (1659¹), but

the pagination is continuous and we have not seen evidence that it was sold separately. The title page reads ‘EUCLIDIS DATA succincte demonstrata; Una cum Emendationibus quibusdam & Additionibus ad ELEMENTA. EVCLIDIS nuper edita. Opera Mri. IS. BARROW, Cantabrigiensis, Coll. Trin. Soc. LONDINI Excudebat R. Daniel, 1659.’

References: Riccardi 1659². Duarte p. 66/68. Steck IV.51. ESTC R3093.

UK/Irish copies: Cambridge: Christ’s, Corpus Christi (2), St John’s, Trinity, UL (3). NLW. National Trust properties. Newcastle (2). Nottingham. Oxford: Bodleian (4), Christ Church (2), St John’s. Royal Society. St Paul’s Cathedral. UCL (2). Wellcome Library. Worth Library, Dublin.

Amsterdam 1660

EUKLIDES SES EERSTE BOEKKEN, Van de Beginnelsen der WISKONSTEN. In Neerduyts vertaald door JACOB WILLEMSZ. VERROOTEN van Haerlem.

Imprint: t’AMSTELDAM, By JOANNES van RAVESTEYN, Boek-verkooper en Ordinaris Drukker deser Stede, 1660.

Quarto. *Elements* 1–6. Reissue of **Hamburg 1633/Hamburg 1638**. Sheet A is once again re-set, containing the title page, dedication to Willem van Ludinkhuizen (still dated 10 September 1638) and epistle.

References: Riccardi 1660³.

UK/Irish copies: None identified.

London 1660

EUCLIDE’S ELEMENTS; The whole Fifteen Books compendiously Demonstrated By Mr. ISAAC BARROW Fellow of Trinity Colledge in CAMBRIDGE. And Translated out of the Latin.

Imprint: LONDON, Printed by R. DANIEL, for WILLIAM NEALAND Bookseller in Cambridge; and are to be sold there, and at the Crown in Duck-Lane, 1660.

Octavo. *Elements* 1–15. Isaac Barrow ed. Translation of the *Elements* from **Cambridge 1655/London 1659**, using the same blocks for the diagrams.

The ESTC catalogues at R187966 a version with imprint ‘London: printed and sold by Joseph Moxon: at his shop on Corn-hill, at the signe of Atlas, 1660.’ This is based on a single reported copy in Worcester College Oxford, whose existence we cannot confirm, and we suspect a mistake.

This edition remained in print well into the eighteenth century, with reimpressions in 1686, 1705, 1722, 1732 and 1751 (see Heath, vol. 1, p. 110).

References: Riccardi 1660². ESTC R27968, R236028.

UK/Irish copies: Aberdeen (2). BL. Birmingham. Cambridge: Jesus, King’s, Peterhouse, Trinity, UL (2). Exeter. Leeds. Marsh’s Library, Dublin. NLS. NLW (3). National Trust properties (4). Oxford: Bodleian (2), Christ Church, St John’s. Senate House Library. UCL. Victoria and Albert Museum. Westminster School.

Lyon 1660

EVCLIDIS ELEMENTORVM Libri octo. Ad faciliorem captum accommodati. AVCTORE P. CLAVDIO FRANCISCO MILLIET DECHALES, Camberiensi Societ. IESV.

Imprint: LVGDVNI, Apud BENEDICTVM CORAL, in vico Mercatorio. M. DC. LX. Cum Priuilegio Regis.

Octodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. A new Latin version of this selection from the *Elements*; although Dechaes’ Euclid would be several times reprinted, this first impression is very rare. The series *Microfilms of rare and out-of-print books* (list 85, no. 42) appears to have a reproduction of a copy at Les Fontaines, Chantilly; the only other copy known to us is that in Christ Church, Oxford.

References: Riccardi 1660⁵. Steck IV.52.

UK/Irish copies: Oxford: Christ Church.

London 1661

EUCLID’S ELEMENTS OF Geometry. In XV. Books: With a supplement of divers PROPOSITIONS and COROLLARIES. To

which is added, a Treatise of REGULAR SOLIDS, By CAMPANE and FLUSSAS. LIKEWISE Euclid's DATA: And MARINUS his Preface thereunto annexed. Also a Treatise of the Divisions of Superficies, ascribed to Machomet Bagdedine, but published by Commandine, at the request of John Dee of London; whose Preface to the said Treatise declares it to be the Worke of EUCLIDE, the Author of these ELEMENTS. Published by the Care and Industry of JOHN LEEKE and GEORGE SERLE, Students in the MATHEMATICKS.

Imprint: LONDON: Printed, by R. & W. LEYBOURN, for RICHARD TOMLINS at the Sun and Bible in Pie-corner, M DC LXI.

Folio. *Elements* 1–16; *Data*. John Leeke, George Serle ed. Dedicated to James, Duke of York. A new English translation of the *Elements*, and the first English version of the *Data*; the sources are not clear although there is certainly a degree of dependence on Billingsley's version (London 1570). A frontispiece portrait of Euclid is included, as is the preface of John Dee from that edition, and the *Protheoria* of Marinus. The diagrams make systematic use of thick, thin and dotted lines, a feature possibly derived from the occasional use of dotted lines in Paris 1622.

A variant (ESTC R25387) has imprint 'LONDON: Printed, by R. & W. LEYBOURN, for GEORGE SAWBRIDGE at the Bible upon Ludgate-hill, M DC LXI.'

The *De divisionibus* is included, with a separate title page:

A BOOK OF THE DIVISIONS OF Superficies: ASCRIBED TO MACHOMET BAGDEDINE. Now first put forth, by the pains of JOHN DEE of LONDON, and FREDERIC COMMANDINE of VRBIN. AS ALSO A little Book of FREDERIC COMMANDINE, concerning the same matter. LONDON Printed by R. & W. LEYBOURN, 1660.

The pagination is continuous, and it does not seem to appear bound separately. Included (all in English, translated from the Latin and Italian printings by Commandino at Pesaro in 1570) are Commandino's dedication to Francisco Maria II and Dee's letter to Commandino, as well as the *De divisionibus* itself and Commandino's explicatory treatise. This is the only printing of the *De divisionibus* in this period which positively asserts its Euclidean authorship.

References: Riccardi 1661¹. ESTC R217918, R25387.

UK/Irish copies: Aberdeen. BL (2). Cambridge: Trinity, UL (2). Cardiff.

Edinburgh: Royal Observatory, UL. Glasgow. Leicester. Liverpool. NLW. Newcastle. Oxford: Bodleian, Christ Church, Exeter, New College, St John's. Saint Andrews (2). Senate House Library. Southampton. UCL (2). Westminster School.

Rotterdam 1661

De ses eerste Boecken EUCLIDIS, Van de beginselen ende fondamenten der Geometrie. Waer by-gevoeght zijn eenige nuttigheden, uyt de selve Boecken getrocken: Mitsgaders de Specien in Geometrische figuren, als 't maken, veranderen, t'samen-voegen, af-trecken, vermenighvuldigen, ende deelen. Over-geset, verklaert, ende uyt-geleydt tot vorderinghe ende oeffeninge van alle leer-gierige Liefhebbers der selver vrye Konste. DOOR JAN PIETERSZ DOU, Landt-meter ende Wijn-roeyer der Stadt LEYDEN. Van nieuws oversien ende verbeteret: Mitsgaders de by-gevoeghde nuttigheden, met de specien in Geometrische figuren breeder verklaert ende vermeerdert, door den selven Autheur.

Imprint: TOT ROTTERDAM, By Abraham van Waesberge, Boeck-verkooper op 't Steyger in de gekroonde Leeuw. 1661.

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626/Rotterdam 1632/Rotterdam 1647**, retaining the dedication to Jan van Hout dated 19 May 1606 and the 'by voeghsels' (so spelled).

A copy in the Bayerische Staatsbibliothek with a damaged title page is catalogued (wrongly) with the date 1675.

References: None identified.

UK/Irish copies: None identified.

Wittenberg 1661

EUCLIDIS ELEMENTORUM LIBRI XIII. Succinctis & perspicuis demonstrationibus comprehensi à D. Ambrosio Rhodio, Kembergensi, Mathematicum Super: Professore publico in Academia

Leucorea. Editio novissima, priore Correctior & Emendatio.

Imprint: WITTEBERGÆ, Typis & impensis Jobi Wilh. Fincelij, Anno M. DC. LXI.

Octavo. *Elements* 1–13. Ambrosius Rhodius ed. Reissue of **Wittenberg 1634** (itself a reimpression of **Wittenberg 1609**). The first sheet is re-set, removing the dedication but retaining the other prefatory matter. Riccardi (1660⁶) reports copies dated in 1660, but we cannot confirm their existence.

References: Riccardi 1661³.

UK/Irish copies: UCL.

Würzburg 1661

P. GASPARIS SCHOTTI REGISCURIANI E SOCIETATE JESU Olim in Panormitano Siciliæ, nunc in Herbipolitano Franconia ejusdem SOCIETATIS JESU Gymnasio Matheseos Professoris CURSUS MATHEMATICUS, Sive Absoluta omnium Mathematicarum Disciplinarum ENCYCLOPÆDIA, In Libros XXVIII. digesta, eoque ordine disposita, ut quivis, vel mediocri præditus ingenio, totam Mathesin à primis fundamentis proprio Marte addiscere possit. Opus desideratum diu, promissum à multis, à non paucis tentatum, à nullo numeris omnibus absolutum. Accesserunt in fine THEORESES MECHANICÆ NOVÆ.

Imprint: HERBIPOLI Sumptibus Hæredum JOANNIS GODEFRIDI Schönwetteri Bibliopolæ Francofurtensis. Excudebat JOBVS HERTZ Typographus Herbipolensis. ANNO M. DC. LXI.

Colophon: HERBIPOLI Excudebat JOBVS HERTZ Typographus Herbipolensis. Impensis Viduæ & Hæredum Joannis Godefridi Schönwetteri, Bibliopolæ Francofurtensis. Cum Gratia & Privilegio Sac. Cæs. Majestatis. Anno M. DC. LXI.

Folio. *Elements* 1–6. Gaspar Schott ed. Dedicated (6 January 1661) to the Emperor Leopold; the dedication is dated the sixth day of 1661. The *facultas* to the author, and that to the bookseller, are both signed on 27 June 1660.

Pages 61–108 ('Liber III') comprise *Elements* 1–6 in Latin; the final index (d4^r–e4^v) is a list of the definitions and propositions in *Elements* 1–6 and parts

of 11 and 12.

References: Riccardi 1661⁴. Steck IV.53.

UK/Irish copies: Aberdeen. Cambridge: Emmanuel, Trinity, UL (3). Chetham's. Edinburgh. Leeds. Oxford: Christ Church, Corpus Christi, History of Science Museum, Jesus, Magdalen, New College, Queen's, St John's. Science Museum.

Amsterdam 1662

De 15 Boecken der ELEMENTEN Van Euclidis. Met korte verklaringen eeniger Propositionen. Uyt het Latijn Overgeset, Door FRANS VAN SCHOTEN, in zijn leven Professor Matheseos der Hooge Schoole tot Leyden. En nu vergroot deur J. V. L. met het sestiende Boeck van Christophoro Clavio, trouwelijck uyt Latijn Vertaelt, ende met een Aenhangsel der Fondamenten vande Mathematische Namen ende Coracteren verrijckt, in dese Const gebruykelijck tot gerief der Aencomelingen.

Imprint: t'AMSTERDAM. By Iacob van Leest, op 't Water in de Blaeuwe Kroon. 1662.

Duodecimo. *Elements* 1–16 (enunciations). Frans van Schooten ed. Dedicated to Justus Bonardus. Page-for-page and very largely line-for-line reimpression of **Leiden 1617**, with the addition of a new dedication and Dutch translations (the first) of the propositions of Book 16, as well as lemmas of Pappus concerning the regular solids, a scholium of Clavius and a further appendix on the matter of Book 15; this matter appears to derive from **Cologne 1607/Cologne 1627**, the slightly expanded version of the Gracilis/Magnienus Latin *Elements*. Riccardi 1663² reports copies with a 1663 imprint, but we cannot confirm this.

References: Riccardi 1662¹.

UK/Irish copies: None identified.

Le Mans 1663

LA PERSPECTIVE D'EVCLIDE, TRADVITE EN FRANÇOIS SVR LE TEXTE GREC, ORIGINAL DE L'AVTHEVR, Et demon-

strée PAR ROL. FRÉART DECHANTELOV SIEVR DE CHAMBRAY.

Imprint: AV MANS. De l’Imprimerie de IACQVES YSAMBART Marchand Libraire, et Imprimeur, demeurant au Pont-neuf, à l’Enseigne du Saint Esprit. M. DC. LXIII.

Quarto. *Optica*. Roland Fréart ed. Dedicated to Louis XIV. The first version of the *Optica* in French.

References: Riccardi 1663³.

UK/Irish copies: NLW. Oxford: St John’s. UCL.

Antwerp 1665

ELEMENTA GEOMETRIÆ PLANÆ AC SOLIDÆ. QVIBVS ACCEDVNT SELECTA EX ARCHIMEDE THEOREMATA. AVCTORE ANDREA TACQVET SOCIETATIS IESV Sacerdote & Matheseos Professore. Quid noui in vtrisque præstitum sit, præfatio ad Lectorem indicabit. EDITIO SECVNDA CORRECTIOR.

Imprint: ANTVERPIÆ, Apud IACOBVM MEVRSIVM. ANNO M. DC. LXV.

Octavo. *Elements* 1–6, 11–12. Andrea Tacquet ed. Page-for-page reimpression of **Antwerp 1654**, retaining the dedication to Philipp Eugenius of Hornes, and the *approbatio*, *facultas* and *privilegium* dated in 1654. The selections from Archimedes once again have a separate title page, with the same wording as in the earlier impression.

References: Riccardi 1665¹.

UK/Irish copies: BL. Cambridge, UL. Oxford: Bodleian, Corpus Christi. UCL.

Cambridge 1665

EUCLIDIS SEX PRIMI ELEMENTORUM GEOMETRICORUM LIBRI, Commodius demonstrati. A. P. GEORG. FOURNIER è societate JESU. Accesserunt Elementa Astronomica, ubi Theodosii Tripolitæ Sphæricorum libri tres, & universa triangulorum resolutio

demonstrantur per Johannem Baptistam Duhamel, Matheseos Professore. Editio prioribus auctior atque castigatio.

Imprint: CANTABRIGIÆ, Excudebat J. Field, impensis Edwardi Story, MDCLXV.

Duodecimo. *Elements* 1–6. Georges Fournier ed. Line-for-line reimpression of **London 1654**, thus in turn a reimpression of **Paris 1643/Paris 1644a**. The dedication to Nicolaus Fouquet is included; the diagram blocks of 1654 are re-used.

Some copies have a variant form of the title page, replacing the words ‘Commodius . . . Professore’ as follows: ‘In commodiorem formam contracti & demonstrati. A. P. GEORG. FOURNIER è societate JESU. Accesserunt Elementa Astronomica, Autore Johanne Baptista Duhamel, in Academia Parisiensi Matheseos Professore Regio.’

The *Elementa astronomica* has a separate title page, with the same imprint details as the main title page, and is dedicated to Claudius Bazin.

References: Steck (under IV.47). ESTC R5894. GMIP Cambridge 1665.

UK/Irish copies: BL. Birmingham. Cambridge: St John’s, Trinity, UL (2). Durham. Exeter. Glasgow. NLW. Oxford: All Souls, Bodleian, Queen’s, St John’s. UCL. Wellcome Library.

Madrid 1665

SEGUNDA PARTE DEL ARTE Y VSO DE ARCHITECTVRA DEDICADA AL DES AMPARO QVE PADECIO MI REDEMPTOR IESV CHRISTO las tres oras que estubo viuo enclabado en el Arbol de la Cruz. CON EL QVINTO Y SEPTIMO libros de Euclides traducidos de latín en Romance Y LAS MEDIDAS DIFICILES DE Bouedas y de las superficies y pies cubicos de Pichinas. CON LAS ORDENANZAS DE La Imperial Ciudad de Toledo aprobadas y Confirmadas por la Cesarea Magd. del Sr Emperador Carlos V de Gloriosa memoria COMPVESTO POR EL P F. LAVRENCIO DE SAN Nicolas Augustino descalzo Architecto y Maestro de obras natural de la muy noble y coronada Villa de Madrid.

Folio. *Elements* 5, 7. The Euclidean material occupies pp. 269–411. No

translator is prominently named in the volume, but some library catalogues attribute book 5 to Antonio de Nájera and book 7 to Juan de la Rocha. The translation of book 5 appears to be new; that of book 7 is the first version in Spanish.

There is no imprint or colophon; the title page bears an engraver's signature: 'Petrus a Villafranca sculptor Regius sculpsit, 1663'. Eight separate licenses from censors and ecclesiastical and royal offices are printed, with dates 10 and 17 February, 8 and 16 July and 12 August 1664, and 4 February 1665.

References: None identified.

UK/Irish copies: None identified.

Milan 1671

I PRIMI SEI LIBRI D'EVCLIDE TRATTI IN VOLGARE. DEDICATI ALL' ILLMO. SIGR. CONTE VITALIANO BORROMEO Generale dell'Artiglieria, e del Consiglio Segreto di S. M. Cattolica, e Commessario Imperiale della Maestà dell'Imperatore in Italia.

Imprint: IN MILANO, Nella Stampa di Lodouico Monza. 1671. Con licenza de' Superiori, e Priuilegio.

Colophon: IN MILANO, Nella Stampa di Lodouico Monza. MD-CLXXI. Con licenza de' Superiori.

Duodecimo. *Elements* 1–6. Dedicated by Monza to Vitaliano Borromeo. The translator is named in the dedication as Pietro Paolo Caravaggi. A new Italian version of these books.

References: Riccardi 1671^{1*}.

UK/Irish copies: None identified.

Antwerp 1672

ELEMENTA GEOMETRIÆ PLANÆ AC SOLIDÆ. QVIBVS ACCEDVNT SELECTA EX ARCHIMEDE THEOREMATA. AVCTORE ANDREA TACQVET SOCIETATIS IESV Sacerdote & Matheseos Professore. Quid noui in vtrisque præstitum sit, præfatio ad Lectorem indicabit. EDITIO TERTIA CORRECTIOR.

Imprint: ANTVERPIÆ, Apud IACOBVM MEVRSIVM. ANNO M. DC. LXXII.

Octavo. *Elements* 1–6, 11–12. Andrea Tacquet ed. Page-for-page reimpression of **Antwerp 1654/Antwerp 1665**, retaining the dedication to Philipp Eugenius of Hornes, and the *approbatio, facultas* and *privilegium* dated in 1654. The selections from Archimedes once again have a separate title page, with the same wording as in the earlier impressions.

References: Riccardi 1672⁶.

UK/Irish copies: Aberdeen. BL. Marsh's Library, Dublin. NLW. Royal Society.

Lyon 1672

HVICT LIVRES DES ELEMENTS DEVCLIDE RENDVS PLVS FACILES Par le R. P. CLAVDE FRANÇOIS MILLIET DECHALES, de la Compagnie de IESVS.

Imprint: A LYON, Chez BENOIST CORAL, ruë Merciere, à la Victoire. M. DC. LXXII. Auec Priuilege du Roy.

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. Translated from **Lyon 1660**; the privilege is dated 7 October 1671.

Steck (III.96), evidently due to a misreading of the imprint date in **Paris 1683**, reported a 1583 impression of Dechaes' French *Elements*.

References: Riccardi 1672¹. Steck IV.60.

UK/Irish copies: NLW. Nottingham.

Leiden and Amsterdam 1673

EVCLIDIS ELEMENTORVM SEX PRIORES LIBRI Recogniti OPERA CHRISTIANI MELDER. Matheseos Prof.

Imprint: LUGD. BATAV. & AMST. Apud DANIELEM, ABRAHAMUM & ADRIANUM à GAESBEECK. M DC LXXIII.

Sexto. *Elements* 1–6. Christian Melder ed. Apparently a new version of the text, though a debt to Fournier is acknowledged in the preface (*i.e.* to **Paris 1643/Paris 1644a/Paris 1654**).

References: Riccardi 1673^{2*}. Steck IV.61.

UK/Irish copies: Aberdeen. Cambridge: UL. Manchester. Oxford: St John's. UCL. Winchester College.

Frankfurt 1674

P. GASPARIS SCHOTTI REGISCURIANI E SOCIET. JESU
Olim in Panormitano Siciliae, nunc in Herbipolitano Franconiae
ejusdem SOCIETATIS JESU Gymnasio Matheseos Professoris
CURSUS MATHEMATICUS, SIVE ABSOLUTA OMNIUM
MATHEMATICARUM DISCIPLINARUM ENCYCLOPÆDIA, In
Libros XXVIII. digesta, eoque ordine disposita, ut quivis, vel mediocri
præditus ingenio, totam Mathesin à primis fundamentis proprio Marte
addiscere possit. Opus desideratum diu, promissum à multis, à non
paucis tentatum, à nullo numeris omnibus absolutum. Accesserunt
in fine THEORESES MECHANICÆ NOVÆ Additis Indicibus
locupletissimis.

Imprint: Cum Privilegio Sacrae Cæsareæ ac Regiæ Majestatis.
FRANCOFURTI AD MOENUM, Sumptibus JOANNIS ARNOLDI
CHOLINI. ANNO M DC LXXIV.

Folio. *Elements* 1–6. Caspar Schott ed. Reimpression (re-set page-for-page) of **Würzburg 1661**, including the dedication to the Emperor Leopold dated in 1661, the *facultas* to the author of 27 June 1660 and a new *privilegium* to the bookseller dated 25 August 1674. Once again book III, on pages 61–108, comprises *Elements* 1–6, and the final index (d4^r–e4^v) is a list of the definitions and propositions in *Elements* 1–6 and parts of 11 and 12.

References: Riccardi 1674³. Steck IV.62a.

UK/Irish copies: None identified.

Lyon 1674

[*Vol. 1*]: R. P. CLAVDII FRANCISCI MILLIET DECHALES
CAMBERIENSIS Ë SOCIETATE IESV. CVRSVS SEV MVNDVS

MATHEMATICVS TOMVS PRIMVS COMPLECTENS EVCLIDIS LIBROS OCTO, ARITHMETICAM, Theodosij sphærica, Trigonometriam, Geometriam practicam, Mechanicam, Staticam, Geographiam vniuersalem, Tractatum de Magnete, Architecturam Ciuilem, & Artem tignariam. NVNC PRIMVM IN LVCEM PRODIT.

Imprint: [Vol. 1] LVGDVNI, Ex Officina ANISSONIANA. M. DC. LXXIV. CVM PRIVILEGIO REGIS.

Three volumes, quarto. *Elements* 1–6, 11–12. Claude-François Milliet Dechales ed. Dedicated to Carolus Emanuel II. The Euclidean text occupies pp. 1–80 in vol. 1. It is reprinted from **Lyon 1660**; the diagrams are newly cut.

Steck and Riccardi, both apparently relying on secondary sources, describe this as a separate edition of the *Elements*; we have not seen evidence that there was such a separate issue.

References: Riccardi 1674². Steck IV.62.

UK/Irish copies: Aberdeen. Cambridge: UL, Edinburgh. Oxford: Christ Church, Corpus Christi, History of Science Museum, Magdalen, Queen's. Queen's University, Belfast. Royal College of Physicians. Royal Society.

Lyon 1675

ELEMENTORUM EUCLIDIS LIBRI OCTO, Ad faciliorem cap-
tum accommodati. AUTHORE P. CLAVDIO FRANCISCO MIL-
LIET DECHALES, Camberiensi, Societ. JESU. TERTIA EDITIO.
Cæteris facilior & correctior.

Imprint: LVGDVNI, Sumptib. VIDVÆ BENEDICTI CORAL, in
vico Mercatorio sub signo Victoriæ. M. DC. LXXV. Cum Superio-
rum Permissu.

Sexto. *Elements* 1–6, 11–12. Claude-François Milliet Dechales ed. Reim-
pression of **Lyon 1660**, thus containing the same Euclidean text as **Lyon 1674**,
Dechales' *Cursus mathematicus*. The diagrams use the blocks from **Lyon 1660**
(also used in **Lyon 1672**, the French translation of this work). The preface
refers to the *Cursus*, but does not make it clear whether the designation of this
as the third edition of Dechales' Latin *Elements* implies that another separate

edition had appeared since 1660. If it had, we have not seen evidence for it or its date.

Ecclesiastical permissions bear the dates 12 January and 11 and 12 February 1675, and the *facultas* of Coral's provincial 7 October 1671.

References: Riccardi 1675².

UK/Irish copies: Aberdeen.

Osnabrück 1676

ELEMENTORVM EUCLIDIS Libri XV. Breviter ac succinctè demonstrati Operâ & Studio Mri Js. BARROW, Cantabrigiensis, COLL. TRIN. SOC. Nunc vicissim revisi, & à cunctis erroribus expurgati.

Imprint: OSNABRVGI Apud Johan. Georg. Schwänderum. Anno 1676.

Octavo. *Elements* 1–15; *Data*. Isaac Barrow ed. A reimpression, presumably unauthorised, of **London 1659**, thus containing the text of the *Elements* from **Cambridge 1655** and that of the *Data* from **Cambridge 1657**. The diagrams are newly cut in imitation of those from 1655 and 1657. The dedications are not included; neither are the ‘annotationes’ on the *Elements*.

The *Data* has a separate title page, but the pagination is continuous:

EVCLIDIS DATA Succinctè demonstrata, Una cum Emendationibus & Additionibus Ad Elementa Euclidis, Edita, operâ Mri. Js. BARROW, Cantabrigiensis, COLL. TRIN. SOC. Nunc de-nuo revisa, & à cunctis erroribus expurgata. OSNABRVGI Apud Johan. Georg. Schwänderum. Anno 1675.

Perhaps as a result, some catalogues report copies of this impression dated 1675, and Steck (IV.63) and Riccardi (1675¹) list a London 1675 impression of Barrow's *Elements*, for which we have not seen direct evidence.

References: Riccardi 1676² and 1675³. Steck IV.64 and VIII.13.

UK/Irish copies: BL. Cambridge: Trinity. NLW. Oxford: Bodleian. UCL.

Rouen 1676

[Vol. 1]: LES QUINZE LIVRES DES ELEMENTS D'EUCLIDE. Traduits en François par D. HENRION Professeur és Mathematiques,

reveus & corrigez: avec des Commentaires beaucoup plus amples & faciles, & des figures en plus grand nombre que dans toutes les impressions precedentes. Plus, le Livre des **DONNEZ** du même Euclide, aussi traduit en François par ledit Henrion. **TOME I.**

[Vol. 2]: **LES QUINZE LIVRES DES ELEMENTS D'EUCLIDE.**
Traduits en François par D. HENRION. **TOME II.**

Imprint: [Both volumes] A ROVEN, Chez JEAN LUCAS, ruë aux Juifs, à côté de la petite porte de l'Hôtel de Ville. M. DC. LXXVI.

Two volumes, octavo. *Elements* 1–15; *Data*. Denis Henrion ed. Reimpression of **Paris 1632**, thus containing the text of the *Elements* from **Paris 1615/Paris 1621/Paris 1623/Paris 1631/Rouen 1649**. Vol. 1 contains *Elements* 1–9; vol. 2 the ‘Sommaire de l’algebre’, *Elements* 10–15, the *Protheoria* of Marinus and the *Data*. We believe the diagrams for the *Elements* are those of **Rouen 1649**, while those for the *Data* are newly cut.

For this impression, the epistle to the reader is shortened so as to remove the statement that any part of Henrion’s proposed second volume of the works of Euclid (containing the *Optics*, *Catoptrics*, *Phaenomena*, musical works and *De levi*) had been printed.

Steck lists at IV.27 what seems to be this edition with a mistaken date: 1626 for 1676.

References: Riccardi 1676¹. Steck IV.64a.

UK/Irish copies: Edinburgh. UCL.

Bamberg 1677

P. GASPARIS SCHOTTI REGIS - CURIANI, E SOCIETATE JESU. Olim in Panormitano Siciliae, nunc in Herbipolitano Franconiae ejusdem SOCIETATIS IESU Gymnasio Matheseos Professoris CURSUS MATHEMATICUS, Sive ABSOLUTA OMNIUM MATHEMATICARUM DISCIPLINARUM. ENCYCLOPÆDIA, In LIBROS XXVIII. digesta, Eoque Ordine disposita, ut quivis, vel mediocri præditus ingenio, totam Mathesin à primis fundamentis proprio Marte addiscere possit. Opus desideratum diu, promissum à multis, à non paucis tentatum, à nullo numeris omnibus absolutum.

Accesserunt in fine THEORESES MECHANICÆ NOVÆ Additis
INDICIBUS locupletissimis

Imprint: Cum Privilegio Sacræ Cæsareæ Majestatis. BAMBERGÆ,
Sumpt. JOH. MARTINI SCHÖNWETTERI, Bibliopolæ Franco-
furtensis. M. DC. LXXVII.

Folio. *Elements* 1–6. Gaspar Schott ed. A reissue of **Frankfurt 1674** (in turn a reimpression of **Würzburg 1661**). The first sheet is re-set, but the dedication to the Emperor Leopold is retained, with its date in 1661. In this version the *facultates* to author and bookseller of 27 June 1660 are both included; the new privilege of 1674 is not.

References: Riccardi 1677^{2*}. Steck IV.65.

UK/Irish copies: BL. Oxford: Christ Church. UCL. Warburg.

Rouen and Paris 1677

Les quinze livres des elemens geometriques d’Euclide. Traduits et commentez par D. Henrion Mathematicien. Derniere edition. Reveuë et augmentée de plusieurs figures, et du Livre des Donnez du même Auteur.

Imprint: A Rouen, & se vend à Paris, chez Jean d’Houry, au bout du Pont-Neuf, sur le quay des Augustins, à l’image de S. Jean. M. DC. LXXVII

Octavo. *Elements* 1–15; *Data*. Denis Henrion ed. This issue is described by Steck and appears in the library catalogues of the Staats- und Universitätsbibliothek Göttingen, the Institut Polytechnique de Paris, the Institut Catholique de Paris and the Bibliothèque de l’Arsenal at Toulouse. We have not seen a copy. It appears to be a reissue of **Rouen 1676** with cancel title page; thus a reimpression of **Paris 1632** and containing the text of the *Elements* from **Paris 1615** and the text of the *Data* from **Paris 1632**.

References: Steck IV.64b.

UK/Irish copies: None identified.

Paris 1677a

LES ELEMENS D’EVCLIDE EXPLIQUEZ D’UNE MANIERE
nouvelle & tres-facile. AVEC L’VSAGE DE CHAQUE Proposition

pour toutes les parties des Mathematiques. PAR LE P. CLAUDE FRANÇOIS MILLIET DECHALES, de la Compagnie de JESUS.

Imprint: A PARIS, Chez ESTIENNE MICHALLET, ruë Saint Jacques, à l'Image S. Paul, proche la Fontaine Saint Severin. M. DC. LXXVII AVEC PRIVILEGE DV ROY.

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. Based upon the Latin texts of **Lyon 1660/Lyon 1674** and the French translation **Lyon 1672**, but in fact a substantially revised text with new wording in many places as well as a good deal of new explanation concerning the use of each proposition.

The *privilege* contains the dates 4 May and 28 May and states that printing was completed on 12 April.

References: Riccardi 1677¹.

UK/Irish copies: Cambridge: UL. Oxford: Bodleian. UCL.

London 1678

EUCLIDIS ELEMENTORUM Libri XV. breviter demonstrati, Operâ IS. BARROW, Cantabrigiensis, Coll. TRIN. Soc. Et prioribus mendis typographicis nunc demum purgati.

Imprint: LONDINI, Typis J. Redmayne: Prostant autem apud J. Williams ad Insigne Coronæ in Cœmeterio D. Pauli, & J. Dunmore ad Insigne Trium Bibliorum in vico vulgò vocato Ludgate-street, MDCLXXVIII.

Octavo. *Elements* 1–15; *Data*. Isaac Barrow ed. Revised reimpression of **London 1659**, itself a reimpression of **Cambridge 1655** and **Cambridge 1657**, retaining the dedications to Cecil, Knatchbul and Willoughby (*Elements*) and Stock (*Data*) and reusing the diagram blocks from those editions. The ‘annotationes’ on the *Elements* are now incorporated into the main text.

The *Data* once again has a separate title page, with continuous pagination; it reads as in the 1659 impression except for the imprint details ‘J. Redmayne, 1678.’

References: Riccardi 1678³. Steck IV.67, VIII.14. ESTC R3052.

UK/Irish copies: Aberdeen. BL. Bristol. Cambridge: King’s, St John’s,

Trinity, UL (2). Canterbury Cathedral. Exeter. Glasgow. Guildhall School of Music and Drama. Leeds. Maynooth. NLS. NLW (2). Newcastle. Nottingham. Oxford: All Souls, Bodleian (2), Brasenose, Christ Church, Corpus Christi, Queen's, St John's (2). Science Museum. UCL (2). Winchester College.

Naples 1679

EUCLIDIS ELEMENTORUM LIBRI SEX. Ex traditione Federici Commandini.

Imprint: NEAPOLI, Typis Novelli de Bonis Typograph. Archiep. 1679. Superiorum facultate. Sumptibus Cosmi Fioravanti.

Octavo. *Elements* 1–6. Dedicated to Dominicus Marius Carafa. Uses the Euclidean text from **Pesaro 1572/Pesaro 1619**.

References: Riccardi 1679^{1*}. Steck IV.68.

UK/Irish copies: None identified.

London 1680–81

A NEW SYSTEME OF THE MATHEMATICKS: CONTAINING I. ARITHMETICK, as well NATURAL and DECIMAL, as in Species, or the Principles of ALGEBRA. II. Practical GEOMETRY, together with the first Six Books of Euclid's ELEMENTS, as also the Eleventh and Twelfth, symbolically demonstrated. III. TRIGONOMETRY PLAIN and SPHERICAL. IV. COSMOGRAPHY, or a DESCRIPTION of the HEAVENS. V. NAVIGATION, or SAILING by a Plain or Mercator's Chart; as also by the Arch of a Great Circle, &c. VI. The DOCTRINE of the SPHERE, grounded on the Motion of the Earth, according to the Old Pythagorean and Copernican Systeme. VII. Astronomical TABLES, with Tables of Logarithms, Natural and Artificial Sines and Tangents, and Versed Sines. VIII. A New GEOGRAPHY, or a Description of the most Eminent Countries and Coasts of the WORLD, with Maps of them, and Tables of their Latitude and Longitude. Composed by Sir JONAS MOORE Knight,

Late Surveyor General of His MAJESTY'S Ordnance, and Fellow of the ROYAL SOCIETY: And designed for the Use of the Royal Foundation of the Mathematical SCHOOL in CHRIST-HOSPITAL. By His MAJESTY'S special Command.

Imprint: LONDON, Printed by A. Godbid and J. Playford, for ROBERT SCOTT, Bookseller in Little Britain, M. DC. LXXXI.

Two volumes, quarto. *Elements* 1–6, 11–12. Dedicated to Charles II of England; the dedication is signed by William Hanway and John Potenger, who are stated in the preface to be Moore's sons-in-law. It is also stated in the preface that the eight books of the *Elements* were 'done by Mr. Perkins': *i.e.* Peter Perkins, at that time master of the mathematical school at Christ's Hospital. Barrow is named as a model for the translations, and the sources for the figures (which were newly engraved) were the editions of Melder (**Leiden and Amsterdam 1673**) for books 1–6 and of Barrow for books 11 and 12.

The title pages and running heads in these volumes present a confusing combination of 'books', 'sections', 'parts' and 'chapters', which do not relate straightforwardly to the list of contents on the title page or the 'Index, or Contents' at the beginning of the book. It is clear that different parts of the text were printed separately; they are not always found bound in the same order, and it is not unusual to find parts of the *Systeme* bound and catalogued separately (as for instance ESTC R5648). Both 'The six first books of Euclid's Elements' and 'The eleventh and twelfth books of Euclid's elements' have separate title pages with the imprint 'Printed at LONDON, by Anne Godbid, and John Playford, 1680.' Their pagination, however, is continuous with the preceding 'Arithmetic in Species' and the following 'Doctrine of Surds', with which they share the running head 'Lib. IV.'

References: Riccardi 1681². ESTC R30526.

UK/Irish copies: BL. Cambridge: Christ's, Trinity, UL (2). Trinity College, Dublin. Exeter. Leicester. Liverpool. National Maritime Museum. Newcastle (2). Oxford: Christ Church, Corpus Christi, Jesus, Merton, Worcester. Senate House Library. UCL (4). Wellcome Library.

Rotterdam 1681

De ses eerste Boecken EUCLIDIS, Van de beginselen ende

fondamenten der Geometrie. Waer by-gevoeght zijn eenige nuttigheden, uyt de selve Boecken getrocken: Mitsgaders de Specien in Geometrische figuren, als 't maken, veranderen, t' samen-voegen, af-treken, vermeenighvuldigen, ende deelen. Over-geset, verklaert, ende uyt-geleydt tot vorderinghe ende oeffeninge van alle leer-gierige Liefhebbers der selver vrye Konste. DOOR JAN PIETERSZ DOU, Landt-meter ende Wijn-roeyer der Stadt LEYDEN. Desen laetsten druck, van nieuws oversien ende verbeteret: Mitsgaders de by-gevoegde nuttigheden, met de specien in Geometrische figuren breeder verklaert ende vermeerderet, door den selven Autheur.

Imprint: TOT ROTTERDAM. By Abraham van Waesberge, Boeck-verkoopster op 't Steyger in de gekroonde Leeuw. 1681.

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626/Rotterdam 1632/Rotterdam 1647/Rotterdam 1661** retaining the dedication to Jan van Hout dated 19 May 1606 and the concluding 'by voeghsels' (so spelt).

References: Riccardi 1681¹.

UK/Irish copies: UCL.

Paris 1682

LES ELEMENS D'EUCLIDE, EXPLIQUEZ D'UNE MANIERE nouvelle & tres-facile. AVEC L'USAGE DE CHAQUE Proposition pour toutes les parties des Mathematiques. Par le P. CLAUDE FRANÇOIS MILLET DECHALLES, de la Compagnie de JESUS. NOUVELLE EDITION.

Imprint: A PARIS, Chez ESTIENNE MICHALLET, ruë S. Jacques, à l'Image S. Paul, proche la Fontaine Saint Severin. M. DC. LXXXII. AVEC PRIVILEGE DV ROY.

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. Reimpression of **Paris 1677a**, thus based ultimately on the Latin texts of **Lyon 1660/Lyon 1674** and the French translation **Lyon 1672**. The *privilege* dated in 1676 is retained, and the diagrams are printed from the same blocks as before.

References: Duarte p. 73.

UK/Irish copies: UCL.

Paris 1682a

OEUVRES POSTHUMES DE Mr ROHAULT.

Imprint: A PARIS, Chez GUILLAUME DESPREZ, ruë S. Jacques, à S. Prosper, & aux trois Vertus, au dessus des Mathurins. M. DC. LXXXII. AVEC PRIVILEGE DV ROY.

Quarto. *Elements* 1–6. Jacques Rohault, Claude Clerselier ed. Dedicated to Mgr. d'Estrées of Laon; the dedication is signed by Clerselier. Pages 1–302 contain an edition of *Elements* 1–6, in what appears to be a new French translation.

References: None identified.

UK/Irish copies: Cambridge: UL, Whipple Museum. Oxford: Bodleian. UCL.

Amsterdam 1683

ELEMENTA GEOMETRIÆ PLANÆ AC SOLIDÆ. Quibus accedunt selecta EX ARCHIMEDE THEOREMATA. Auctore ANDREA TACQUET SOC. JESU Sacerdote & Matheseos Professore. EDITIO NOVA.

Imprint: AMSTELÆDAMI, Apud HENRICUM WETSTENIUM. M DC LXXXIII.

Octavo. *Elements* 1–6, 11–12. Andrea Tacquet ed. Page-for-page reimpression of **Antwerp 1654**/**Antwerp 1665**/**Antwerp 1672**, retaining the *approbatio* and *facultas* of 1654 but not the dedication or the *privilegium*. Once again the selections from Archimedes have a separate title page but continuous pagination.

References: Steck IV.70.

UK/Irish copies: Cambridge: St John's. Leicester. National Trust properties (2). Nottingham. Oxford: Queen's. York.

Lausanne 1683

LES ELEMENS D'EUCLIDE EXPLIQUEZ D'UNE MANIERE nouvelle & tres facile. AVEC L'VSAGE DE CHAQVE Proposition pour toutes les parties des Mathematiques. PAR LE P. CLAVDE FRANÇOIS MILLIET DECHALES.

Imprint: A LAUSANNE, Chez DAVID GENTIL. M. DC. LXXXIII.

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. Page-for-page reimpression (possibly unauthorised) of **Paris 1677a**; the text seems not to adopt the slight revisions of the reimpression **Paris 1682**. The diagrams are newly cut and rather crude.

References: Riccardi 1683¹.

UK/Irish copies: None identified.

Paris 1683

LES ELEMENS D'EUCLIDE, EXPLIQUEZ D'UNE MANIERE nouvelle & tres-facile. AVEC L'USAGE DE CHAQUE Proposition pour toutes les parties des Mathematiques. Par le P. CLAUDE FRANÇOIS MILLET DECHALLES, de la Compagnie de JESUS. NOUVELLE EDITION.

Imprint: A PARIS, Chez ESTIENNE MICHALLET, ruë S. Jacques à l'Image S. Paul, proche la Fontaine Saint Severin. M. DC. LXXXIII. AUEC PRIVILEGE DU ROY.

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. Reimpression of **Paris 1677a/Paris 1682**, retaining the *privilege* dated in 1676 and reusing the same blocks for the diagrams.

References: Riccardi 1683⁴. Duarte p. 73.

UK/Irish copies: NLS. Nottingham. UCL.

Rouen and Paris 1683

LES QUINZE LIVRES DES ELEMENS GEOMETRIQUES D'EUCLIDE. Traduits & commentez par D. HENRION Mathematicien. DERNIERE EDITION. Reveuë & augmentée de plusieurs

figures, & du Livre des DONNEZ du même Auteur. TOME PREMIER. [*Vol. 2 has TOME SECOND.*]

Imprint: [*Both volumes*] A Roüen, & se vend, A PARIS, Chez LAURENT D'HOURLY, ruë saint Jacques, près les Mathurins, au saint Esprit. M. DC. LXXXIII. Avec Privilege.

Two volumes, octavo. *Elements* 1–15; *Data*. Denis Henrion ed. Reissue of **Rouen 1676** with cancel title pages, thus containing the text of the *Elements* first issued in **Paris 1615** as well as Henrion's 'Sommaire de l'algebre', the *Protheoria* of Marinus and the *Data*.

References: None identified.

UK/Irish copies: Cambridge: UL.

Bologna 1684

SEX PRIORA EVCLIDIS GEOMETRICA ELEMENTA, Denudò clarioribus Auctorum demonstrationibus, vna cum breuissimo proportionum tractatu in gratiam studiosæ iuuentutis eddita, AC Illustrissimo Domino D. IOANNI FRANCISCO POLO Patritio Veneto consecrata.

Imprint: BONONLÆ, M. DC. LXXXIV. Typis Iosephi Longi. Superiorum permissu.

Octavo. *Elements* 1–6. Dedicated to Giovanni Francisco Polo; the dedication to Polo is signed on 15 March 1684 by 'H.R.' Some of the diagrams use the same blocks as **Bologna 1651/Bologna 1651a/Bologna 1686**, the Italian version of *Elements* 1–6 by Giovanni Ricci, printed for the second time by Longhi, but the texts do not seem to be closely related.

References: Riccardi 1684^{1*}. Duarte p. 73.

UK/Irish copies: NLW (2). UCL.

London 1685

EUCLIDIS ELEMENTORUM Libri XV. breviter demonstrati, Operâ IS. BARROW, Cantabrigiensis, Coll. TRIN. Soc. Et prioribus mendis typographicis nunc demum purgati.

Imprint: LONDINI, Apud CAR. MEARNE, Bibliopolam Regium. MDCLXXXV.

Octavo. *Elements* 1–15; *Data*. Isaac Barrow ed. Reissue of **London 1678** with cancel title page. The separate title page for the *Data*, naming Redmayne as printer, is retained.

References: ESTC R218297.

UK/Irish copies: Aberdeen (2). BL. Cambridge: Trinity. Eton College. NLW. Newcastle. Oxford: Bodleian. UCL. Wellcome Library.

London 1685a

THE ELEMENTS OF EUCLID, Explained and Demonstrated in a New and most easie Method. With the USES of each PROPOSITION In all the Parts of the MATHEMATICKS. By Claude Francois Milliet D’Chales. a Jesuite. Done out of FRENCH, Corrected and Augmented, and Illustrated with Nine Copper Plates, and the Effigies of EVCLID, By Reeve Williams, Philomath.

Imprint: LONDON: Printed for Philip Lea, Globemaker, at the Atlas and Hercules in the Poultry, near Cheapside, 1685.

Colophon: [On portrait leaf] London Printed for Phillip Lea Globe Maker at the Atlas and Hercules in Cheapside Near Friday Street There all Sorts of Globes Spheres Maps Sea:plats Mathematical Books and Instruments are Made and Sold

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes, Reeve Williams ed. Dedicated to Samuel Pepys. A translation from Dechaes’ expanded French version of the *Elements*, **Paris 1677a/Paris 1682**. To the dedication and a translation of Dechaes’ preface are added a second preface by the translator, and an ‘advertisement’ pointing out that by contrast with the in-text woodcuts of Dechaes’ edition, here the diagrams are gathered in copperplate-printed sheets at the end of the book.

References: Riccardi 1685¹. Duarte p. 73. Steck IV.72. ESTC R10241.

UK/Irish copies: Aberdeen. BL. Cambridge: Magdalene, Murray Edwards. Glasgow. Leicester. NLW. Trinity College, Dublin. UCL (2). Victoria and Albert Museum.

Oxford 1685

THE ELEMENTS OF EUCLID Explain'd, in a new, but most easie method, Together with The Use of every Proposition through all parts of the Mathematicks. Written in French, by that Excellent Mathematician, F. CLAUD. FRANCIS MILLIET de CHALES, of the Society of JESUS. And now carefully done into English, and purg'd from a multitude of Errors, which had escap'd in the Original.

Imprint: OXFORD, Printed by L. Lichfield, Printer to the University, for Anthony Stephens, Bookseller near the Theater in Oxford. 1685.

Quarto. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. Another translation from the French (**Paris 1677a/Paris 1682**) of Dechaes (*cf.* **London 1685a**). No English translator is named in the volume; many catalogues attribute the translation to William Hallifax. This version includes a slightly amended version of Dechaes' preface, but no dedication or further explanation from the translator. By contrast with the version of Reeve Williams, the diagrams are woodcuts set into the text.

References: Riccardi 1685⁶. ESTC R21479.

UK/Irish copies: BL. Cambridge: UL (2). NLW. Nottingham. Oxford: All Souls, Bodleian. UCL. Wellcome Library (2).

Rouen and Paris 1685

[*Vol. 1*]: LES QUINZE LIVRES DES ELEMENTS GEOMETRIQUES D'EUCLIDE, Et son Livre des DONNEZ, Avec des Commentaires beaucoup plus amples & beaucoup plus faciles que dans les editions precedentes; Et un Traité sommaire de l'Algebre. Par le Sieur HENRION. TOME I.

[*Vol. 2*]: LES QUINZE LIVRES DES ELEMENS GEOMETRIQUES D'EUCLIDE, Avec des Commentaires beaucoup plus amples & beaucoup plus faciles que dans les editions precedentes. Par le Sieur HENRION. TOME II.

Imprint: [*Vol. 1*] Imprimez à Roüen, & se vendent A PARIS, Chez J. JOMBERT, près des Augustins, à l'Image Notre Dame. M. DC. LXXXV.

[Vol. 2] Imprimez à Roüen, & se vendent A PARIS, Chez J. JOMBERT, près des Augustins, à l'Image Notre-Dame. M. DC. LXXXV.

Two volumes, octavo. *Elements* 1–15; *Data*. Denis Henrion ed. Another reissue of **Rouen 1676** with cancel title pages (*cf.* **Rouen and Paris 1683**), thus containing the text of the *Elements* first issued in **Paris 1615** as well as Henrion's 'Sommaire de l'algebre', the *Protheoria* of Marinus and the *Data*.

Riccardi 1685⁵ reports copies with an imprint naming Pierre Baudoyne, but we have seen no direct evidence for this.

References: None identified.

UK/Irish copies: Cambridge: UL.

Bologna 1686

DE GLI ELEMENTI DI EVCLIDE Li Primi sei Libri Tradotti in lingua Italiana ALL'ILLVSTRISS. SENATO DI BOLOGNA.

Imprint: In Bologna, per Gioseffo Longhi. 1686. Con licenza de'Superiori.

Octavo. *Elements* 1–6. Giovanni Ricci ed. Reissue of **Bologna 1651a** with the first leaf, containing the title page and dedication, re-set. The dedication to the senate of Bologna dated 8 March 1651 is retained, as is the final 'reimprimatur' leaf.

References: Riccardi 1686^{2*}.

UK/Irish copies: NLW.

London 1686

EVCLID'S ELEMENTS. The Whole FIFTEEN BOOKS Compendiously Demonstrated By Mr. ISAAC BARROW, Fellow of Trinity Colledge in CAMBRIDGE. And Translated out of the Latin. The Second Edition, very carefully corrected.

Imprint: LONDON: Printed for Christopher Hussey and E. P. in Little Britain. MDCLXXXVI.

Duodecimo. *Elements* 1–15. Isaac Barrow ed. Reimpression of **London**

1660, replacing the in-text diagrams with separate leaves of plates.

References: Riccardi 1686⁴. ESTC R216198.

UK/Irish copies: BL (2). Cambridge: UL. NLW. Oxford: Bodleian, St John's. UCL.

London 1687

EUCLIDIS Elementorum LIBRI XV. Breviter demonstrati, OPERA IS. BARROW, Cantabrigiensis, Coll. TRIN. Soc. Et prioribus mendis typographicis nunc demum purgati.

Imprint: LONDINI: Apud Abel Swalle ad insigne Monocerotis in Cœmeterio D. Pauli. MDCLXXXVII.

Octavo. *Elements* 1–15; *Data*. Isaac Barrow ed. Another reissue of **London 1678** with cancel title page (*cf.* **London 1685**). The separate title page for the *Data*, naming Redmayne as printer, is retained.

References: ESTC R232660.

UK/Irish copies: BL. Lincoln Cathedral. Liverpool. Oxford: Lincoln.

Brussels 1688

LOS SEIS PRIMEROS LIBROS, ONZE, Y DOZE DE LOS ELEMENTOS DE EUCLIDES MEGARENSE: Augmentados de muchas Proposiciones curiosas que facilitan su uso. DIRIGIDOS Al Excelentissimo Señor MARQUES DE BEDMAR, Capitan General de la Artilleria del Exercito de los Payses Baxos. Por el Capitan DON SEBASTIAN FERNANDEZ DE MEDRANO, Maestro de Mathematicas por su Magestad en dicho Exercito.

Imprint: EN BRUSSELAS, En Casa de LAMBERTO MARCHANT, Mercader de Libros. M. DC. LXXXVIII.

Octavo. *Elements* 1–6, 11–12. Sebastian Fernandez de Medrano ed. Dedicated (23 November 1687) to Isidro de la Cueva y Benavides. A new translation into Spanish. Riccardi (1689¹) places this in 1689, which appears to be a error.

References: Duarte p. 74. Steck IV.74.

UK/Irish copies: None identified.

Brussels 1689

ELEMENTOS GEOMETRICOS DE EVCLIDES, LOS SEIS PRIMEROS LIBROS DE LOS PLANOS; Y LOS ONZENO, Y DOZENO DE LOS SOLIDOS: CON ALGVNOS SELECTOS THEOREMAS DE ARCHIMEDES. TRADVCIDOS, Y EXPLICADOS POR EL P. JACOBO KRESA DE LA COMPAÑIA DE JESVS, Cathedratico de Mathematicas en los Estudios Reales del Colegio Imperial de Madrid; y en interin en la Armada Real en Cadiz.

Imprint: EN BRVSSELAS Por Francisco Foppens, año de 1689.

Quarto. *Elements* 1–6, 11–12. Jacobo Kresa ed. Dedicated to Ignacio de la Cruz; the *licencia* is dated 16 March 1689. Book 5 is followed by an explanatory appendix based on Tacquet (**Antwerp 1654/Antwerp 1665/Antwerp 1672**); book 12 is followed by an appendix containing selected theorems on parallelepipeds, and by a selection of propositions from Archimedes translated from that of Tacquet. It is likely that the main Euclidean text is also translated from Tacquet's edition.

References: Riccardi 1689². Duarte p. 74.

UK/Irish copies: Cambridge: St John's. NLW. UCL.

Florence 1690

Vol. 1: ELEMENTI PIANI, E SOLIDI D'EVCLIDE AGL'ILLVSTRISSIMI SIG. DELL'ACCADEMIA DE' NOBILI.

Vol. 2: QVINTO LIBRO DEGLI ELEMENTI D'EVCLIDE, OVVERO SCIENZA VNIVERSALE DELLE PROPORZIONI SPIEGATA COLLA DOTTRINA DEL GALILEO, Con nuov'ordine distesa, e pubblicata da Vincenzio Viviani ultimo suo Discepolo.

Imprint: Vol. 1: IN FIRENZE, Da Cesare, e Francesco Bindi. 1690. Per il Carlieri all'Insegna di S. Luigi. Con Licenza de' Superiori.

Vol. 2: IN FIRENZE, Per Cesare, e Francesco Bindi 1690. E si

vende all'Insegna di San Luigi Con licenza de' Super.

Duodecimo. *Elements* 1–6, 11–12. Vincenzo Viviani ed. The two volumes have uniform half-title pages designating them 'ELEMENTI D'EVCLIDE PARTE PRIMA' and '...PARTE SECONDA'. Volume 1 contains a dedication to the members of the Accademia de' Nobili (signed by Iacopo Carliere and dated 25 October 1690) and a commendatory 'digressione' by Viviani, a preface on the excellence and utility of geometry, and *Elements* 1–5. Volume 2 contains a dedication to Leopoldo de' Medici, Viviani's 'Scienza Universale Delle Proporzioni' (based on *Elements* 5), and *Elements* 6, 11 and 12. The translation appears to be new; for books 11 and 12 it is the first new version in Italian since **Urbino 1575**.

References: Riccardi 1690^{1*}.

UK/Irish copies: Cambridge: Christ's. NLS. NLW.

The Hague 1690

[*Vol. 1*]: OEUVRES POSTHUMES DE Mr. ROHAULT. TOME PREMIER. Suivant la Copie de Paris.

Imprint: [*Vol. 1*] A LA HAYE, Chez HENRY van BULDEREN, Marchand Libraire, dans le Pooten, à l'Enseigne de MEZERAY. M. DC. XC.

3 volumes, duodecimo. *Elements* 1–6. Jacques Rohault, Claude Clerselier ed. Reimpression in three volumes of **Paris 1682a**, retaining the dedication to Mgr. d'Estrées signed by Clerselier. Volume 1 contains at pp. 1–346 the edition of *Elements* 1–6, in which the diagrams are newly cut.

References: Riccardi 1690³. Steck IV.76.

UK/Irish copies: Oxford: All Souls.

Lyon 1690

[*Vol. 1*]: R. P. CLAUDII FRANCISCI MILLIET DECHALES CAMBERENSIS È SOCIETATE JESU CURSUS SEU MUNDUS MATHEMATICUS. TOMUS PRIMUS COMPLECTENS TRACT. DE PROGRESSV MATHESEOS ET DE Illustribus Mathematicis,

Euclidis Libros XIV, Theodosii sphærica, Sectiones Conicas, Arithmetica, Trigonometria, Algebra, & refutationem Hypotheson Cartesianarum. Editio altera ex Manuscriptis Authoris aucta & emendata, operâ & studio R.P. AMATI VARCIN ejusdem Societatis.

Imprint: [Vol. 1] LUGDUNI, Apud ANISSONIOS, JOAN. POSUEL & CLAUD. RIGAUD. M. DC. LXXXX. CUM PRIVILEGIO REGIS.

Four volumes, quarto. *Elements* 1–14. Claude-François Milliet Dechaes, Amatus Varcin ed. Dedicated to Vittorio Amedeo II of Savoy. An expanded reimpression of **Lyon 1674**, now in four volumes. Volume 1 contains at pp. 109–260 an edition of *Elements* 1–14; its version of books 7–10 and 13–14 is new, but there is no prominent statement about its authorship (Dechaes had died in 1678). For books 1–6 and 11–12 the diagrams re-use the blocks from 1674.

Steck (IV.77) and Riccardi (1690²) report a separate impression of Dechaes' fourteen-book Latin *Elements* at Lyon in 1690; we cannot confirm this. Since the Euclidean section in the *Cursus* does not begin a sheet nor have a separate title page with its own imprint, it is unlikely that they had seen it bound separately. Steck states that the copy known to him was destroyed during the Second World War.

References: Riccardi 1690*.

UK/Irish copies: BL. Chetham's School. Durham. Maynooth. Science Museum. UCL.

Paris 1690

LES ELEMENS D'EUCLIDE, EXPLIQUEZ D'UNE MANIERE nouvelle & tres-facile. AVEC L'USAGE DE CHAQUE Proposition pour toutes les parties des Mathematiques. Par le P. CLAUDE FRANÇOIS MILLIET DECHALLES, de la Compagnie de JESUS. NOUVELLE EDITION, Reveuë & corrigée.

Imprint: A PARIS, Chez ESTIENNE MICHALLET, premier Imprimeur du Roy, ruë S. Jacques, à l'Image S. Paul. M. DC. XC. AVEC PRIVILEGE DU ROY.

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed.

Reimpression of **Paris 1677a/Paris 1682/Paris 1683**, re-using the same blocks for the diagrams. The *privilege* of 1676 is omitted.

References: Riccardi 1690⁴. Duarte p. 74.

UK/Irish copies: Aberdeen. Cambridge: UL. Oxford: Wadham. Science Museum.

Leiden 1691

EUCLIDIS ELEMENTORUM SEX LIBRI PRIORES Magnam partem novis demonstrationibus ADORNATI OPERA & STVDIO HENRICI COETSII.

Imprint: LUGDUNUM BATAVORUM, Apud DANIELEM à GAESBEEK, M DC XCI.

Quarto. *Elements* 1–6. Heinrich Coetsius ed. Dedicated to the heads of the Academy and college of Leiden, Jacob van Wassenae, Conrad van Bavningen, Cornelius van Halewijn, Johann van Banchem, Daniel van Alphen, Jacob Vroman, Cornelius Wittens and Johann van den Bergh. Some of the diagrams use the same blocks as **Leiden and Amsterdam 1673**, but many are new; the text appears to be new, although it is indebted to the Clavius tradition as well as to the algebraized versions of Hérigone and Barrow.

References: Riccardi 1691^{7*}. Steck IV.78.

UK/Irish copies: Aberdeen.

Siena 1691

ELEMENTA EVCLIDIS Ad usum NOVÆ ACADEMIÆ NOBILIVM SENENSIVM Nova Methodo, & succinctè demonstrata Per FR. ELIAM ASTORINVM Carmelitam Consentinum. AD SERmum. PRINCIPEM IOANNEM GASTONEM AB ETRVRIA.

Imprint: SENIS Apud Bonettos Typis Publici MDCXCI. SVPERIORVM PERMISSV.

Duodecimo. *Elements* 1–15. Elias Astorinus ed. Dedicated to Ioannes Gaston, but also bears a preface addressed to Francisco Redi. Apparently a new version of the text. The permission of Astorinus' superior is dated 23

December 1690 and the *nilhil obstat* 18 February 1691.

References: Riccardi 1691².

UK/Irish copies: None identified.

Leiden 1692

EUCLIDIS ELEMENTORUM SEX LIBRI PRIORES Magnam partem novis demonstrationibus ADORNATI OPERA & STVDIO HENRICI COETSII.

Imprint: LUGDUNI BATAVORUM, Apud DANIELEM à GAES-BEEK, M DC XCII.

Quarto. *Elements* 1–6. Heinrich Coetsius ed. Reissue of **Leiden 1691**, with a cancel title page and lacking the dedication.

References: Riccardi 1692^{2*}. Steck IV.79.

UK/Irish copies: NLW. UCL.

Paris 1693

[*Vol. 1*]: COURS DE MATHEMATIQUE, QUI COMPREND Toutes les Parties de cette Science les plus utiles & les plus necessaires à un homme de Guerre, & à tous ceux qui se veulent perfectionner dans les Mathematiques. TOME PREMIER. Qui contient l'Introduction aux Mathematiques, & les Elemens d'Euclide. Par Mr OZANAM, Professeur des Mathematiques.

Imprint: [*Vol. 1*] A PARIS, Chez JEAN JOMBERT, près des Augustins, à l'Image Nôtre-Dame. M. DC. XCIII. AVEC PRIVILEGE DU ROY.

Five volumes, octavo. *Elements* 1–6, 11–12. Jacques Ozanam ed. The *Elements* occupy 421 pages, separately paginated, of volume 1. Steck (under IV.60) states that this uses the translation of Dechales (**Lyon 1672/Paris 1677a** and subsequent impressions) without attribution; the preface to the Euclidean matter in fact names Dechales and Tacquet as sources but implies that this is a new version, as in fact seems to be the case. As in Tacquet's version, the commentary specifies the 'usage' of each proposition; certain propositions judged useless are omitted, making this in places closer to a

selection than an edition.

References: None identified.

UK/Irish copies: BL. Cambridge; UL. St George's Chapel library. UCL.

Padua 1694

ELEMENTA GEOMETRIÆ PLANÆ AC SOLIDÆ, QUIBUS
ACCEDUNT SELECTA EX ARCHIMEDE THEOREMATA.
AUCTORE ANDREA TACQUET SOCIETATIS JESV Sacerdote,
& Matheseos Professore. IN HAC NOVA EDITIONE INSERTA
EST Trigonometria plana ejusdem auctoris, & Sphærica aliundè
desumpta.

Imprint: PATAVII, M. DC. XCIV. Ex Typographia Seminarii.
Superiorum permissu.

Octavo. *Elements* 1–6, 11–12. Andrea Tacquet ed. Reimpression of
Antwerp 1654/Antwerp 1665/Antwerp 1672/Antwerp 1683, omitting the
dedication and adding an account of trigonometry. As in those editions, the
selections from Archimedes have a separate title page, the wording of whose
title matches that of 1672 edition; its imprint reads 'PATAVII, M. DC. XCI.
Typis Seminarii Patavini. SUPERIORUM PERMISSU.'

References: None identified.

UK/Irish copies: BL.

Vienna 1694

Teutsch-Redender Euclides, Oder Acht Bücher Von Denen An-
fängen Der Meß-Kunst, Auff eine neue und gantz leichte Art, Zu
Nutzen Allen Generalen, Ingenieren, Natur- und Warheit-Kündigern,
Bau-Meistern, Künstlern und Handwerckern In Teutscher Sprach
eingerrichtet und bewiesen, Durch A. E. B. V. P.

Imprint: Wienn in Oesterreich, In Verlegung Philipp Fievets, Buch-
und Kunst-Händlers. ANNO M DC LXXXIV.

Quarto. *Elements* 1–6, 11–12. Anton Ernst Burckhard von Pirckenstein
ed. A new German version of these parts of the *Elements*; for books 11 and

12 it is the first German translation. Proofs are divided into construction (*Handgriff*) and proof (*Beweis*) and use some symbolic notation.

References: Riccardi 1694¹. Duarte p. 74. Steck IV.82.

UK/Irish copies: UCL.

Amsterdam 1695

EUCLIDIS BEGINSELEN der MEETKONST, Vervaat in 15 Boeken, Waar by't 16 Boek Fr. Flussatis Candallæ. Begrijpende de Beginselen, op dewelke de gantsche Wiskonst rust, Daarom ook te recht genaamt BEGINSELEN DER WISKONST. Eerst in onse nederduytse taal met alle omsightigheyd, kortheyd en klaarheyd opgesteld DOOR CLAAS JANSZ. VOOGHT Geometra, Geswooren Landmeeter en Leermeester, in de Wiskonst, als Stuurmanskonst enz. tot Amsterdam.

Imprint: t'AMSTERDAM, By JOHANNES van KEULEN, Boeken-Kaart verkoper, by de Nieuwe-Brugh, in de gekroonde Lootsman. Anno 1695. Met Privilegie voor 15 Jaren.

Quarto. *Elements* 1–16. Claas Janszen Vooght ed. Dedicated (6 December 1694) to Nicolaas Witsen; the privilege to print is dated 17 July. A new translation of the *Elements* into Dutch, incorporating some algebraic notation. For books 14 and 15 this is the first complete printing in Dutch.

References: Riccardi 1695⁴. Duarte p. 74/78.

UK/Irish copies: NLW.

London 1696

THE ELEMENTS OF EUCLID Explain'd, in a New, but most Easie method: Together with The Use of every Proposition through all parts of the Mathematicks. Written in French, by that Excellent Mathematician, F. CLAUD. FRANCIS MILLIET de CHALES, of the Society of JESUS. Now made English, and a multitude of Errors Corrected, which had escap'd in the Original. The Second Edition.

Imprint: LONDON, Printed for M. Gillyflower at the Spread Eagle in

Westminster-Hall, and W. Freeman at the Bible over against the Middle Temple Gate, in Fleet-street. 1696.

Octavo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaies ed. Line-for-line reimpression of **Oxford 1685**, reusing the blocks for some of the diagrams (some are altered); thus a translation from the French (**Paris 1677a**) of Dechaies.

References: ESTC R22532.

UK/Irish copies: Cambridge: UL. Glasgow. NLW (2). Oxford: Bodleian. UCL. Wellcome Library.

Amsterdam 1697

COURS DE MATHEMATIQUE, QUI COMPREND Toutes les Parties les plus utiles & les plus necessaires à un homme de Guerre, & à tous ceux qui se veulent perfectionner dans cette Science. TOME PREMIER. Qui contient l'Introduction aux Mathematiques, & les Elements d'Euclide. Par Mr. OZANAM, Professeur des Mathematiques. NOUVELLE EDITION REVEU ET CORRIGÉE.

Imprint: A AMSTERDAM, Chez GEORGE GALLET. M. DC. XCVII.

Five volumes, octavo. *Elements* 1–6, 11–12. Jacques Ozanam ed. A reissue of **Paris 1697** with cancel title page; thus a reimpression of **Paris 1693**.

References: Riccardi 1697².

UK/Irish copies: Aberdeen.

Kiel, Hamburg and Leipzig 1697

Samuel Reyhers, Jcti, Bey der Hoch-Fürstl. Holst. Universität Codic. und Mathematicum Prof. In Teutscher Sprache vorgestellter EUCLIDES, Dessen VI. erste Bücher auf sonderbahre Art, Mit Algebraischen Zeichen, also eingerichtet sind, daß man derselben Beweise auch in andern Sprachen gebrauchen kan.

Imprint: Kiel, Bey Benjamin Schillern, in Hamburg und Leipzig zu

bekommen, Jm Jahr 1697.

Quarto. *Elements* 1–6. Samuel Reyher ed. Dedicated to Georg Winckler. A new translation of these books of the *Elements* into German, making quite dense use of algebraic notation. The diagrams make a use of dotted lines which may suggest that **Paris 1622** or **London 1661** was a source.

References: Riccardi 1697¹. Steck IV.83.

UK/Irish copies: UCL.

Paris 1697

[Vol. 1]: COURS DE MATHEMATIQUE, QUI COMPREND Toutes les Parties les plus utiles & les plus necessaires à un homme de Guerre, & à tous ceux qui se veulent perfectionner dans cette Science. TOME PREMIER. Qui contient l'Introduction aux Mathematiques, & les Elemens d'Euclide. Par Mr. OZANAM, Professeur des Mathematiques. NOUVELLE EDITION REVEUE ET CORRIGÉE.

Imprint: [Vol. 1] A PARIS, Chez JEAN JOMBERT, près des Augustins. M. DC. XCVII. AVEC PRIVILEGE DU ROY.

Five volumes, octavo. *Elements* 1–6, 11–12. Jacques Ozanam ed. Reimpression of **Paris 1693**. Once again the *Elements* occupies a separately paginated section of volume 1, this time of 288 pages. The diagrams appear to have been freshly engraved for this edition.

References: Riccardi 1697².

UK/Irish copies: Edinburgh. Glasgow. Oxford: Christ Church, St Edmund Hall, Worcester.

Kiel and Leipzig 1699

Samuel Reyhers, Jcti, Bey der Hoch-Fürstl. Holst. Universität Codic. und Mathematicum Prof. In Teutscher Sprache vorgestellter EUCLIDES, Dessen VI. erste Bücher auf sonderbahre und sehr leichte Art, Mit Algebraischen, oder aus der neuesten Löse-Kunst entlehneten Zeichen, also dass man deroselben Beweiss auch in andern Sprachen gebrauchen kan, eingerichtet, auch des II. Buchs Vorträge nebst der

gemeinen, auff Algebraische Ahrt beweisen sind.

Imprint: Kiel, Druckts Joachim Reumann, Academischer Buchdrucker, bey Johann Sebastian Riecheln, Academischen Buchführer daselbst, und in Leipzig zubekommen, Im Jahr 1699.

Quarto. *Elements* 1–6. Samuel Reyher ed. Reissue of **Kiel, Hamburg and Leipzig 1697**. Sheet)(, containing the dedication, is omitted, and sheet)(, containing the Latin epistle to the reader, is re-set with siglum)(.

References: Riccardi 1699³. Steck IV.84.

UK/Irish copies: None identified.

Lübeck and Frankfurt 1699

Teutsch-Redender Euclides, Oder Acht Bücher Von Denen Anfängen Der Meß-Künst, Auff eine neue und gantz leichte Art, Zu Nutzen Allen Generalen, Ingeniern, Natur- und Warheit-Kündigern, Bau-Meistern, Künstlern und Handwerckern In Teutscher Sprach eingerichtet und bewiesen, Durch A. E. B. V. P.

Imprint: Lübeck und Franckfurt, In Verlegung Johann Wiedemeyers, Anno 1699.

Quarto. *Elements* 1–6, 11–12. Anton Ernst Burckhard von Pirckenstein ed. Reissue of **Vienna 1694**, with the two initial leaves (title page and epistle to the reader) re-set.

References: Riccardi 1699². Steck IV.85.

UK/Irish copies: None identified.

Amsterdam 1700

LES ELEMENS D'EUCLIDE, EXPLIQUEZ D'UNE MANIERE nouvelle & tres-facile. AVEC L'USAGE DE CHAQUE Proposition pour toutes les parties des Mathematiques. Par le P. CLAUDE FRANÇOIS MILLET DECHALLES, de la Compagnie de JESUS. NOUVELLE EDITION, Reveuë & corrigée.

Imprint: A AMSTERDAM. Aux dépens D'ESTIENNE ROGER, Marchand Libraire chez qui l'on trouve toute sorte de Musique. M.

DCC.

Duodecimo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaes ed. Reimpression of **Paris 1677a/Paris 1682/Paris 1683/Paris 1690**, with the diagrams now collected into fold-out leaves.

References: Riccardi 1700². Steck IV.86.

UK/Irish copies: NLW.

Amsterdam 1700b

De zes eerste Boecken EUCLIDIS, Van de beginselen ende fundamenten der Geometrie. Waer by-gevoeght zijn eenige nuttigheden, uyt deselve Boecken getrokken: Mitsgaders de Specien in Geometrische figuren, als 't maken, veranderen, t'samen voegen, aftrecken, vermeenighvuldigen, ende deelen. Over-geset, verklaert, ende uyt-geleyt tot vorderinghe ende oeffeninge van alle leer-gierige Liefhebbers der selver vrye Konste. DOOR JAN PIETERSZ. DOU, Lant-meter ende Wijn-roeyer der Stadt LEYDEN. Desen laetsten Druk, van nieuws oversien en verbeterd: Mitsgaders de by-gevoegde nuttigheden, met de specien in Geometrische figuren breeder verklaert ende vermeerderd, door den selven Autheur.

Imprint: t'AMSTERDAM Gedruckt, By HENDRIK BOTERENBROOT, Boek-verkooper op 't Water, recht over de Nieuwe Brugh, in de Delfsche Bybel. 1700.

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626/Rotterdam 1632/Rotterdam 1647/Rotterdam 1661/Rotterdam 1681**, retaining the dedication to Jan van Hout dated 19 May 1606 and the concluding 'by-voeghsels' (so spelt). This is a line-for-line reimpression of **Rotterdam 1681**, reusing the same blocks for the diagrams.

References: None identified.

UK/Irish copies: None identified.

Oxford/London 1700

THE ELEMENTS OF EUCLID Explain'd, In a New, but most Easie Method: Together with The Use of every Proposition through all

parts of the Mathematicks. Written in French, by that Excellent Mathematician, F. CLAUD. FRANCIS MILLIET de CHALES, of the Society of JESUS. Now made English, and a multitude of Errors Corrected, which had escap'd in the Original. The Third Edition.

Imprint: OXFORD, Printed by L.L. for M. Gillyflower at the Spread-Eagle in Westminster-Hall, and W. Freeman at the Bible over-against the Middle-Temple-Gate, in Fleet-street, 1700.

Octavo. *Elements* 1–6, 11–12. Claude-François Milliet Dechaies ed. Page-for-page reimpression of **Oxford 1685/London 1696**, reusing the blocks for the diagrams; thus ultimately a translation from the French (**Paris 1677a**) of Dechaies.

Despite the word ‘Oxford’ in the imprint, the addresses given are clearly in London.

References: ESTC R12500.

UK/Irish copies: Cambridge: Trinity (2), UL. Edinburgh (2). NLW. Oxford: Bodleian (2). Senate House Library. St Andrews. UCL.

Amsterdam 1701

De zes eerste Boecken EUCLIDIS, Van de beginselen ende fondamenten der Geometrie. Waer by-gevoeght zijn eenige nuttigheden, uyt deselve Boecken getrocken: Mitsgaders de Specien in Geometrische figuren, als 't maken, veranderen, t'samen voegen, aftrecken, vermeenighvuldigen, ende deelen. Over-geset, verklaert, ende uyt-geleyt tot vorderinghe ende oeffeninge van alle leer-gierige Liefhebbers der selver vrye Konste. DOOR JAN PIETERSZ. DOU, Lant-meter ende Wijn-roeyer der Stadt LEYDEN. Desen laetsten Druk, van nieuws oversien en verbeterd: Mitsgaders de by-gevoegde nuttigheden, met de specien in Geometrische figuren breeder verklaert ende vermeerderd, door den selven Autheur.

Imprint: t'AMSTERDAM Gedruckt, By HENDRIK BOTERENBROOT, Boek-verkooper op 't Water, recht over de Nieuwe Brugh, in de Delfsche Bybel. 1701.

Octavo. *Elements* 1–6. Jan Pieterszen Dou ed. Reissue of **Amsterdam**

1700b, in turn a reimpression of **Leiden 1606/Leiden 1607/Amsterdam 1616/Amsterdam 1626/Rotterdam 1632/Rotterdam 1647/Rotterdam 1661/Rotterdam 1681**, retaining the dedication to Jan van Hout dated 19 May 1606 and the concluding ‘by-voeghsels’ (so spelt). Riccardi lists a 1702 issue, which we cannot confirm.

References: None identified.

UK/Irish copies: BL.

Amsterdam 1701b

ELEMENTA GEOMETRIÆ PLANÆ AC SOLIDÆ. Quibus accedunt selecta EX ARCHIMEDE THEOREMATA, Auctore ANDREA TACQUET, SOC. JESU Sacerd. & Matheseos Professore.

Imprint: AMSTELÆDAMI, Apud FRANCISCUM van der PLAATS. MDCCL.

Octavo. *Elements* 1–6, 11–12. Andrea Tacquet ed. Reimpression of **Antwerp 1654/Antwerp 1665/Antwerp 1672/Amsterdam 1683**, retaining the *approbatio* and *facultas* of 1654 but not the dedication or the *privilegium*. Once again the selections from Archimedes have a separate title page (here with imprint date 1700) but continuous pagination.

References: Riccardi 1701¹. Steck under V.1.

UK/Irish copies: Cambridge: UL.

Brussels 1701

LOS SEIS PRIMEROS LIBROS, ONZE, Y DOZE, DE LOS ELEMENTOS GEOMETRICOS DEL FAMOSO PHILOSOPHO EUCLIDES MEGARENSE, Amplificado de nuevas Demonstraciones, Por el Sargento General de Batalla Don SEBASTIAN FERNANDEZ DE MEDRANO, Director de la Academia Real y Militar de los Payses-Bajos. Y que Dirije Al Exmo. Señor Marques de BEDMAR, y de ASSENTAR, &c.

Imprint: EN BRUSELAS. En Casa de LAMBERTO MARCHANT Mercader de Libros al Buen Pastor. CON PRIVILEGIO.

Octavo. *Elements* 1–6, 11–12. Sebastián Fernández de Medrano ed. A reimpression of **Brussels 1688**, retaining the dedication to Isidro de la Cueva y Benavides. The *privilegio* is dated 4 November 1701; there is no other indication of the date of printing.

References: Duarte p. 78.

UK/Irish copies: Glasgow. NLW.

Naples 1701

ELEMENTA EUCLIDIS, Novâ methodô, & compendiariè olim demonstrata PER F. ELIAM ASTORINUM CARMELITAM CONSENTINUM; NUNC VERÒ Ab ipso eodem Auctore recognita, & emendata.

Imprint: NEAPOLI, MDCCI. Ex Typographia Felicis Mosca. Superiorum Permissu.

Octavo. *Elements* 1–15. Elias Astorinus ed. A reimpression of **Siena 1691**, lacking the original dedication and preface, and the permission and *nihil obstat*, and now dedicated to Seraphin Biscardo.

References: Riccardi 1701³.

UK/Irish copies: None identified.

Oxford 1701

EUCLIDIS ELEMENTORUM LIBRI PRIORES SEX, ITEM UNDECIMUS & DUODECIMUS. Ex Versione Latina FEDERICI COMMANDINI. In usum Juventutis Academicæ.

Imprint: OXONIÆ, E THEATRO SHELDONIANO. Impensis Henr. Clements Bibliopolæ Oxoniensis. MDCCI.

Octavo. *Elements* 1–6, 11–12. John Keill ed. The imprimatur is dated 1 November 1700. The selection of books is that of Tacquet and Dechaies (**Antwerp 1654** and **Lyon 1660** and their descendants), but the text is apparently that of Commandino.

References: Riccardi 1701² (misprinted as 1702²). Steck V.1.

UK/Irish copies: BL. Cardiff. Winchester College.

Amsterdam 1702

DE SES EERSTE BOEKEN DER BEGINSELEN EUCLIDIS
Op een korte en klaere manier GEDEMONSTREERT DOOR
HENRICK COETS, Lector in de MATHESIS tot LEYDEN.

Imprint: TOT AMSTERDAM, By HENRICK en de Weduwe van
DIRCK BOOM. M. DCC. II.

Octavo. *Elements* 1–6. Henrick Coets ed. Translation of **Leiden 1691/Leiden 1692**, with a new dedication to Jacob Coets. The blocks for the diagrams are re-used from the Latin impression.

References: Riccardi 1702³.

UK/Irish copies: None identified.

Milan 1702

I PRIMI SEI LIBRI D’EVCLIDE TRATTI IN VOLGARE.

Imprint: IN MILANO 1702. Nella Stampa di Giacinto Brenna
herede di Lodouico Monza. Con licenza de’ Superiori.

Sexto. *Elements* 1–6. Pietro Paolo Caravaggi ed. Reimpression of **Milan 1671**. The blocks for the diagrams are re-used from that impression.

References: Riccardi 1702¹.

UK/Irish copies: None identified.

Naples 1702

EVCLIDIS ELEMENTA ex Traditione Federici Commandini

Imprint: NEAPOL 1702 APVD CAROLVM PORPORA

Octavo. *Elements* 1–6. A prefatory poem ‘geometriae cultoribus’ is signed by Dominicus Porpora. The only copy certainly known to us is in the Huntington.

References: None identified.

UK/Irish copies: None identified.

Cambridge 1703

V. CL. ANDREÆ TACQUET SOC. JESU Sacerdotis, & Matheseos Professoris ELEMENTA GEOMETRIÆ PLANÆ AC SOLIDÆ, & SELECTA EX ARCHIMEDE THEOREMATA. Quibus in hac nova Editione accedunt COROLLARIA non pauca illustrandis Elementis accommodata, & varios propositionum plurimarum USUS continentia. Summa cura emendata, & XL Schematibus novis æri incisis illustrata. A GVLIELMO WHISTON, A. M. Matheseos Professore LUCASIANO apud CANTABRIGIENSES.

Imprint: CANTABRIGIÆ, TYPIS ACADEMICIS. Impensis CORN. CROWNFIELD. MDCCIII.

Octavo. *Elements* 1–6, 11–12. Andrea Tacquet, William Whiston ed. A new version of Tacquet's edition (**Antwerp 1654/Antwerp 1665/Antwerp 1672/Antwerp 1683/Amsterdam 1701**). Tacquet's dedication is omitted, but his address to the reader is retained, as is his history of the origin and development of mathematics. Whiston adds a preface dated 'III. Calendarum Martii A. D. 1702/3', i.e. 27 February 1703. The selections from Archimedes have once again a separate title page, with wording as in the Antwerp editions and imprint date 1703.

References: Riccardi 1703¹.

UK/Irish copies: Cambridge: Trinity, UL. Chetham's School. Oxford: Radcliffe Science Library.

London 1703

THE ELEMENTS OF EUCLID, Explained and Demonstrated in a New and most Easy Method. With the Uses of each PROPOSITION In all the Parts of the MATHEMATICKS. By Claude Francois Milliet D'Chales, a Jesuite. Done out of FRENCH, Corrected and Augmented, and Illustrated with Nine Copper Plates, and the Effigies of EVCLID, By Reeve Williams, Philomath.

Imprint: LONDON; Printed for A. Lea, Globemaker, at the Atlas and Hercules in Cheap-side, near Friday-street, 1703.

Duodecimo. *Elements* 1–6, 11–12. Claude François Milliet Dechaies,

Reeve Williams ed. A reimpression of **London 1685a**, retaining the dedication to Samuel Pepys.

References: None identified.

UK/Irish copies: CUL. NLW. UCL.

Oxford 1703

ΕΥΚΛΕΙΔΟΥ ΤΑ ΣΩΖΟΜΕΝΑ. EUCLIDIS QUÆ SUPER-
SUNT OMNIA. Ex Recensione DAVIDIS GREGORII M. D.
Astronomiæ Professoris Saviliani, & R. S. S.

Imprint: OXONIÆ, E THEATRO SHELDONIANO, An. Dom.
MDCCIII.

Folio. *Elements* 1–15; *Data*; *Introductio harmonica*; *Sectio canonis*; *Phaenomena*; *Optica*; *Catoptrica*; *De divisionibus*; *De levi et ponderoso*. David Gregory ed. Dedicated to Henry Aldrich; the imprimatur is dated 3 June and the preface 10 June 1703.

A new edition of the texts, in all cases the first for several decades; for books 14 and 15 of the *Elements* this was the first complete printing in Greek. For the basis of this edition in earlier work by Edward Bernard and John Wallis, see Beeley 2021. The Greek texts of Grynæus and Briggs, and the Latin of Commandino, were used heavily, but completely revised.

References: Riccardi 1703³. Duarte p. 78. Steck V.2.

UK/Irish copies: Birmingham (2). Bristol. Cambridge: St Catharine's, Christ's, Fitzwilliam Museum, St John's (2), Trinity, UL (3). Chetham's School. Durham. Edinburgh. Eton College. Lambeth Palace. Leeds. Manchester. NLS. NLW (2). National Trust properties,. Nottingham. Oxford: Balliol, Bodleian, Christ Church (2), Exeter, Hertford, Jesus, St John's, Magdalen, Merton, Queen's, Radcliffe Science Library, University College. Reading. Royal College of Physicians. Science Museum. Senate House Library. Society of Antiquaries. St Andrews. UCL.

Appendices

Appendix 1: Summary lists of editions

1. Editions of the *Elements*

These categories are intended to group editions by gross features such as the adoption of the Mondoré revision of Book 10 or the inclusion or exclusion of the extension to book 5. Editions have been placed in these categories on the basis of statements of dependency in the editions themselves as well as inspection of the numbers of their propositions. Detailed textual collation has not been carried out. It is also emphasised that the definitions and axioms vary widely from editor to editor within each category, as do supplements such as prolegomena, and that many editors revised or replaced some or all of the proofs they found in their sources: thus the editions within a single category may vary widely. For a more sophisticated and perhaps robust approach, see (Wardhaugh 2025b).

For each category a count of the propositions in each book is given (grouped into sets of three books for legibility). Unless otherwise noted, this count is adhered to by every edition listed within the category. For each edition listed, the included books of the *Elements* are specified, with the language(s), the editor and other major features.

Outline stemmas are also provided, to show the approximate and/or conjectural relationships between these main text types.

CAMPANUS type

Propositions: 48;14;36; 16;34;32; 39;25;39; 107;41;15; 18;18;13.

Venice 1482 (1–15 Latin; Ratdolt; from Campanus MS).

Reimpression Vicenza 1491 (Achates).

Probably provides text for Frankfurt 1506 (1–4; Lacher).

Provides text for Venice 1509 (1–15; Scipio Veggio).

ZAMBERTI/GRYNAEUS (THEON) type

Propositions: 48;14;37; 16;25;33; 41;27;36; 118;40;18; 18;4;5.

Venice 1505 (1–15 Latin; Zamberti; new translation).

Reissue/reimpression Venice 1510.

Basel 1533 (1–15 Greek; Grynaeus; from Greek MSS).

Paris 1536 (1–6 Latin and Greek; Fine; enunciations from Zamberti (Latin) and presumably Grynaeus (Greek); proofs (Latin only) new, perhaps based on Zamberti).

Reimpressions Paris 1544, Paris 1551.

Strasbourg 1538 (1 Greek; Rihel; text from Grynaeus?).

Reimpression Strasbourg 1559.

Paris 1545 (1–15 enunciations Latin; Ramus; ?new translation).

Reimpressions Paris 1549, 1558a.

Rome 1545 (1–15 enunciations Greek; Cajani; from Grynaeus?)
Omits X.118.

Translation Rome 1545a (1–15 enunciations Italian; Cajani).

Leipzig 1549 (1–6 enunciations Latin and Greek; Rhaeticus/Camerarius; new translation).

Expanded edition Leipzig 1577 (1–3 full, 4–6 enunciations; Camerarius/Steinmetz).

Basel 1550 (1–6 Latin; Scheybl; new translation).

Augsburg 1555 (7–9 German; Scheybl; translated from an unnamed Latin edition: text type uncertain).

Basel 1562 (1–6 German; Holtzman; translated ‘from Greek’ thus presumably from Grynaeus). *Includes II.15.*

Wittenberg 1564 (7 Latin and Greek; Sthen; new translation, new proofs).

Seville 1576 (1–6 Spanish; Zamorano; probably derived from Zamberti).

Ansbach 1610 (1–6 German; Marius).

London 1620 (1–6 Latin and Greek; Briggs. Greek new edition from MSS: Latin translation based on Commandino).

Alcala 1637 (1–6 Spanish; Carduchi; sources unclear).

D’ÉTAPLES type

Propositions: 48;14;37; 16;25+9;33; 41;27;36; 118;40;18; 18;18/4;13/5. Extension to V is usually marked as inauthentic; two versions of XIV and XV are printed.

Paris 1516 (1–15 Latin; d’Etaples; uses texts from both Venice 1505/1510 and Venice 1509).

Basel 1537 (1–15 Latin; Herlin; based on Paris 1516, possibly collated with Basel 1533).

Reimpressions Basel 1546, Basel 1558 (partial reissue).

Venice 1543 (1–15 Italian; Tartaglia. Uses both Campanus and

Zamberti and mentions no Greek source; thus likely to be based on Paris 1516 or Basel 1537). *Propositions*: 48;15;37; 16;34;33; 41;26;39; 119;42;15; 18;18;13, ie a hybrid text.

Reimpression Venice 1565 (adding *De levi*); reimpression/reissue Venice 1569; reimpression Venice 1585; reissue Venice 1586.

Cologne 1556 (1 and selection from 2–15 enunciations Latin; Nabod; possibly depends on Paris 1516 or Basel 1537).

Lyon 1557 (1–6 Latin; Peletier; sources unknown, proofs new) *Omits III.37*.

Text used in Geneva 1610 (adding Greek texts of archai and enunciations).

Translation Geneva 1611 (1–6 French; de Tournes tr.).

Reimpression Geneva 1628.

MONDORÉ type

Propositions (X): 116.

Paris 1551a (10 Latin; Mondoré; new translation).

Reissue Paris 1552.

MAGNIENUS/GRACILIS and DASYPODIUS type

Propositions: 48;14;37; 16;25;33; 41;27;36; 116;40;18; 18;4;5.

Paris 1557 (1–15 enunciations Latin and Greek; Gracilis/Magnienus. Multiple sources, including Paris 1551a for book 10.)

Reissue Paris 1558; reimpressions Paris 1573, Paris 1598.

Reimpression Cologne 1564.

Reimpressions (Latin only) Cologne 1580, Cologne 1587,

Cologne 1600, Cologne 1612.

Reimpressions Cologne 1607 (adds book 16), 1627.

Paris 1564 and 1565 (1–6 and 7–9 French; Forcadel. Probably translated from Paris 1557; proofs possibly new.)

Reimpression Paris 1566a (1–6, enunciations. Definitions new tr.)

Strasbourg 1564, 1564a and 1564b (1–2 full, 3–13 enunciations Latin and Greek; Dasypodius; ?new version. 1564 uses the Greek text of Strasbourg 1538/1559; 1564a and 1564b presumably derive from Basel 1533.)

Strasbourg 1566 (1–6; Herlin and Dasypodius; Latin text based on Strasbourg 1564/a/b for books 1 and 2, otherwise new; Greek text probably extracted from Strasbourg 1564/a/b.)

Strasbourg 1570 (1; reprints the Greek and Latin texts of 1564).

Reissue Strasbourg 1571.

Text used in Strasbourg 1570a (1–15 enunciations) emended.

Reissue Strasbourg 1571a.

Text used in Strasbourg 1599 (1 enunciations; does not follow 1570a's changes).

Arnhem 1603 (1–6 Latin; Dybvad; uncertain textual tradition).

Companions Arnhem 1605 (7–9) and 1605a (10).

Paris 1610 (1–15 French; Dounot; new; sources uncertain). *Includes XIV.5–7.*

New version Paris 1613 (extended commentary).

Paris 1615 (1–15 French; Henrion's 'new' translation but rather similar to Dounot). *Includes X.117 and XIV.5–7.*

New edition Paris 1621.

reimpression 1623 (with 'sommaire' and 'response').

Selected edition Paris 1630 (1–6).

New edition 1631.

Reimpression Rouen 1649.

New edition 1632 adding the *Data*.

Reimpression Rouen 1676; reissues Rouen and Paris 1677, 1683, 1685.

Bologna 1651 (1–6 Italian, Ricci; uncertain text type).

Reimpression 1651a; reissue Bologna 1686.

Milan 1671 (1–6 Italian, Caravaggi; possibly related to Ricci).

Reimpression 1702.

FOIX type

Propositions 1566:

48;14;37; 16;25;38; 41;27;37; 116;40;19; 18;20;21; 37.

Propositions 1578:

48;14;37; 16;25;39; 41;27;37; 116;40;19; 18;20;21; 46;28;45.

Paris 1566 (1–16 Latin; Foix; multiple sources; adds book 16 and ‘tract’).

New edition Paris 1578 (adds books 17 and 18 but removes ‘tract’).

Reissues Cologne 1602, Paris 1602.

London 1570 (1–16 English; Billingsley. Sources include Basel 1533, Venice 1505, Basel 1558, Paris 1566.) *Propositions: 48;14;37; 16;25+9;33+5; 41;27;36; 116;40;18; 18;4/20;5/21; 37, thus a hybrid text often close to Foix.*

Paris 1598a (1–6 French; Errard; enunciations follow Forcadel; definitions and proofs apparently a new translation with a distinctive lettering; proposition numbers match Paris 1578).

Expanded version Paris 1605 (1–9. Enunciations again follow Forcadel but proofs new).

Reimpression Paris 1629.

Paris 1626 (1–18 enunciations Latin; Mersenne?)

Paris 1644c (1–18 enunciations Latin; Mersenne). Includes V.26–33; otherwise matches Foix 1578.

COMMANDINO type

Propositions: 48;14;37; 16;33;33; 41;27;36; 117;40;18; 18;7;5.

Pesaro 1572 (1–15 Latin; Commandino. From Grynaeus and MSS).

Reimpression Pesaro 1619.

Text used in Naples 1679 (1–6).

Text used in Oxford 1701 (1–6, 11–12; Keill).

Text used in Naples 1702 (1–6; Porpora).

Translation Urbino 1575 (1–15 Italian; Commandino/Spacciuoli).

Reimpression Pesaro 1619a.

Text used in Naples 1679 (1–6; Fioravanti).

Ingolstadt 1617 (1–6 Latin; Lanz; new tr. after Commandino).

Reimpression Bologna 1629.

Leiden 1617 (1–15 enunciations Dutch; van Schooten, new, sources unknown). *Omits V.26–33.*

New version Amsterdam 1662 (adds book XVI).

Paris 1622 (1–15 French; le Mardelé; new tr. from Greek). *Includes V.34.*

Reimpressions Paris 1632a, Lyon 1645, reissue Lyon 1646.

Hamburg 1633 (1–6 Dutch; Willemszen. Possibly related to Leiden 1617). *Omits V.26–33.*

Reissues 1638, Amsterdam 1660.

Madrid 1665 (5, 7 Spanish; Najera and Rocha; apparently new;

sources unknown and text type uncertain).

CLAVIUS type

Propositions: 48;14;37; 16;34;33; 41;27;36; 117;40;18; 18;32;21; 31.

Rome 1574 (1–16 Latin; Clavius. Sources include Paris 1536 or a successor, Lyon 1557 and Paris 1566.)

Translation Beijing 1607 (1–6 Chinese; Ricci and Xu Guangqi).

Reimpression Beijing 1611.

Text used in Beijing 1629.

New version Rome 1589.

Reimpressions Cologne 1591, Rome 1603, Frankfurt 1607, Frankfurt 1654.

Reimpression Mainz 1611 (as vol. 1 of the *Opera*).

Abridgement Rome 1629 (1–6; Grienberger).

Reimpressions Graz 1636, Rome 1655.

Text used in c. 1650 n.p. (1–6 enunciations, anon.)

Wittenberg 1609 (1–13 Latin; Rhodius; new demonstrations).

Reimpression 1634; reissue 1661.

Paris 1612 (10 Latin; Puteanus) Text type uncertain.

Douai 1620 (1–6 Latin; Montensis after Clavius).

Reimpressions 1625, 1633.

Ferrara 1628 (1–6 Latin; Doino after Clavius.)

Reimpressions Venice 1641, 1647.

Paris 1634 (1–15 French; Hérigone. Proofs apparently a new version.) Hybrid text type; XIV and XV have 8 and 5 propositions respectively).

Text used in Paris 1639 (1–6); reissue Paris 1644.
Reissue Paris 1644b.

Paris 1643 (1–6 Latin; Fournier after Clavius.)
Reissue Paris 1644a; reimpression Paris 1654.
Reimpressions London 1654, Cambridge 1665.
Translation Paris 1654a (1–6 French). *Omits V.26–34.*

Genoa 1644 (1–6 Latin; anonymous after Clavius).

Antwerp 1645 (1–16 Latin; Richard after Clavius; proofs apparently new). *Omits V.34.*

Utrecht n.d. (1–15 enunciations Dutch; Nienrode; sources mentioned include Peletarius, Clavius, Proclus). *Omits XI.40 and gives XIV–XV with respectively 9, 5 propositions.*

Lyon 1660 (1–6, 11–12 Latin; Dechales after Clavius).
Translation Lyon 1672 (1–6, 11–12 French)
Text used in Lyon 1674 (Dechales' *Cursus*).
Expanded edition Lyon 1690 (1–14; authorship of 7–10, 13–14 unclear). *Some propositions omitted including XIV.28–32.*
Reimpression 1675.
New translation Paris 1677a (1–6, 11–12 French).
Reimpressions 1682, 1683, 1690, Amsterdam 1700.
Reimpression Lausanne 1683.
Translation London 1685a (1–6, 11–12 English; Williams tr.)
Reimpression London 1703.
Translation Oxford 1685 (1–6, 11–12 English)
Reimpressions London 1696, Oxford/London 1700.

London 1661 (1–16 English; Leeke and Serle. New; no sources known.) *Hybrid text. I–XIII = Clavius. XIV–XVI: 18;19;21;37, thus close to Foix 1566. Includes Foix's 'tract'.*

- Würzburg 1661** (1–6 Latin; Schott after Clavius).
Reimpression Frankfurt 1674; reissue Bamberg 1677.
- Leiden/Amsterdam 1673** (1–6 Latin; Melder; indebted to Fournier).
- Paris 1682a** (1–6 French; Rohault. Sources uncertain.)
Reimpression The Hague 1690.
- Bologna 1684** (1–6 Latin; anon after Clavius; possibly by or related to Ricci, *i.e.* Bologna 1651).
- Florence 1690** (1–6, 11–12 Italian; sources uncertain.)
- Leiden 1691** (1–6 Latin; Coetsius after Clavius).
Reissue 1692.
Translation Amsterdam 1702 (1–6 Dutch; Coetsius tr.)
- Siena 1691** (1–15 Latin; Astorinus; new after Clavius and Commandino). *XIV and XV are Commandino type.*
Reimpression Naples 1701.
- Paris 1693** (1–6, 11–12 French; Ozanam. New version using Dechales and Tacquet).
Reimpression Paris 1697; reissue Amsterdam 1697.
- Vienna 1694** (1–6, 11–12 German; Pirckenstein; sources unknown).
Reissue Lübeck 1699.
- Amsterdam 1695** (1–16 Dutch; Vooght; new; ?from Clavius).

MAUROLICUS type

Propositions (XIII–XV): 21;39;13.

Venice 1575 (13–15 Latin; Maurolicus. Composed 1532; sources include Zamberti but substantially rewritten).

ps-TUSI type

Rome 1594 (1–13 Arabic; ps-Tusi. Edited from manuscript.)

DOU type

Propositions (I–VI): 48;15;37; 16;25;39.

Leiden 1606 (1–6 Dutch; Dou. Sources mentioned are Basel 1562 (Holzmann) and Paris 1598a (Errard)).

Reissue 1607. Reimpressions Amsterdam 1616, 1626, Rotterdam 1632, Rotterdam/Utrecht 1647, Rotterdam 1661, Rotterdam 1681, Amsterdam 1700b, Amsterdam 1701.

Translation Amsterdam 1618 (1–6 German; Curtius tr.)

Reimpression 1634.

London 1651 (1–6 English; Rudd.)

TACQUET type

Propositions: 48;14;37; 16;35;33; 40;18.

Antwerp 1654 (1–6, 11–12 Latin; Tacquet after Clavius).

Reimpressions 1665, 1672, 1683, Amsterdam 1701b.

Reimpression Padua 1694.

New version Cambridge 1703 (Whiston).

Brussels 1688 (1–6, 11–12 Spanish; Fernandez; sources unclear).

Reimpression 1701.

Brussels 1689 (1–6, 11–12 Spanish; Kresa. Based on Tacquet.)

Kiel 1697 (1–6 German; Reyher; new; sources not known).

Reissue 1699.

HÉRIGONE/BARROW type

Propositions: 48;14;37; 16;34;33; 41;27;36; 117;40;18; 18;8;5.

Paris 1634 (1–15 Latin; Hérigone after Clavius. Proofs new.)

Reissue Paris 1644b.

Cambridge 1655 (1–15 Latin; Barrow after Hérigone and others. Proofs new.)

Reimpressions London 1659, 1678; reissues 1685, 1687.

Reimpression Osnabrück 1676.

Translation London 1660 (1–15 English; Barrow).

Reimpressions 1686[, 1705, 1722, 1732 and 1751].

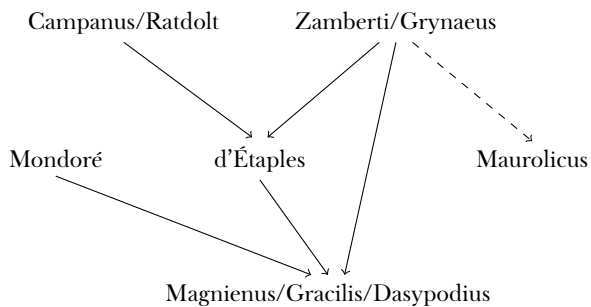
London 1680–81 (1–6, 11–12 English; Perkins tr. Sources include Barrow and (for figures) Melder.)

GREGORY type

Propositions: 48;14;37; 16;25;33; 41;27;36; 117;40;18; 18;7;7.

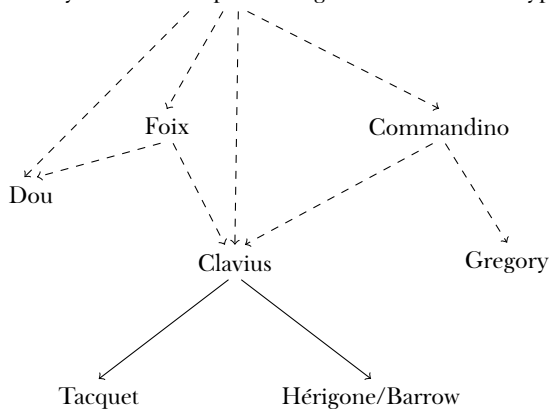
Oxford 1703 (1–15 Latin and Greek; Gregory; new tr based on Commandino).

Stemma: Fifteenth and sixteenth centuries.



Later sixteenth and seventeenth centuries.

Zamberti/Grynaeus – d'Étaples – Magnienus/Gracilis/Dasypodius



2. Editions of the opuscula

Phaenomena

Venice 1505 (Zamberti, Latin).

Reissue Venice 1510.

Text used in Basel 1537 (Herlin).

reimpressions Basel 1546, Basel 1558 (partial reissue).

Text revised in Messina 1558 (enunciations Latin, Maurolico).

Text used in Paris 1626 (Baudry).

Paris 1626a (anon, Latin; follows Maurolico).

Text used in Paris 1644c (Latin; Mersenne).

Strasbourg 1570a (Dasypodius, Greek and Latin; new).

Reimpression/reissue Strasbourg 1571a.

Text used in Strasbourg 1572 (enunciations Greek and Latin).

Rome 1591 (Auria, Latin; new; using Vatican MSS as well as Zamberti and Maurolico).

Reissue Rome 1609.

Oxford 1703 (Gregory, Latin and Greek; new text from MSS and new tr.)

Optica and Catoptrica

Venice 1505 (Zamberti, Latin).

Reissue Venice 1510.

Text used in Basel 1537 (Herlin).

reimpressions Basel 1546, Basel 1558 (partial reissue).

Strasbourg 1557 (Dasypodius, Greek and new Latin version of

Catoptrica only). *Independent of Paris 1557a*.

Paris 1557a (la Pène, Greek and new Latin version).

Reimpression Paris 1604 (Latin only).

Text used in Strasbourg 1570a (Dasypodius; Latin and Greek enunciations). *Does not use the text of Strasbourg 1557*.

Reissue: Strasbourg 1571a.

Text used in Leiden 1599 (enunciations, Latin; sources unclear).

Text used in Leipzig 1607 (enunciations, Latin; sources unclear).

Florence 1573 (Danti, Italian; source not known).

Madrid 1585 (Ondériz, Spanish; source not known).

Paris 1626 (Baudry, Latin enunciations of *Optica* only. Sources not stated.)

Le Mans 1663 (Ysambart, *Optica* only, French; tr. from Greek.)

Oxford 1703 (Gregory, Latin and Greek; new text from MSS and new tr.)

Data

Venice 1505 (Zamberti, Latin).

Reissue Venice 1510.

Text used in Basel 1537 (Herlin).

Reimpressions Basel 1546, Basel 1558 (partial reissue).

Strasbourg 1571a (Enunciations, Dasypodius, Greek and Latin).

Paris 1625 (Hardy, Greek and Latin; the Latin new).

Text used in Paris 1644c (enunciations Latin; Mersenne).

Paris 1632 (Henrion, French, added to this reimpression of his 1615 *Elements*; presumably tr. from Paris 1625).

Reimpression Rouen 1676; reissues Rouen and Paris 1677, 1683, 1685.

Paris 1634 (Hérigone, French and Latin; sources not known; proofs new.)

Reissue Paris 1644b.

Cambridge 1657 (Barrow, Latin; new).

Reimpression London 1659 (with *Elements*).

Reimpression 1678; reissues 1685, 1687.

Reimpression Osnabrück 1676.

London 1661 (Leeke and Serle, English. Source not known.)

Oxford 1703 (Gregory, Latin and Greek; new text from MSS and new tr.)

De levi

Basel 1537 (Herlin, Latin).

Reimpressions Basel 1546, Basel 1558 (partial reissue).

Paris 1565 (Forcadel, French. Source presumably Basel 1537 or a reimpression).

Venice 1565 (Troiano?, Italian; a reimpression of Venice 1543 adding *De levi*).

Reimpression/reissue Venice 1569; reimpression Venice 1585; reissue Venice 1586.

Oxford 1703 (Gregory, Latin and Greek; new text from MSS and new tr.)

Introductio and *Sectio*

[*Introductio* printed at Venice in 1497 in the version of Placentino and in 1498 in that of Valla (both Latin), attributed to Cleonides.]

Paris 1557b (la Pène; Greek and Latin).

Text used in Strasbourg 1570a (Dasypodius; Latin and Greek enunciations).

Reissue: Strasbourg 1571a.

Paris 1566b (Forcadel; French. Presumably translated from Paris 1557b).

Rome 1593 (Possevino; Latin; uses Vatican MSS as well as Paris 1557b).

New versions: Venice 1603, Cologne 1607a.

Amsterdam 1652 (Meibom; Greek and Latin; new edition and translation).

Oxford 1703 (Gregory, Latin and Greek; new text from MSS and new tr.)

3. Editions of ps.-Boethius, *Geometry*

Venice 1491 (In Boethius *Opera*; Gregorius).

New version Venice 1498 (Boethius *opera*; Gregorius).

Paris 1500 (With Sacrobosco *De Sphaera*; ?d'Étaples).

Reimpressions Paris 1507, Paris 1511, Paris 1516a, Paris 1521, Paris 1527, Paris 1531, Paris 1534, Paris 1538.

Basel 1546a (In Boethius *Opera*; Petrus; re-edited from MSS; relationship with Venice 1491/1498 unclear.)

New version Basel 1570.

Appendix 2: Euclidean and quasi-Euclidean works excluded from the catalogue

This appendix includes in intention every item listed by Riccardi, Thomas-Stanford or Steck which we believe to be extant and which we do not consider to be an edition of a Euclidean text; it also includes other Euclidean-related works known to us. Books and sections within books are included; items in periodicals are not. Most of the works listed fall into the categories of ancient commentaries and collections of scholia on the *Elements*, modern commentaries on Euclidean texts, dissertations on Euclidean topics, or re-workings and re-orderings of (selections from) the *Elements*. The boundaries between these categories are not always clear, and it has seemed to us most useful to present a single list arranged by year of first (known) publication.

Georgio Valla, *De expetendis, et fugiendis rebus opus, in quo haec continentur. De Arithmetica libri .iii. ubi quædam a Boetio prætermissa tractantur. De Musica libri .v. sed primo de inuentione, & commoditate eius. De Geometria libri .vi. in quibus elementorum Euclidis difficultates omnes fere exponuntur, ubi etiã de Mechanicis spiritalibus Catoptricis, ac Opticis, deq; quadrato circuli habetur tractatus. . . .* (Venice: Aldus Romanus, 1501).

Sphere mundi opusculum Joannis de sacro busto cum additamētis mathematicis figuris decentibus explicatis et ad eius lucidiorē interpretationē per Magistrum Joannem Guyon astronomum commodissime prepositis. (Avignon: Joannes de Channey, 1520?).

Prefaced by extracts from *Elements* 7 and 1; falls below the level of an edition in our sense. No date given in the printed text, but generally placed in 1520; see TS.

Francesco Ghaligai, *Summa de Arithmetica* (Florence: Bernardo Zucchetta, 1521).

Subsequent editions 1548, 1552. Books 10 and 11 contain in part the

arithmetical material from the *Elements*.

Johannes Voegelin, *Elementale geometricum, ex Euclidis Geometria ... decerptum* (Vienna: Johannes Singrenius, 1528).

Subsequent editions: Strasbourg 1529; Paris 1530, 1533, 1534, ?1543, 1550; Frankfurt, 1534, 1548, 1561; Wittenberg 1536; Venice 1539.

Giambattista Politi, *Expositio ... super definitiones et propositiones quae supponuntur ab Euclide in quinto Elementorum eius* (Siena: Simone Nicolò de'Nardi, 1529).

Described by Riccardi and TS. We do not know of an extant copy and cannot confirm how much of the Euclidean text is printed.

In priora sex elementa commentarium edidit Orontius Finaeus (1530).

Wolfgang Schmidt, *Das erst Buch der Geometria, von Wolffgang Schmidt* (Nürnberg: 1532).

Subsequent editions: 1539, 1564.

Oronce Fine, *Protomathesis: opus uarium, ac scitu non minus utile quàm iucundum, nunc primum in lucem foeliciter emissum* (Paris: Gerard Morrh, Ioannes Petrus, 1532).

Contains 'De geometria libri II', a selection from the *Elements* with other matter. Riccardi's initial report of this is somewhat confused; see the note under 1530¹ in his part 4.

Joannes Voegelin, *Elementa geometriae ex Evclide singulari prudentia collecta* (Wittenberg: Josef Klug, 1536).

Subsequent edition Venice 1539.

Plato Tiburtinus, *Rudimenta astronomica Alfragani* (Nürnberg: Johannes Petreius, 1537).

Contains an 'introductio in Elementa Euclidis'. Subsequent edition Bologna 1645 according to Riccardi.

Robert Recorde, *The pathway to Knowledge* (London: Reynold Wolfe, 1551).

Geometrical parts based on the *Elements*. Subsequent editions 1574, 1602.

Giambattista Benedetti, *Resolutio omnium Euclidis problematum aliorumque ad hoc necessario inventorum una tantummodo circini data apertura* (Venice: Bartolommeo Caesano, 1553).

Euclidis Elementa quædam Arithmetica (Paris: Michel de Vascosan, 1554).

Presumably related to **Paris 1551a/Paris 1552**; Steck describes it as ‘complementary’ (‘ein zugehöriger Ergänzungsdruck’). Only 18 pages long; Smith states it is a collection of extracts.

Élie Vinet, *Definitiones elementi quinti, et sexti, Euclidis, ab E. Vineto interpretatæ* (Bordeaux: Simon Millanges, 1557).

First edition known only from Riccardi. Subsequent edition 1575.

Jean Borrel, *Ioan. Buteonis de quadratura circuli libri duo, vbi multorum quadraturæ confutantur, & ab omnium impugnatione defenditur Archimedes. Eiusdem, annotationum opuscula in errores Campani, Zamberti, Orontij, Peletarii, Io. Penæ interpretum Euclidis* (Leiden: Gulielmo Rovillius, 1559).

Pedro Monzon, *Elementa arithmeticae, ac geometriae, ad disciplina omnes . . . ex Euclide decerp[t]a Monçono Valentino autore* (Valencia: Juan Mey, 1559).

Francesco Barozzi, *Procli Diadochi Lycii Philosophi Platonici Ac Mathematici Probatissimi In Primum Euclidis Elementorum librum Commentariorum Ad Universam Mathematicam Disciplinam Principium Eroditionis Tradentium Libri IIII*. (Patavia: Gracioso Perchacino, 1560).

Niccolò Tartaglia, *La quinta parte del general trattato de numeri et misure, di Nicolò Tartaglia, nellla quale si mostra il modo de eseguire con il compasso,*

et con la regha tutti i problemi geometrici di Euclide et da altri philosophi (Venice: Curtio Trojano, 1560).

Ogniben da Castellano Trantino, *Opera de principii, et ordini rationali* (Venice: Giovanni Griffio il vecchio, 1561).

Riccardi (1561²) seems to imply that this includes a ‘Questio sopra il septimo d’Euclide’.

Christian Herlinus, Conrad Dasypodius, *Euclideæ demonstrationes in syllogismos resolutæ* (Strasbourg: 1564).

Cosimo Bartoli, *Del modo di misurare le distantie, le superficie, i corpi, le piante, le prouincie, le prospettiue, & tutte le altre cose terrene, che possono occorrere a gli guomini, Secondo le uere regole d’Euclide, & de gli altri piu lodati scrittori* (Venice: Francesco Franceschi, 1564).

Subsequent editions 1589, 1614. Duarte gives the printer’s name as Franceschi Sanefe.

Arnoldus de Lens, *In geometrica elementa eisagoge* (Antwerp: Christophe Plantin, 1566).

In the dedication the author says ‘Selegeram nuper ex Euclide præcipua quædam Theoremata, & in demonstrationibus Geometricis maximè vtilia’.

Conradus Dasypodius, *Volumen primum mathematicum, prima et simplicissima mathematicarum disciplinarum principia complectens: geometriae, logisticae, astronomiae, geographiae* (Strasbourg: Josias Rihel, 1567).

The definitions of *Elements* 1–2 appear in fols. 1–17.

Jean de Merliers, *L’art de mesurer toutes superficies rectilignes tiré des Elements d’Euclide* (Paris: Denis de Pré, 1568).

Petrus Ramus, *Scholarum mathematicarum libri unus et triginta* (Basel: Eusebius Episcopus, Nicolas Fratrís (heirs of), 1569).

Subsequent editions: Frankfurt 1599, 1627.

Pedro Monzón, *Elementa Arithmeticae ac Geometriae ac disciplinas omnes Aristoteleam praesertim Dialecticam ac Philosophia[m] apprime necessaria ex Euclide decerpta* (Valencia: Pedro de Huete, 1569).

Muhammad al-Baghdadi, Federigo Commandino, *De superficierum divisionibus liber Machometo Bagdedino ascriptus Nunc primum Ioannis Dee Londinensis, & Federici Commandini Urbinatis in lucem editus* (Pesaro: Girolamo Concordia, 1570).

Not attributed to Euclid, but cf. **London 1661**.

Muhammad al-Baghdadi, Federigo Commandino, Fulvio Viani de Malatesti (tr.), *Libro del modo di dividere le superficie attribuito a'Machometo Bagdedino* (Pesaro: H. Concordia, 1570).

Guillaume Postel dict Rorisperge, *Les premiers elements d'euclide chrestien, pour la raison de la Diuine & éternelle vérité demontrer* (Paris: Martin le Jeune, 1579).

Conrad Dasypodius, *Oratio Cunradi Dasypodii De disciplinis mathematicis . . . Eiusdem Hieronis Alexandrini nomenclaturae vocabulorum geometricorum translatio. Eiusdem lexicon mathematicum, ex diuersis collectum antiquis scriptis*. (Strasbourg: Nicolaus Vuyriot, 1579).

Contains at ff. 42–4 'Graecum scholion in definitiones Eucidis libri quinti elementorum appendicis loco propter pagellas vacantes annexum', containing four scholia and parts of two others.

Isaac Monachus, Conrad Dasypodius (tr.), *Isaaci Monachi scholia in Euclidis elementorum geometriae, sex priores libros* (Strasbourg: Nicolaus Vuyriot, 1579).

Ioannes Thomas Freig, *Quæstiones geometricæ et stereometricæ in Euclidis & Rami στοιχειωσιν, in quibus logica veterum mathematicorum illustratur & demonstratur* (Basel: Sebastian Henricpetrus, 1583).

G.B. Benedetti, *Diversarum speculationum mathematicorum et physicarum*

liber (Turin: Heirs of Nicolas Bevilaqua, 1585).

Includes a piece about *Elements* V.

Antoine Dominique Dole, *Geometricorum elementorum* (1588).

Reported by USTC (112011) with ‘no known surviving copy’; no confirmation found in other catalogues.

Giovanni Pomodoro, *Geometria Prattica Tratta Dagl’Elementi d’Euclide et Altri Autori* (Rome: Stefano de Paolini, 1599).

Peter Ryff, *Quæstiones geometricæ, in Euclidis & P. Rami Στοιχειωσιν; In usum Scholæ Mathematicæ collectæ* (Frankfurt: Heirs of André Wechel, Claude de Marne, Iohann Aubry, 1600).

Subsequent editions Frankfurt 1602, 1621, 1649; Oxford 1665. See Madan 1931 (vol. 3, p. 201).

Christoffer Dybvad, *In geometriam Euclidis prioribus sex Elementorum libris comprehensam demonstratio numeralis* (Arnhem and Leiden: Johannes Jansonius, Christoffel Guyot, 1603).

Pietro Antonio Cataldi, *Operetta delle linee rette equidistanti, et non equidistanti* (Bologna: Heirs of Giovanni Rossi, 1603).

A discussion of the parallel postulate. *Aggiunta* published in 1604.

Thomas Oliver, *De sophismatum præstigijs cauendis admonitio: in qua præter alia cognitu non indigna nec usquequaque vulgo tractata accuratioris dialecticæ finis, necessitas, & præstantia explicantur* (Cambridge: John Legat, 1604).

Includes ‘De rectarum linearum parallelismo & concursu doctrina geometrica, qua demonstratio quintæ petitionis Euclidis certissimis notissimisq[ue] principiis extracta continetur, cui modus novus geographicus intra planum vnus circuli mensurandi locorum intervalla subijcitur.’ Subsequent edition Frankfurt 1605.

Ioannes Kepler, *Dioptrice ... Præmissæ epistolæ Galilæi ... item, exa-*

men præfationis Ioannis Penae Galli in Optica Euclidis, de usu optices in philosophia (Augsburg: David Francus, 1611).

Subsequent editions London 1653, Amsterdam 1682.

Christoph Clavius, *Commentaria in Euclidis Elementa geometrica, & in Sphaerica Theodosij: quibus accessit explicatio sinuum, tangentium & secantium cum canonibus. Tractatio item triangulorum, tum rectiliniarum, tum sphaericorum Omnia hac editione ab ipso autore multis in locis correctata & aucta.* (Mainz: Anton Hierat, Johannes Volmar, 1612).

Hans Poulsen Resen, Johann Christoph Knopf, *Initia geometrica, seu, in Euclidem isagoge compendiosa Una cum logistica astronomica brevissima tradita olim in Schola privata a Johan. Paul. Resenio et nunc edita pro junioribus a Joh. Christoph. Knopfio* (Wittenberg: Martin Henckel, Zacharia Schürer, 1612).

Riccardi at 1612⁵ reports ‘Euclidis libri II priores cum explicatione Io. Pauli Reseni editi a Christ. Knopff’, printed at Wittenberg. Two copies in the Munich University Library are catalogued with similar details. We believe, with Steck, that these reports describe the present item, but it is just possible that they instead describe an otherwise unknown edition of *Elements* 1 and 2.

I primi sei libri degli elementi di Euclide ridotti alla pratica (Bologna: Bartolomeo Cochi, 1613).

Subsequent edition 1620.

Eberhard Welper, *Elementa geometrica, in usum geometriae studiosorum ex variis authoribus collecta* (Strasbourg: J. Reppius, 1620).

Pages 18–90, the substantial majority of the book, contain the enunciations and some proofs for *Elements* 1–6, somewhat rearranged. We believe this is the first item listed here in which the figures are grouped into a separate set of plates placed at the end of the volume. Subsequent edition 1630.

I tre libri settimo, ottauo, & nono de gli Elementi aritmetici d’Euclide ridotti alla pratica (Bologna: Sebastiano Bonomi, 1621).

Companion to Bologna 1620; continued in 1625.

Henry Savile, *Praelectiones tresdecim in principium elementorum Euclidis Oxonii habitae M.DC.XX* (Oxford: John Lichfield, James Short, 1621).

Riccardi's report of a 1610 impression (1610²) is mistaken.

Honorat de Meynier, *Paradoxes de Meynier, contre les mathematiens, qui abusent la ieunesse. Ensemble les Definitions Theoremes & Maximes, d'Euclides, d'Archimedes, de Proclus, de Sacrobosco, & d'Aristote, utiles a ceux qui se veulent servir proprement des Mathematiques, & de la Philosophie. Avec un Abregé des reigles de la Geometrie, & des principales maximes & regles des Arts, de fortifier & assaillir les places.* (Paris: Julian Jacquin, 1624).

Subsequent editions 1626, 1652, 1653.

Decimo libro degli elementi d'Euclide ridotto alla prattica (Bologna: 1625).

Companion to Bologna 1620 and 1621.

Lucas Brunn, *Euclidis Elementa practica, oder Auszug aller problematum und Handarbeiten auss den 15 Buchern Euclidis: allen und jeben, dess uhrhalten geometrischen nusslichen gebrauchs, des Cirkels Liebhabern zu gut in Teutsche sprach dargegebeu* (Dresden, Nürnberg: Simon Halbmayer, 1625).

Pietro Antonio Cataldi, *Difesa d'Euclide: dove si dimostra le opposizioni date dal Sig. Ioan Alfonso Molina Cano à molte proposizioni de gl'Elementi d'Euclide non essere di valore, & si mantiene chiara la certissima dottrina d'essi Elementi . . .* (Bologna: Nicolò Tebaldini, 1626).

François Besson, *La pratique de geometrie de M. Francois Besson, divisee en trois livres.* (Paris: Iran Moreau, 1626).

Elements 4, 13 are included, much edited.

Heinrich Hoffmann, *Teutscher Euclides, Das ist seiner geometriae Erster Theil, Von derselben Elementen* (Jena: Widow of Johann Weidner, 1628).

Not a translation: see Heath (vol. 1, p. 107).

Ovidio Montalbano, *Speculum Euclidianum, totam Euclidis Planimetriam, quæ absolute dicitur, et extranea nonnulla, geometrica tamen, internotata unico in schemate linealiter repræsentans* (Bologna: Clement Ferronius, 1629).

Ghetaldi Marino, *De resolutione & compositione mathematica libri quinque. Opus posthumum.* (Rome: Reverender Camerae Apostolicae, 1630).

Subsequent edition 1640.

Andreas Arzet, *Clavis mathematica qua ad recondita totius matheseos penetralia primus aperitur aditus per usitatiores demonstrationes quas ex Euclidis sex prioribus elementorum libris selegit et faciliorem ad captum accommodavit* (Innsbruck: Daniel Agricola, 1634).

Simon Stevin, *Les oeuvres mathématiques de Simon Stevin* (Leiden: Bonaventure & Abraham Elsevir, 1634).

Vol. 6 includes a ‘Traité des Incommensurables grandeurs avec l’explication du dixième livre d’Euclide’.

Martin E. Gestrinus, *In geometriam Euclidis demonstrationum libri sex in quibus Geometria planorum traditur et brevibus notis perspicue explicatur* (Uppsala: Æschillus Matthiae, 1637).

Subsequent edition 1642.

Jacques Alexandre le Tenneur, *Traité des quantitez incommensurables: où sont décidées plusieurs belles questions des nombres rationaus & irrationaus: les erreurs de Stevin refutées; et le dixième livre d’Euclide illustré, de nouvelles demonstrations plus faciles & plus succinctes que les ordinaires, & réduit à 62 propositions, avec un discours de la manière d’expliquer les sciences en François* (Paris: I. Dedin, Louis Boulanger, Augustin Courbe, 1640).

Mario Bettini, Petrus Bettini, *Apiaria universæ philosophiæ mathematicæ . . . Accessit ad finem secvndi tomi Evclides applicatus, Et conditus ex Apiarijs, indicatis visibus eximijs præcipuarum propositionum in prioribus sex libris*

Euclidean Elementorum. (Bologna: Paulus Baleon, Giovanni Battista Ferroni, 1642–1654).

Sometimes described as the ‘fourth edition’, but we have seen no evidence of earlier editions.

William Oughtred, *Clavis mathematica denuò limata, sive potius fabricata: Cui accedit ... declaratio tum decimi elementi Euclidis de lateribus incommensurabilibus: tum decimi tertii & decimi quarti elementi de quinque solidis regularibus.* ... (London: Thomas Harper, Thomas Whitaker, 1648).

Subsequent editions: Oxford 1652, 1662, 1667, 1693, 1698; editions in English: London 1694, 1702, 1794. The original 1631 edition, and the 1647 English translation (both at London) lack the Euclidean material. See also Madan 1931 (vol. 3, pp. 19, 216).

Joannes Broscius, *Apologia pro Aristotele & Euclide, contra Petrum Ramum, & alios: Additæ sunt duæ disceptationes de numeris perfectis* (Danzig: Georg Förster, 1652).

François de Nonancourt, *Euclides logisticus, sive de ratione Euclidea* (Louvain: A. Bouvet, 1652).

Subsequent edition 1682 reported by Steck alone, possibly a mistake.

Georgius Hilarius, *Progymnasmatum mathematicorum enchiridion* (Copenhagen: Petrus Hakius?, 1654).

Contains selections from the enunciations of *Elements* 1–6. New edition 1656 with the Euclidean matter much reduced.

Marcus Meibom, *De proportionibus dialogus* (Copenhagen: Melchior Martzan, 1655).

Euclid appears as a character in this dialogue.

Antonio Santini, *Propositiones geometricæ ... Euclidi restitutæ* (Macerata: Philippo Camacci, 1655).

Andrea Tacquet, *Arithmeticae theoria et praxis* (Louvain: Cyp. Coen-

esten, 1656).

Based on *Elements* 7–9. Subsequent editions Antwerp 1665, 1682; Brussels 1683; London 1690, 1705 (in English); Amsterdam 1704; Naples 1724; Venice 1790.

Thomas White, *Euclides physicus* (London: John Crook, 1657).

Ismaël Boulliau, *Exercitationes geometricae tres: I. Circa demonstrationes per inscriptas & circumscriptas figuras. II. Circa conicarum sectionum quasdam propositiones. III. De porismatibus. Astronomiae philolaicae fundamenta clariùs explicata, & asserta aduersus clariss. viri Sethi Wardi Oxoniensis professoris impugnationem.* (Paris: Sebastien and Gabriel Cramoisy, 1657).

Erhard Weigel, *Analysis Aristotelica ex Euclide restituta* (Jena: 1658).

Thomas White, *Euclides metaphysicus, sive, De principiis sapientiae, stoecheidea* (London: John Macock, John Martin, James Allestry, Thomas Dicas, 1658).

Giovanni Alfonso Borelli, *Euclides restitutus, sive, Prisca geometriae elementa brevius, & faciliùs contexta: in quibus praecipuè proportionum theoriae nova firmiorique methodo proponuntur* (Pisa: Francisco Honophri, 1658).

Subsequent editions (the same title but with a rather different text) Bologna 1663 (in Italian; see Duarte p. 68); Rome 1679, 1695.

Mario Bettini, *Recreationum mathematicarum apiara novissima duodecim: quae continent militarià, stereometrica, conica, & novas alias jucundas praxes ac theorias, in omni mathematicarum scientiarum genere* (Bologna: Joannes Baptista Ferroni, 1659).

Subsequent edition 1660. Riccardi reports that this contains Euclidean material, presumably taken from Bettini's 1642 *Apiaria*.

Samuel Foster, *Miscellanies: or, mathematical lucubrations of Mr Samuel Foster published, and many of them translated into English, by the care and*

industry of John Twysden C.L.M.D. whereunto he hath annexed some things of his own (London: R. & W. Leybourn, 1659).

Includes ‘the second book of Euclides Elements, demonstrated by species. By John Leeke.’

Johann Christoph Sturm, *Universalia Euclidea, hoc est Liber Quintus Euclidis universalissimis inque omni entium genere veris demonstrationibus confirmatus. Accedunt eiusdem XII. novi syllogizandi modi in propositionibus absolutis, cum XX. aliis in exclusivis eâdem methodo Geometricâ demonstratis* (The Hague: Adrian Vlacq, 1661).

Euclidis elementa geometrica novo ordine ac methodo fere demonstrata (London: T.R., John Martyn, 1666).

The Euclidean material, from *Elements* 1–6 and 11–12, is rearranged into a single series of 142 theorems. The subsequent 1678 edition includes an introduction by Nicolaus Mercator; it is sometimes inferred that he was the author of the main text. Steck reports (IV.41) an impression at Antwerp in 1645, which we cannot confirm.

Antoine Arnauld, *Nouveaux elemens de geometrie* (Paris: Charles Savreux, 1667).

Carlo Renaldini, *De resolutione et compositione mathematica libri duo* (Patavia: Heirs of Paulo Frambotti, 1668).

Gilles François de Gottignies, *Elementa geometriae planae* (Rome: Angelo Bernabò, 1669).

Probably included in some form in de Gottignies’ *Logistica universalis* (Naples 1687).

Ignace Gaston Pardies, *Elemens de geometrie, ou, Par une methode courte & aisee l’on peut apprendre ce qu’il faut sçavoir d’Euclide, d’Archimede, d’Appollonius, & les plus belles inventions des anciens & des nouveaux geometres* (Paris: Sebastien Mabre-Cramoisy, 1671).

Subsequent editions: The Hague 1680 (in Latin), 1690, 1691 (in Pardies’

(*Œuvres*), 1705, 1710; Paris 1673, 1683; Lyon 1683, 1695, 1725 (in Pardies' *Œuvres*); Jena 1684 (in Latin), 1693; Oxford 1694 (in Latin); London 1701, 1702, 1705, 1711, 1717, 1725, 1734, 1746 (all in English); Utrecht 1711 (in Latin); Amsterdam 1725 (in Pardies' *Œuvres*); Dublin 1734 (in English).

Camillo Guarino Guarini, *Euclides adauctus et methodicus mathematicaque universalis* (Turin: Bartholomeo Zapata, 1671).

Subsequent edition 1676.

Georg Mohr, *Euclides Danicus bestaende in twee deelen: het eerste deel, handelt van de Meetkonstige werckstucken, begrepen in de ses eerste boecken Euclides; het tweede deel geeft aenleyding on verscheyde werckstucken te maecken, als van snyding, raeking, deeling, perspective e Sonnewysers* (Amsterdam: Jacob van Velsen, 1672).

Andrés Puig, *Arithmetica especulativa, y practica, y arte de algebra. En la qual se contiene todo lo que pertenece al arte menor, ò mercantivol, y à las dos algebras, racional, è irracional; con la explicacion de todas las proposiciones, y problemas de los libros quinto, septimo, octavo, non, y decimo del principe de la matematica Euclides* (Barcelona: A. Lacavalleria, 1672).

Subsequent edition 1715.

José Zaragoza, *Geometria practica: Euclidis problemata continens* (Madrid: Bernardo à Villa Diego, 1672).

Ignaz Pardies, *Discours de la connaissance des bêtes, avec un table nouvelle pour l'intelligence des Elémens de Géometrie selon Euclide* (Paris: 1672).

Subsequent edition 1678; also included in Pardies' *Œuvres*.

Jan Alexander Ferrarius, *Euclides Catholicus, Rom. Ecclesiae Fidem non minùs lepide Demonstrans, quàm Mores Artesque Rom. Pontificum graphice depinxit Erasmus*. (Paris: before 1673).

A satirical 'defence' of the doctrines of the Catholic Church by quasi-geometrical methods, apparently written by the German Johannes Ludovicus Fabricius (d. 1697), Ferrarius being a pseudonym. Subsequent editions

London 1673, 1676, Oxford 1680; in English, London 1673. See Madan 1931 (vol. 3, pp. 384–5).

Georg Mohr, *Compendium Euclidis curiosi: dat is, Meetkonstigh passerwerck, hoe men met een gegeven opening van een passer en een liniael, de werck-stucken van Euclides, ontbinden kan te samen gestelt door een Liefhebber der selver konst* (Amsterdam: Joannes Janssonius van Waesberge, 1673).

Riccardi's publication date of 1672 seems to be incorrect. Subsequent editions 1673 (in German); London 1677 (in English).

José Zaragoza, *Euclides novo-antiquus singulari methodo illustratus* (Valencia: Hieronymus Villagrassa, 1673).

Described as the 'secunda editio', but no earlier edition with this title is known to us. Subsequent edition: Madrid 1678 (in Spanish).

Elementa geometriæ priora duo Breviter Demonstrata (N.P.: 1674).

Contains the propositions of Elements 1–4 and 6, with some from 5 and a few from Archimedes, rearranged and compressed into a series of 40 propositions. The place of publication and author are not given; Wing attributed the book to Henry Aldrich. Not known apart from a copy in the Radcliffe Science Library with shelfmark 1831 d. 19, formerly owned by All Souls College, Oxford.

Vicenzio Viviani, *Quinto Libro Degli Elementi d'Euclide, ovvero Scienza Unversale Delle Proporzioni spiegata colla dottrina del Galileo* (Florence: 1674).

Rearranged and renumbered. Reissued in about 1676 incorporating the original sheets containing the half-title and title page, address and sections 1–10; dedication and contents are re-set and three new sections are added.

Pierre de Fermat, *Varia opera mathematica* (Toulouse: Johannes Pech, 1679).

Includes at p. 116 'Porismatum Euclidæorum renovata doctrina, et sub forma isagoges recentioribus Geometricis exhibita'.

Théodoric Luders, *Traité mathématique, contenant les principales définitions, problèmes, et théorèmes d'Euclide. L'Arithmétique Décimale. La Trigonométrie. La Longimétrie. La Planimétrie, et Stéréométrie. La Fortification . . . La Perspective militaire: et la Géographie universelle.* (Paris: 1680).

Vitale Giordani, *Euclide restituto ouero Gli antichi elementi geometrici restaurati, e facilitati . . . Libri XV. Ne i quali principalmente si dimostra la compositione delle proportioni secondo la definitione datane dal suo antico autore* (Rome: Angelo Bernabò, 1680).

Subsequent edition 1686.

Anon., *The Elements or Principles of Geometrie: Collected From several Authors and reduc'd into a shorter Method.* (London: Ann Godbid and John Playford for John Seller, 1684?).

Johann Balthazar Lauterbach, *Resp. Euclidem Geometram . . . disquisitioni* (Jena: Joh. David Werther, 1685).

Andreas Hedio, *Exercitatio academica De Euclidis propos. XLVII. Lib. I. Element.* (Königsberg: Reusner, 1689).

Heinrich Meissner, *Der Gantze Teutsche Euclides* (Hamburg: 1690).

Subsequent editions ?1696, ?1700.

Michaele Angelo Fardella, *Universæ usualis mathematicæ theoria: in qua nova quadam et extricata methodo, insignores Euclidis, Apollonii, Archimedis et Theodosii propositiones demonstrantur* (Venice and Leiden: Girolamo Albrizzi and Petrus Vaulcurtus, 1691).

Subsequent edition Amsterdam 1695 according to Riccardi.

Bernard Lamy, *Nouveaux élémens de géométrie, ou de la mesure du corps. Qui comprennent tout ce qu'Euclide en a enseigné; les plus belles propositions d'Archimede et l'analyse* (Paris: André Pralard, 1692).

Subsequent editions 1695?, 1701, 1704, 1734.

Geminiano Rondelli, *Planorum, ac solidorum Euclidis elementa facilioribus auctorum demonstrationibus* (Bologna: Giuseppe Longhi, 1693).

Caspar Ringelmann, *Euclidem στοιχειώτην dissertatione historico-mathematica* (Kiel: Joachim Reumann, 1693).

Also included in Samuel Reyher's edition (Kiel 1699).

John Wallis, *Opera mathematica* (Oxford: At the Sheldonian Theatre, 1693–99).

Contains in vol. 2 'De pustulato quinto et definitione quinta lib. VI. Euclidis, descriptio geometrica'.

William Alingham, *Geometry epitomiz'd: being a compendious collection of the most useful propositions in the first, third, fourth, fifth and sixth books of Euclid. Together with their uses, in several practical parts of the mathematicks. Also, Euclid's second book and doctrine of proportion alegebraically demonstrated. With some of the most useful problems required in practise* (London: J. Moxon, B. Beardwell, 1695).

Subsequent editions 1700, 1701, 1703, 1714.

Heinrich Meissner, *Geometria tyronica: darinn die herzliche und hochnutsche mäss-kunst nach ihren 3-en dimensionibus, nemlich: I. Longimetria, II. Planimetria, III. Solidimetria vel Stereometria, aus wahren Euclideischen fundamenten . . . gelehrt* (Hamburg: Hinrich von Wiering, 1697?).

Angelo Marchetti, *Euclides reformatus siue antiqua mathematicae elementa nova, facili, ac securo methodo contexta, ac demonstrata* (Pistoria: Stefano Gatti, 1698).

Subsequent edition Livorno 1709.

William Alingham, *An epitome of geometry, containing the principal theorems of Euclid's first, third, fifth, sixth, eleventh and twelfth books, with their uses and applications, digested in a method fit to be read by all such*

who would, in short time, lay a foundation for the most required parts of the mathematicks. Also Euclid's second book and doctrine of proportion, algebraically demonstrated. (London: Benjamin Barker, 1701).

Giovanni Antonio Conti, Bern Dibner, *Breve compendio di varij essercizij di compasso fondati su gli elementi di Euclide* (Bologna: Giulio Borzaghi, 1702).

Tobias Beutel, *Geometrischer Lust-Garten: Darinnen d. edle u. höchst-nützliche Kunst Geometria aus d. Euclide gepflanzt* (Leipzig: Tarnovius, 1703).

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