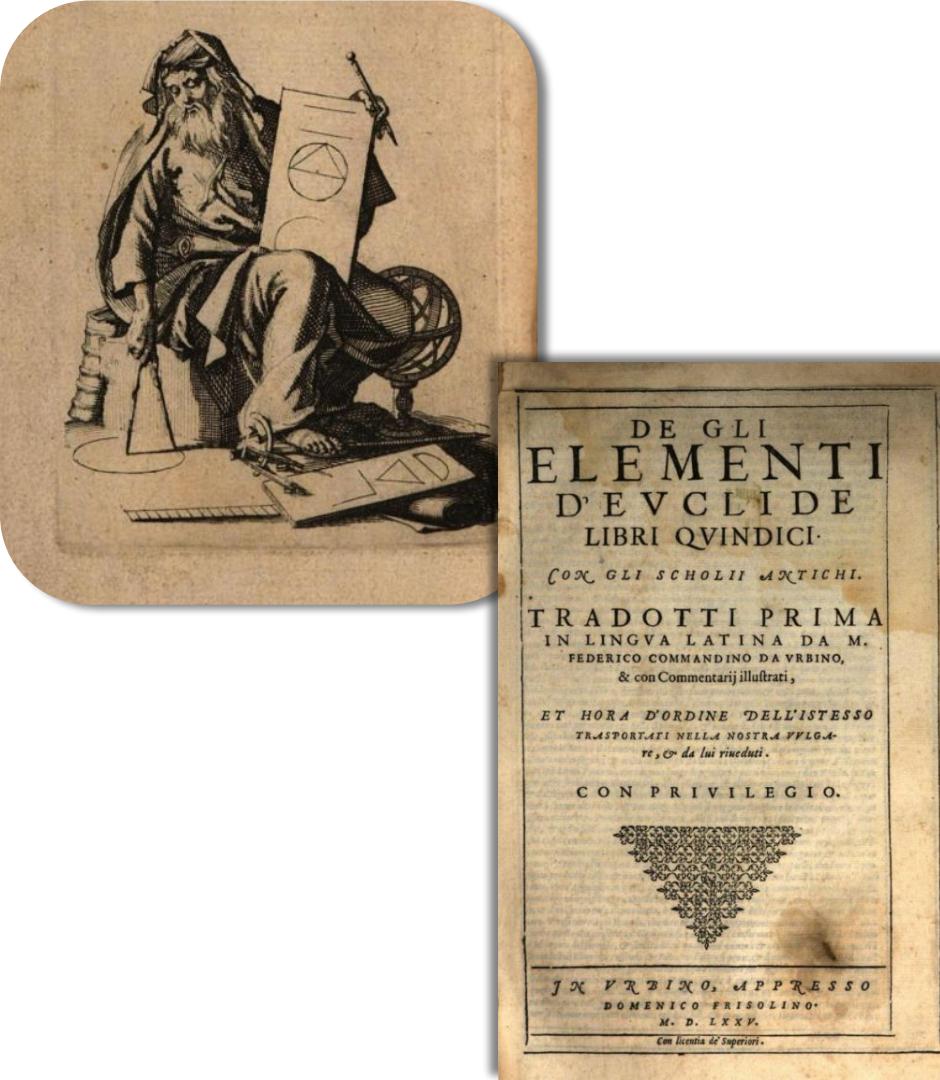

Framing Mathematics

Title Pages of Euclid's *Elements* in Early Modern Europe

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Introduction

- Introduction
- Focus
- Methodology
- Findings
- Takeaways

Euclid's *Elements*

- The *Elements*, written around 300 BCE, is a foundational mathematical text.
- Structured from basic principles to complex concepts systematically.
- Each of its 13 books presents definitions, postulates, common notions, and propositions.
- Subjects: plane geometry (books 1–6), basic number theory (books 7–10) and solid geometry (books 11–13).
- THE geometry until the 19th century.

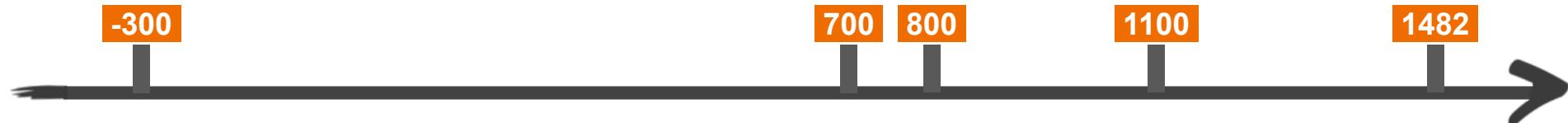


The Journey of Euclid's *Elements* from Antiquity to Print

Euclid's *Elements* underwent significant transitions and adaptations.

Some of them:

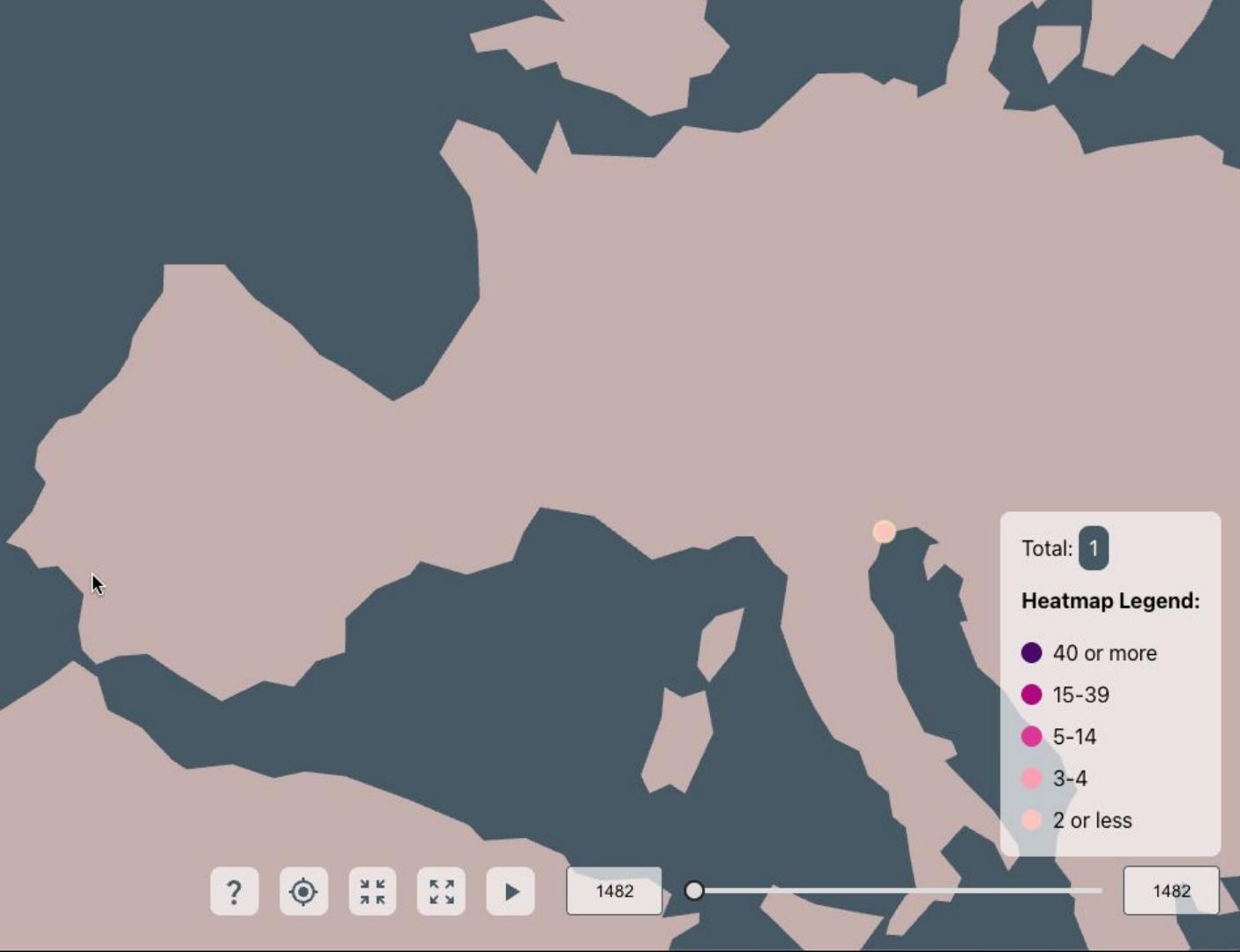
- Preserved in Alexandria and Byzantium.
- 8-9th century: Transmitted to the Islamic world, where it was studied and translated into Arabic.
- 12th century: Arabic versions translated into Latin.
- 1482 (Venice): First printed edition (Latin).



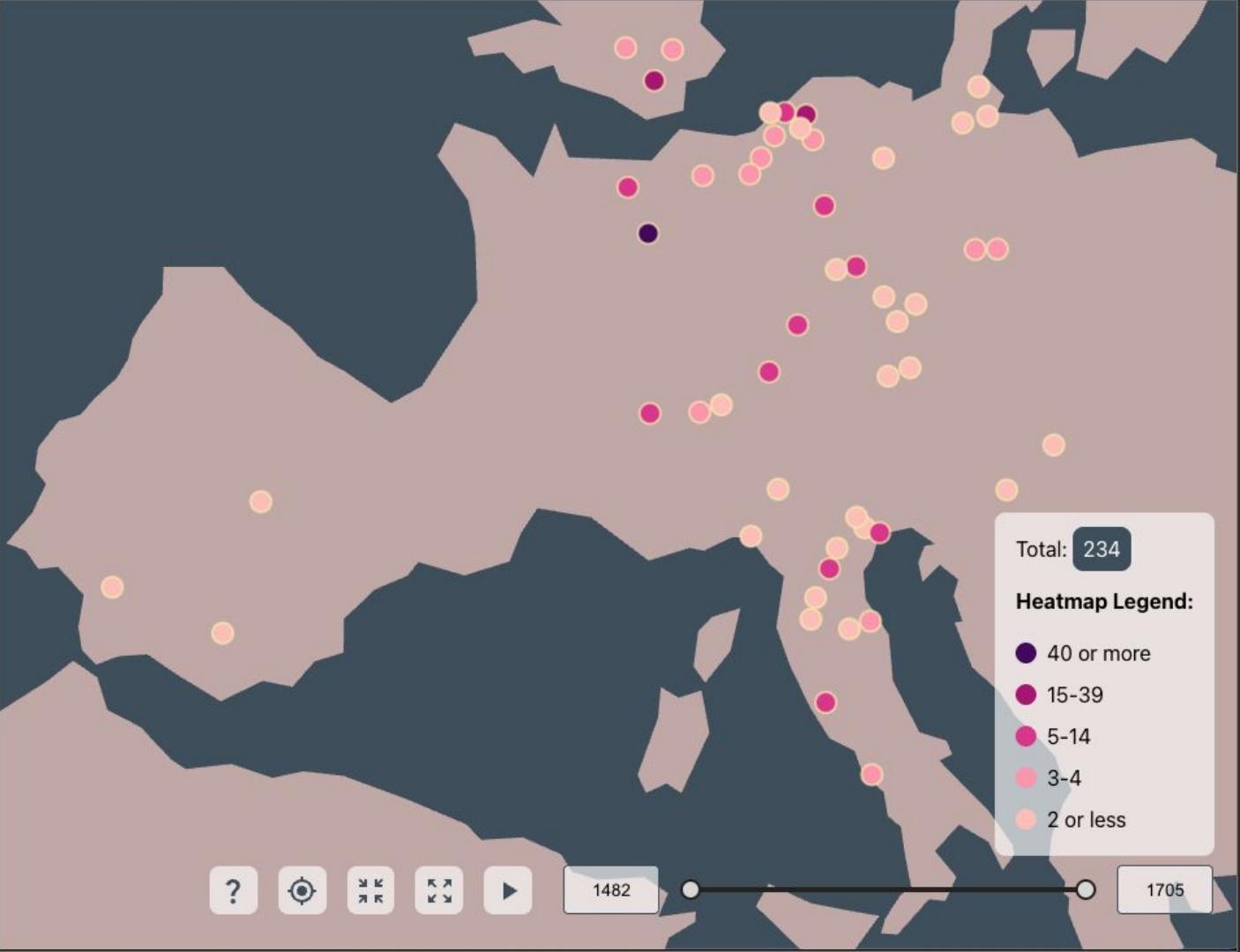
Euclid's *Elements* in Early Modern Europe

- Euclid's *Elements* held a canonical status in early modern Europe.
- 16th-17th centuries: Surge in printed translations in Latin and vernacular languages.
- Over 230 translations published, ~40% in Latin.
- Translations varied in presentation, commentary, and mathematical content.
- Reflects shifts in geometry, arithmetic, and algebra conceptions.

A Proliferation of Editions



A Proliferation of Editions



Title Pages: Selected Milestones

Pre-print

- No title pages and often even fixed titles.
- Books identification by incipits and colophons.

15 century (Early Print)

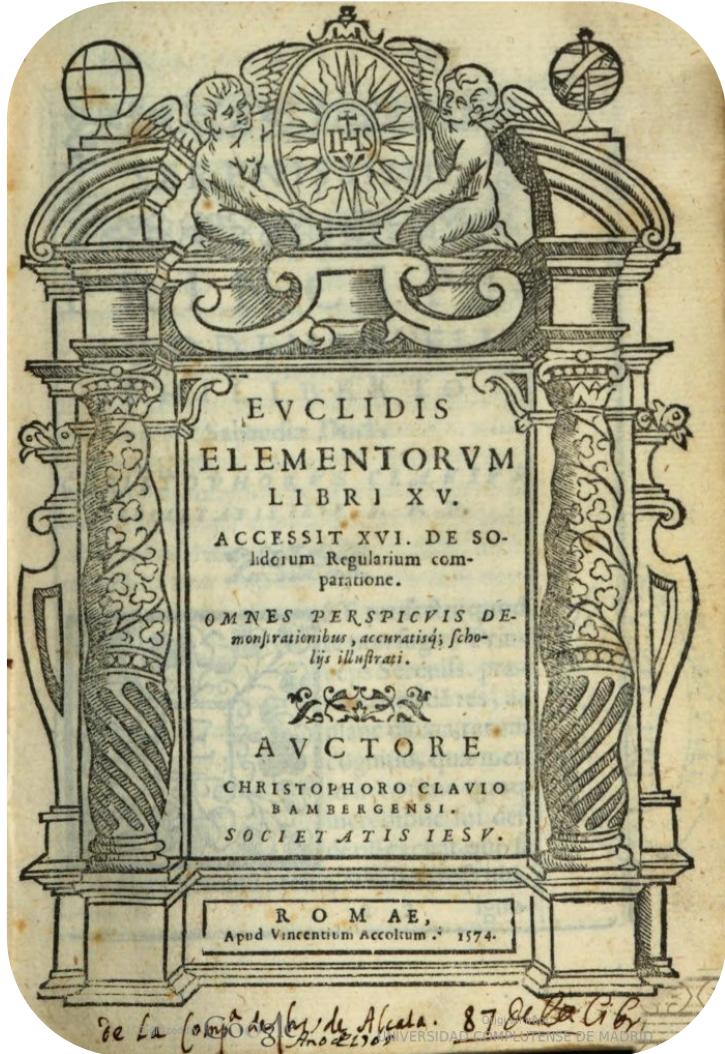
- Printed books imitate manuscripts.
- First experimental title pages appear.

16th-17th centuries

- Title pages quickly become a common convention, driven by practical and commercial needs.
- Title pages vary in layout, content, and style.

~18th century and afterwards

- Title page are increasingly paired with frontispiece.
- Later, role changes with printed covers.



Focus

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Motivation & Research Question

The BIG question:

How did authors, printers and publishers adapt and frame *Elements* for different audiences?

Why it matters:

Since *Elements* was a foundational text across many contexts, answering this question gives us a window into the broader mathematical landscape of the time.

Intuition:

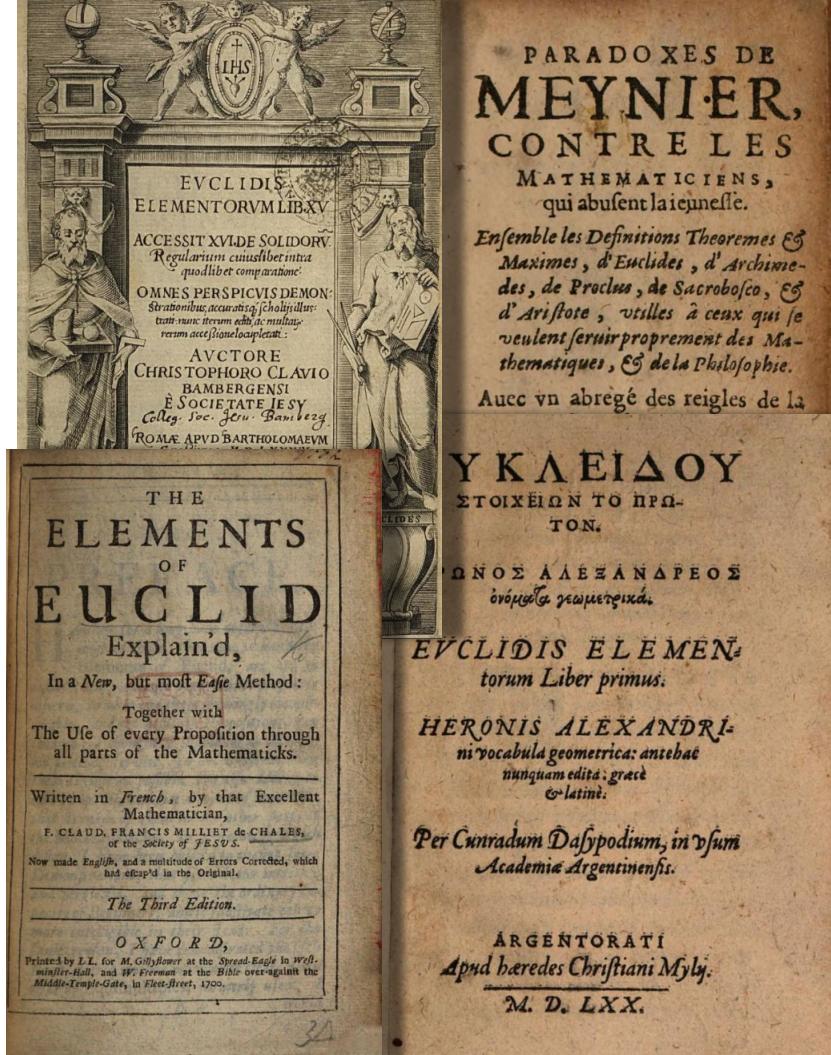
- > The title pages of the ~230 adaptations reflect how the book was positioned and circulated.
- > They can offer a panoramic overview.
- > They can shed light on the social, intellectual and commercial forces shaping its transmission.

Research question:

What can these title pages reveal about the pedagogical, intellectual and social contexts in which *Elements* was taught and circulated?

Teaser

- Title pages of *Elements* highlight the book's distinct and active role in scholarly exchange, its pan-European circulation and reach, and the roles of institutions in shaping it, in particular the Jesuit order.
- They expose debates and tensions in early modern mathematics: Fidelity to Greek sources, philological rigor, mathematical innovation, pedagogy and practical utility.
- No simple linear story—title pages highlight shifting commercial, social and intellectual priorities and offer insight into how it shaped this foundational text.





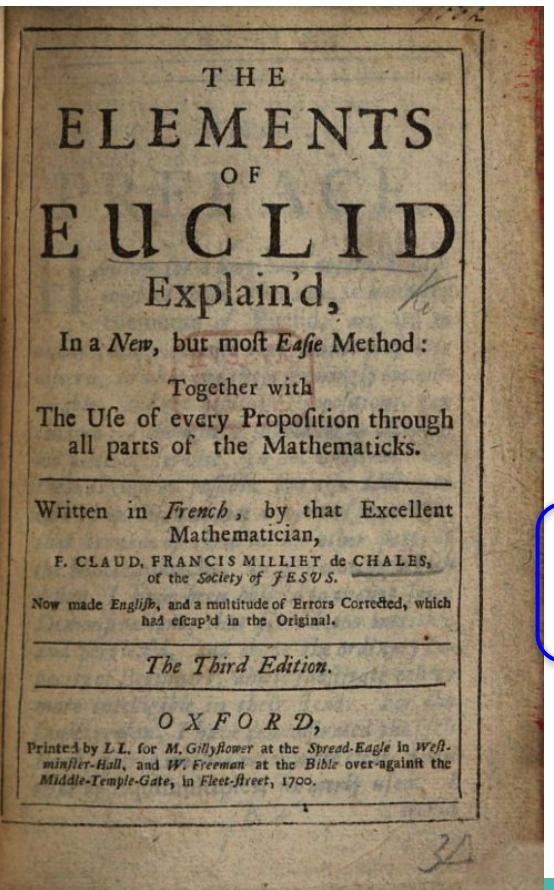
Methodology

- Introduction
- Focus
- **Methodology**
- Findings
- Takeaways

Sources

- **Corpus:** ~230 editions of *Elements* + ~60 related French math books (1600–1650).
- **Focus:** Segmenting the text of each title page into distinct elements to identify patterns and variations + materialistic feature extraction.
- **Framework:** Based on Gérard Genette's structuralist ideas about paratexts.
- **Challenge:** Huge amount of data.
- **Strategy:** Training an AI agent and building a researcher-in-the-loop platform.

Segmenting the Title Page's Text



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 Mathematics.

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.

OXFORD,

Printed by L.L. for M. Gillyflower at the Spread-Eagle in Westminister-Hall, and W. Freeman at the Bible over-against the
Middle-Temple-Gate, in Fleet-street, 1700.

Base Content

Elements Designation

Base Content

Description

Adapter action verbs

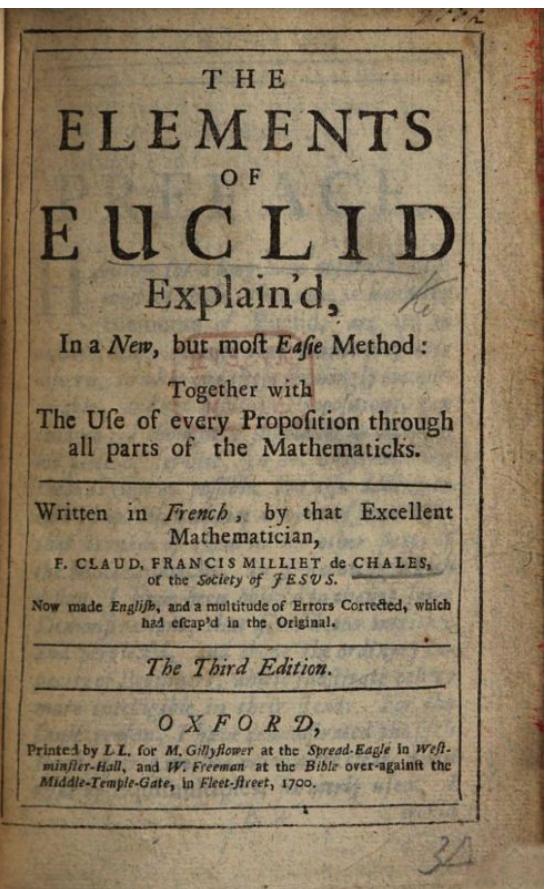
Languages

Institutions

Adapter Description

Edition Statement

Segmenting the Title Page's Text



THE ELEMENTS OF EUCLID Explain'd

Base Content

THE ELEMENTS OF EUCLID

Elements Designation

In a New, but most Easie Method: Together with The Use of every Proposition through all parts of the Mathematicks.

Base Content
Description

Explain'd, Written

Adapter action verbs.

French, English

Languages

the Society of JESUS

Institutions

Excellent Mathematician, ..., of the Society of JESUS

Adapter Description

Now made English, and a multitude of Errors Corrected, which had escap'd in the Original. The Third Edition.

Edition Statement

...

Highlight Segments:

Adapter Description x Adapter Attribution x Patronage Dedication x

Enriched With x Euclid References x Euclid Description x

Other Educational Authorities x Explicit Language References x Institutions x

Intended Audience x Bound With x Publishing Privileges x

Reset



A PARIS, Chez Hierosme de Marnef, & Guillaume Cauelet, au mont S. Hilaire, à l'enseigne du

1566 Pierre Forcadel, Paris
French

1570 Henry Billingsley, London
English

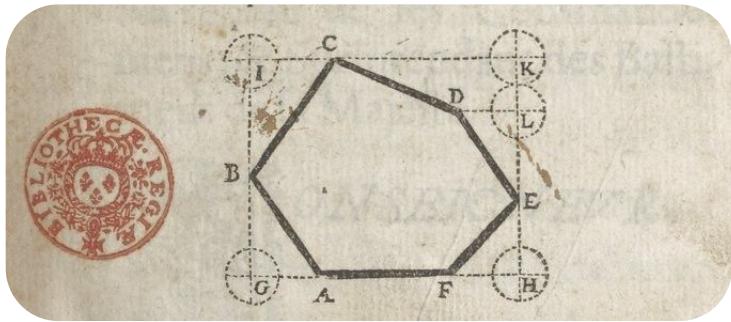
AI Agent with research in the loop custom platform

AI Agent with research in the loop custom platform

Demo: Custom platform for annotating and analyzing pages



<https://elements-resource-box.netlify.app>

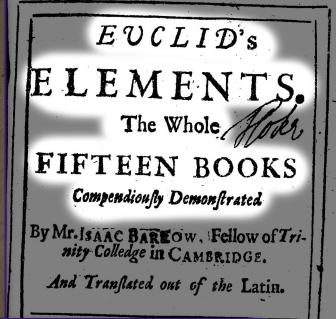
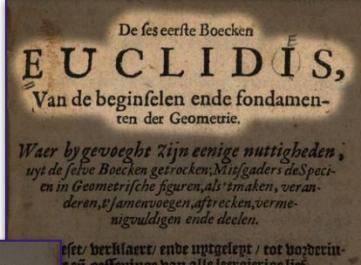
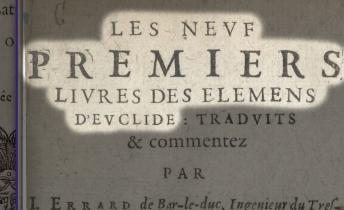
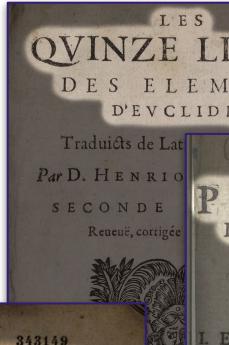
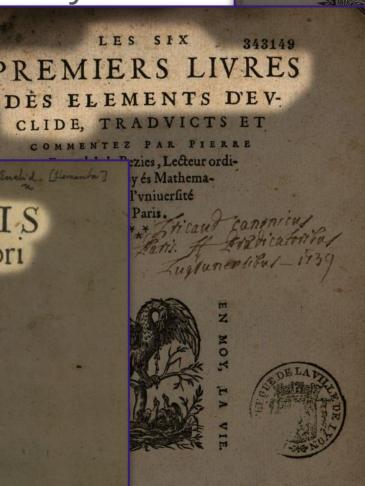
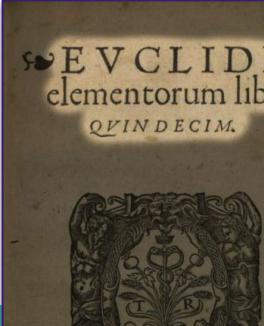


Findings

- Introduction
- Focus
- Methodology
- **Findings**
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Uniformity & Shared Conventions

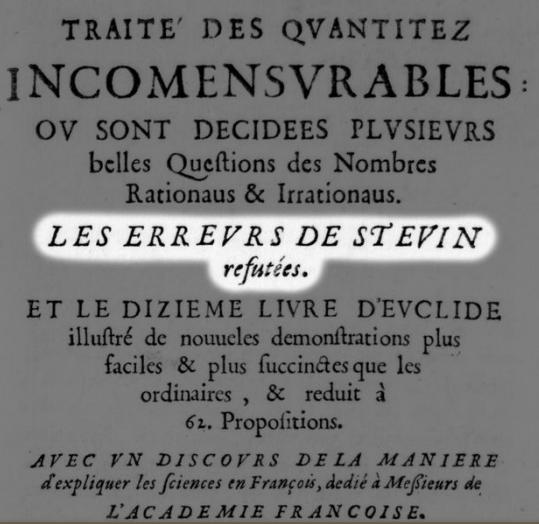
- The title pages display a degree of uniformity in wording and structure.
- For example, the different versions present themselves as different renderings of a single, ancient, consolidated work that might be open for commentary or augmentation, but retain its identity as a definitive authoritative reference in mathematical education.



Title pages, 1558-1705,
published across Europe in
English, Latin, Dutch and
French

Elements as an Active Player in Mathematical Discourse

- Title pages often reference corrections or improvements over previous editions and adapters.
- Examples:
 - "avec la correction des erreurs commises és autres traductions" (le Mardelé, 1622)
 - "les erreurs de Stevin refutées" (Le Tenneur, 1640)
 - "Purg'd from a multitude of Errors" (Dechales, 1685)
- Portrays *Elements* as an active player of an evolving, contested mathematical landscape.

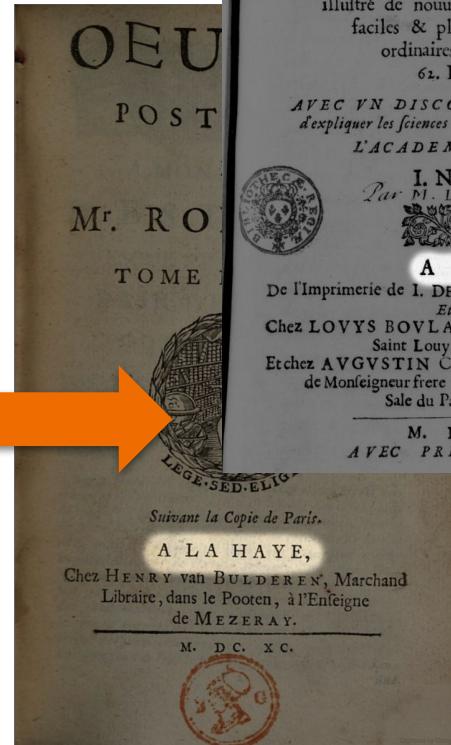
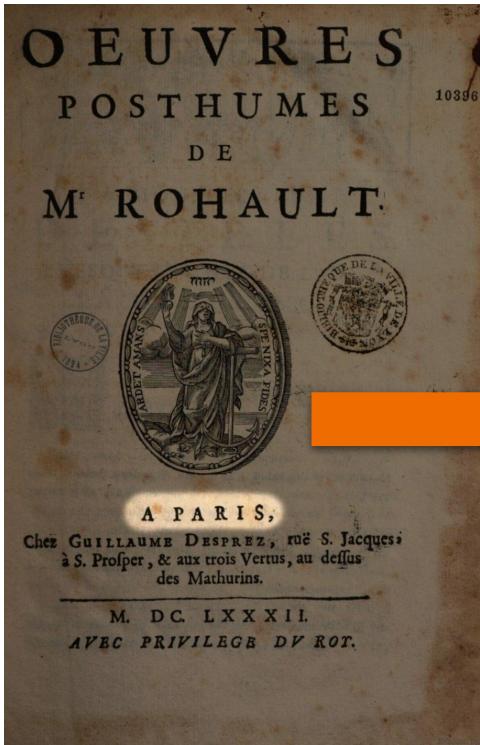


Written in French, by that Excellent Mathematician,
F. CLAUD. FRANCIS MILLIET de CHALES,
of the Society of JESUS.
And now carefully done into English, and purg'd from a multitude of Errors, which had escap'd in the Original.

OXFORD,
Printed by L. Lichfield, Printer to the University,
for Anthony Stephens, Bookseller near the
Theater in Oxford. 1685.

Pan-European Networks & Exchange

- Mathematical publishing operated across national borders.
- Imprints and references reveal active exchange, especially between France and the Low Countries.

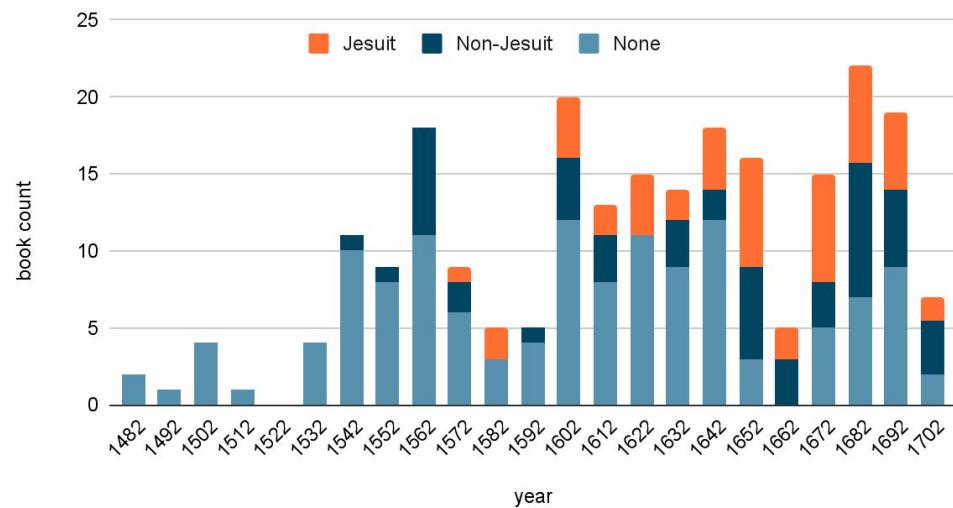


TRAITE DES QVANTITEZ
INCOMENSVRABLES:
OVS SONT DECIDEES PLVSIEVR
belles Questions des Nombres
Rationaus & Irrationaus.
LES ERREVRIS DE STEVIN
refutées.
ET LE DIZIEME LIVRE D'EVCLIDE
illustre de nouvelles démonstrations plus
faciles & plus succinètes que les
ordinaires, & reduit à
62. Propositions.
AVEC VN DISCOVRIS DE LA MANIERE
d'expliquer les sciences en François, dédié à Messieurs de
L'ACADEMIE FRANCOISE.
I. N. T. Q. L.
Par M. le Terneur.
A PARIS
De l'Imprimerie de I. DEDIN, rue des Noyers au petit Ecu.
Et se vend
Chez LOVYS BOVLANGER, rue S. Iaques à l'Image
Saint Louys devant Saint Yves.
Et chez AVGUSTIN COVREBE, Libraire & Imprimeur
de Monseigneur frere unique du Roy, dans la petite
Sale du Palais, à la Palme.

The Role of Jesuits and Institutional Legitimacy

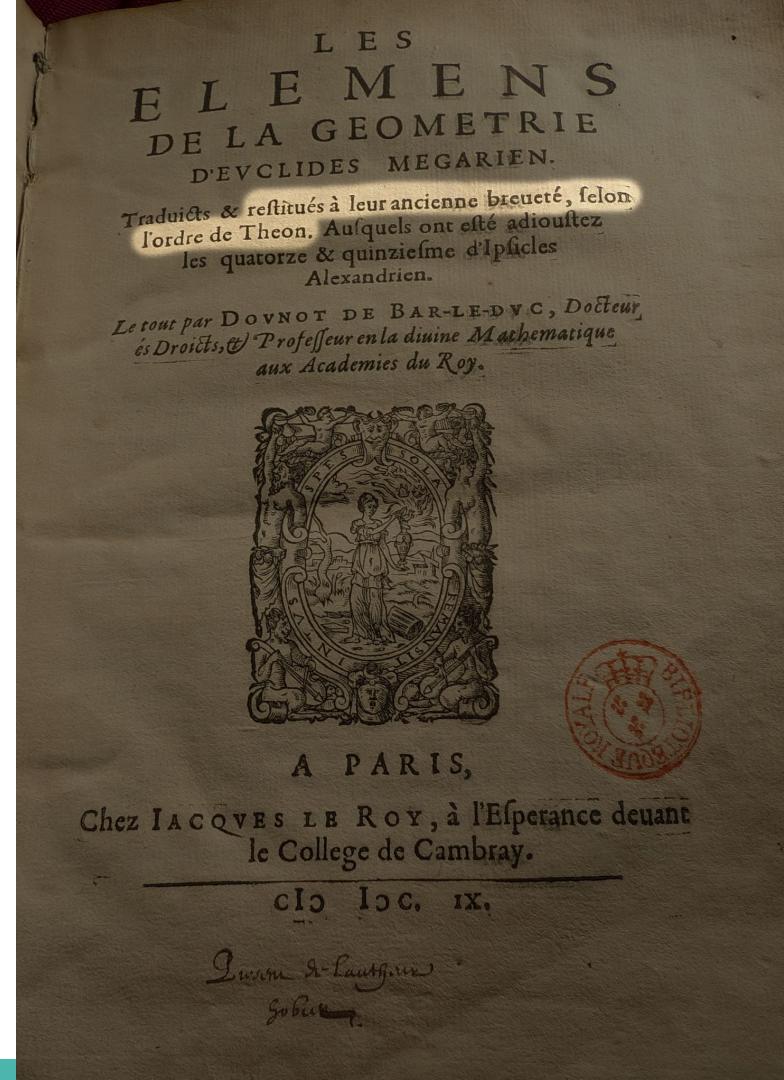
- Title pages frequently highlight academic or institutional affiliations.
- Jesuit membership became a recurring mark of status, especially after 1574 and especially in the French context.
- Several mathematicians described as members of the Society of Jesus.
- Jesuit identity alone often used as a mark of legitimacy and authority.

Institutions Mentioned in Title Page



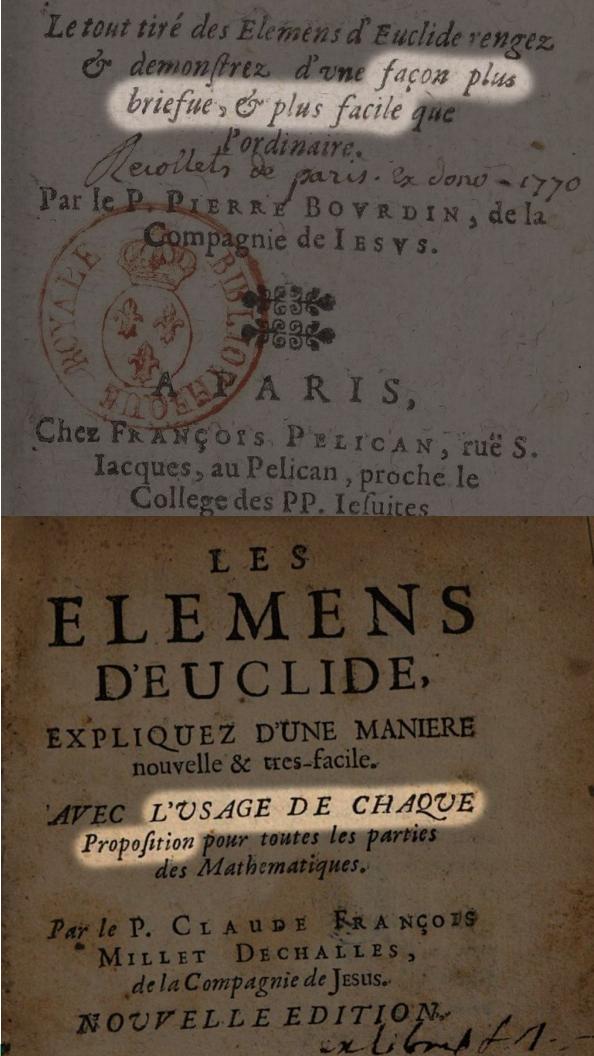
Humanist Approaches: Fidelity to Sources

- Renaissance humanists aimed to recover and restore ancient texts.
- Title pages stress direct engagement with Greek and Latin originals.
- Translators present themselves as restorers, not just transmitters—aligning with philological rigor and the ideal of returning to authentic sources.



Innovation, Accessibility, and Utility

- Many title pages emphasize innovation—new demonstrations, diagrams, or reorganized content.
- **Accessibility:** Efforts to make content clearer, briefer, and easier to understand. Including advertisement of new notations and symbols, universal mathematical language.
- **Utility:** Increasing attention to practical application, especially in later editions (e.g. math for military/professionals).
- Accessibility and utility are interconnected, but not reducible to each other; both reflect changing ideals of mathematical clarity and practice.





Takeaways

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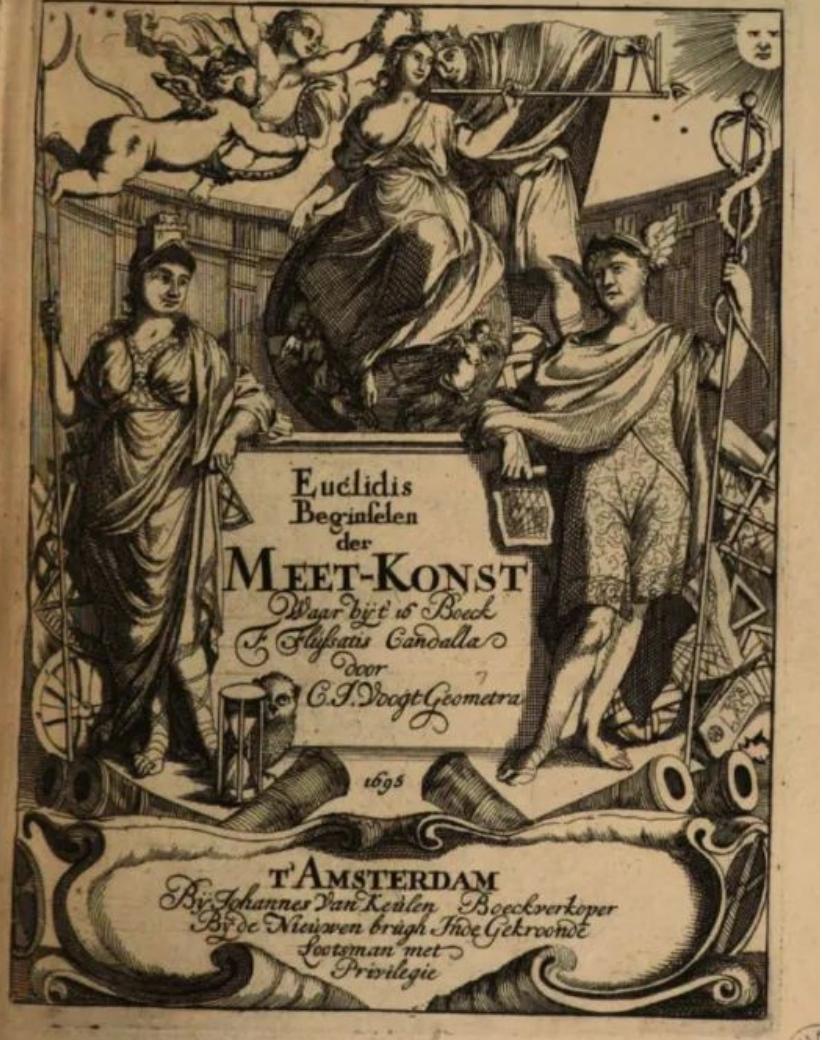
Title pages & Methodology

- > Title pages are a mediating space where multiple intellectual, commercial, and pedagogical priorities intersect.
- > A tool to explore how books and ideas were framed, positioned and circulated.
- > Offer a panoramic view and allow large-scale comparative analysis across editions and contexts.

Early modern Euclid's *Elements* & The Mathematical Landscape

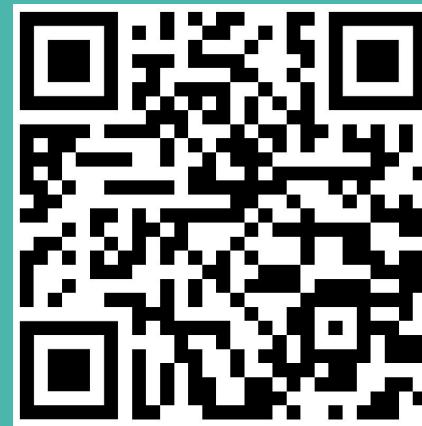
- > Title pages of *Elements* highlight the book's distinct and active role in scholarly exchange, its pan-European circulation and reach, and the roles of institutions in shaping it, in particular the Jesuit order.
- > They capture tensions between competing intellectual priorities and ideals: Fidelity to Greek sources, philological rigor, mathematical innovation, pedagogy and practical utility.

Rather than signal a linear progression, *Elements'* title pages shed light on broader mathematical shifts during the period and the connections between them and the changing, diverse practitioners who engaged with the text.



Thank You

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