

HISTORY OF SCIENCE IN EUROPE · COURSE 4

Scientific Journals in Europe

How the unit of scientific communication changed — from the slow, monolithic book to the short, dated, frequent journal article — from 1665 to the 1860s

FRAMING THE CHAPTER

From the book to the journal: a new unit of communication

Before 1665, a natural philosopher's findings reached other natural philosophers chiefly through books — slow to write, slow to print, slow to travel — or through private correspondence, visible only to its addressees. The scientific journal, invented in that single year in two rival capitals, changed the unit of communication itself: from the book, finished and monolithic, to the short, frequent, dated contribution.

B

Before 1665

The book, and private correspondence — slow to write, slow to print, slow to travel; letters reached only their addressees.

The prior state of affairs

1665

The dual invention

Paris and London each launch a short, dated, frequently issued periodical — a genuinely new unit of communication.

Journal des Sçavans · Philosophical Transactions

∞

Multiplication, then split

Generalist imitators multiply across Europe, then fracture into the discipline-specific journals of today.

1668 to the 1860s

This chapter traces that invention, its rapid multiplication across Europe, and its eventual split, two centuries later, into the disciplinary journals still the basic currency of science today.

4.1
CHAPTER 4 · SCIENTIFIC JOURNALS IN EUROPE

1665: Two Journals, One New Institution

Paris and London each launch a periodical in the same year — following directly from a wave of institution-building already under way.

Neither journal appeared in a vacuum

The birth of the scientific press is conventionally dated to a single year, 1665, and to two publications: the Journal des Sçavans in Paris and the Philosophical Transactions in London. Both followed directly from a wave of institution-building already under way in the two capitals.

1660

Royal Society

founded in London, out of informal gatherings of natural philosophers stretching back further still.



1665

Two journals

the Journal des Sçavans (Paris, Jan.) and the Philosophical Transactions (London, Mar.) both launch.



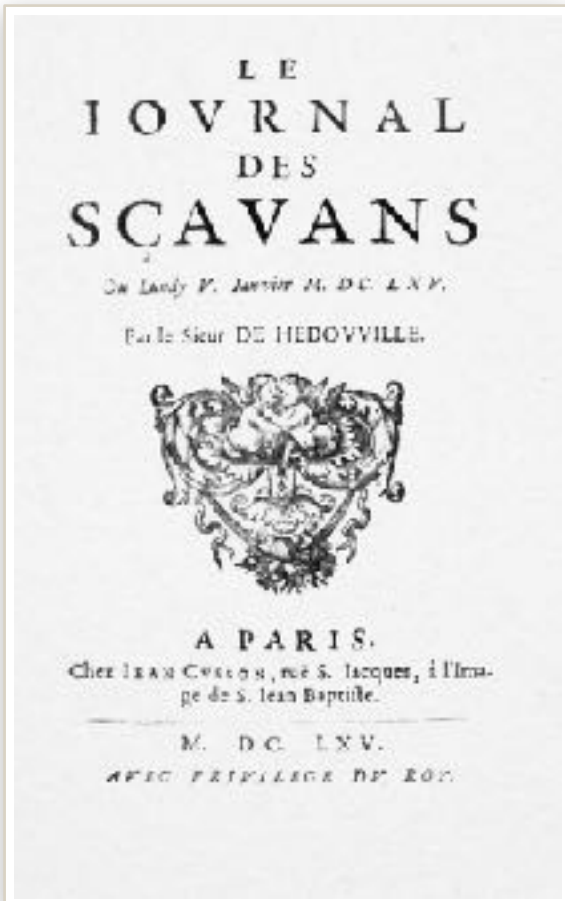
1666

Académie Royale des Sciences

founded in Paris, the year after the Journal des Sçavans — not before it.

The journals and the learned societies belong to the same movement: the conviction that natural knowledge should be pursued collectively and made public, not kept as private, individual erudition.

The Journal des Sçavans



Title page of the first issue, Paris, 5 January 1665.

Denis de Sallo, editor (pen name “Sieur de Hédouville”)

A twelve-page weekly quarto pamphlet, first published in Paris on 5 January 1665 — edited by the magistrate and scholar Denis de Sallo, who set out its programme in the issue itself.

“The design of this journal, being to make known what is new in the republic of letters ... we shall try to ensure that nothing happens in Europe worthy of the curiosity of men of wit that cannot be learned through this journal.”

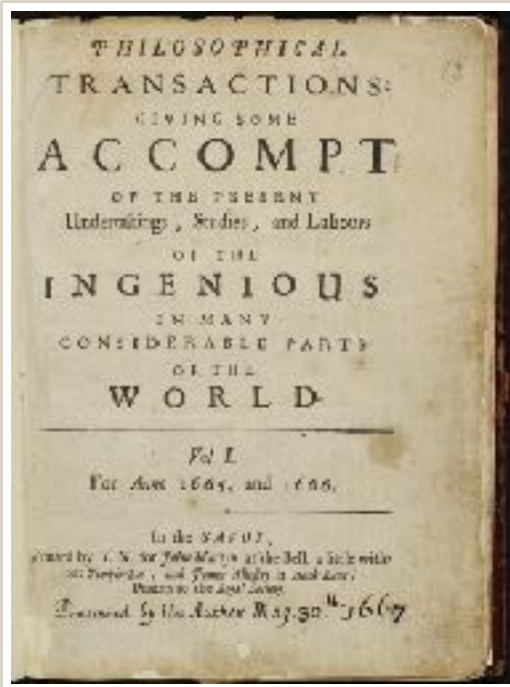
— issue no. 1, 5 January 1665

- 1 **Book catalogue** — an exact list of the principal books newly printed in Europe.
- 2 **Éloges** — obituaries for scholars celebrated for their learning and their works.
- 3 **Natural philosophy** — physics, chemistry, mathematics, astronomy, comparative anatomy.
- 4 **Courts & censures** — decisions of secular and ecclesiastical courts, including university censures.
- 5 **Everything else** — whatever is worthy of the curiosity of the learned.

Only category 3 is what a modern reader would call science — and even that spans the whole of natural philosophy, not a single discipline.

4.1 • 1665

The Philosophical Transactions



Title page, first issue, 6 March 1665.

Henry Oldenburg, founding editor

Published just over two months after the *Journal des Sçavans*. Oldenburg — the Royal Society's first secretary — financed and ran the journal very largely as his own personal undertaking.

“Philosophical Transactions, Giving Some Accompt of the Present Undertakings, Studies, and Labours of the Ingenious in Many Considerable Parts of the World.”

A corrective, in real part. Launched partly as a reproach to the French journal's breadth: that it was not exclusively devoted to natural philosophy.



Henry Oldenburg (c. 1619–1677).

Two points of precision

The first issue is securely dated 6 March 1665 by the Gregorian calendar used on the Continent — 24 February by England's own, still-Julian calendar. And “exclusively scientific” is a matter of degree: the Transactions carried occasional book notices and obituaries too.

4.2
CHAPTER 4 · SCIENTIFIC JOURNALS IN EUROPE

A New Medium for a New Practice of Science

Short, dated, frequent instalments — replacing the book as the basic unit of scientific communication.

4.2 • THE PERIODICAL FORM

From the monolithic book to the dated instalment

What made 1665 a genuine turning point was not only that these two publications existed, but the specific editorial form they introduced — one far better matched to the rhythm of the new experimental and observational science described in Chapter 3.

The book

-  Expensive and slow: written, printed, and distributed over months or years.
-  Monolithic: one finished, complete work — not suited to a single finding.
-  Rare: often reaches only the scholars who happen to own or borrow one costly volume.

The periodical

-  Short and dated: a few pages, issued weekly or monthly.
-  Frequent: an observation or experiment written up and circulated within weeks.
-  Reaches a continental audience of correspondents, not only volume-owners.

Vernacular versus Latin: a real trade-off

A second novelty, easy to overlook today, is language. Both journals were written in the vernacular — French and English respectively — at a moment when Latin had been, for centuries, the one language common to all of learned Europe.



The vernacular choice

Journal des Sçavans (French) · Philosophical Transactions (English)



Reaches a much wider domestic public — the curious and practically minded, not only scholars.



Trades away the automatic, empire-wide readership that a Latin publication still commanded.



Not every journal agreed

The road not taken



The Acta Eruditorum (Leipzig, 1682) deliberately stayed in Latin — precisely to reach the whole of literate Europe (§4.3).



As from the scientific journal, from its very first years, could be shaped to different audiences and purposes.

4.2 · READERSHIP

Two different journals, two different audiences

The two founding journals' early decades show a marked editorial contrast, wholly consistent with the different scope Sallo and Oldenburg each set out.



Journal des Sçavans

1,200+

book notices, first ~25 years

Aimed at a broad public of the educated curious, for whom a digest of a book was often more useful than the book itself.



Philosophical Transactions

≈1,900 : <1,000

articles vs. book notices, 1665–1700

Addressed a public already engaged in experiment and observation, for whom a short original report was the useful unit.

A bibliometric caution

These counts come from modern surveys, not a contemporary tally, and different studies — different cut-offs, different rules for “article” vs. “notice” — reach somewhat different totals. The order of magnitude and the direction of the contrast are well established; the exact figures are indicative, not a precise census.

Both journals' success was imitated almost at once: reprint or translated editions appeared in the Dutch Republic and the German lands before the century's end.

CHAPTER 4 · SCIENTIFIC JOURNALS IN EUROPE

The Multiplication of Learned Journals, 1668–1684

Four imitators, four different local adaptations of the periodical form.

4.3 · IMITATORS

Four journals, four adaptations



Giornale de' Letterati

Rome, 1668 · Francesco Nazari

Brought the model to Italy, with a broad, book-review-centred scope closer to the Journal des Sçavans than to the Transactions.



Acta Eruditorum

Leipzig, 1682 · Otto Mencke

Written entirely in Latin, to reach the whole of literate Europe. The journal in which Leibniz published on the calculus (§4.3, below).



Nouvelles de la République des Lettres

Amsterdam, 1684 · Pierre Bayle

Often credited as the first periodical devoted specifically to book reviews as such — published in French, but from Dutch soil.



Acta Medica et Philosophica Hafniensia

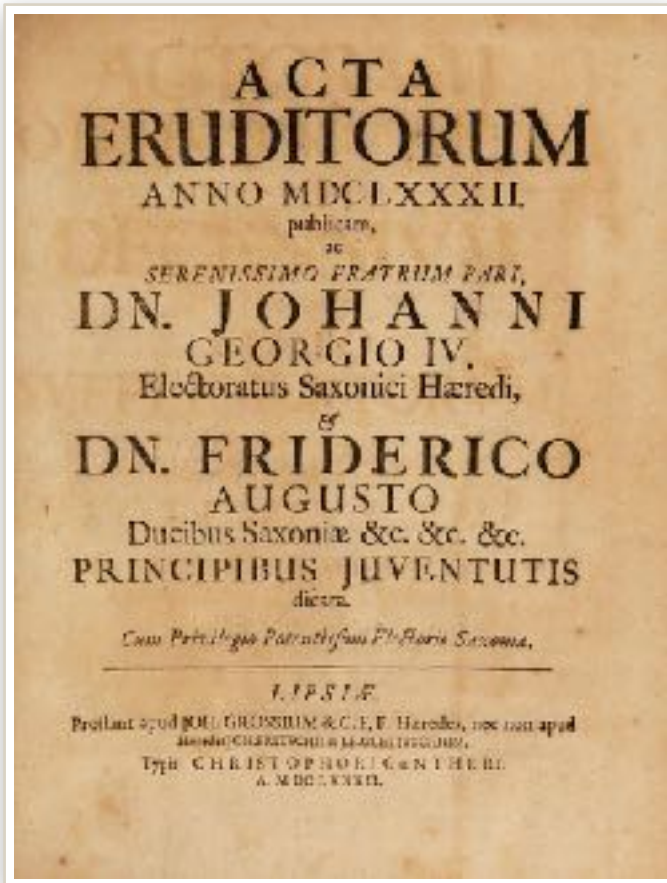
Copenhagen, from 1673 · Thomas Bartholin

Extended the model to a dedicated medical and natural-philosophical scope: case reports and anatomy from correspondents across northern Europe.

Bayle's choice of Amsterdam over Paris was no accident: publishing in French, but from Dutch soil, let his journal escape the very French censorship the Journal des Sçavans's own fourth category (§4.1) existed to report on.

4.3 • THE ACTA ERUDITORUM

A Latin journal, and a priority dispute



Title page of the Acta Eruditorum, Leipzig.

Otto Mencke, Leipzig, 1682

Founded the year after the Journal des Sçavans's third imitator. It took the opposite linguistic choice from the vernacular journals of 1665: written entirely in Latin, precisely so as to reach the whole of literate Europe rather than one national public.

1684 — Nova Methodus. It is in the Acta Eruditorum that Leibniz published his foundational papers on the differential and integral calculus, including the 1684 Nova Methodus — opening the priority dispute with Newton over the calculus's invention.

A pattern repeats. As with the Journal des Sçavans and the Philosophical Transactions, the choice of language was never neutral — it defined who could read a journal, and so who counted as its intended public.

4.4
CHAPTER 4 · SCIENTIFIC JOURNALS IN EUROPE

The Academic Journal, 1700–1770

State-sponsored academies acquire their own house journals — and the number of periodicals explodes across Europe.

4.4 • THE ACADEMIC JOURNAL

The Académie Royale des Sciences gets its own journal



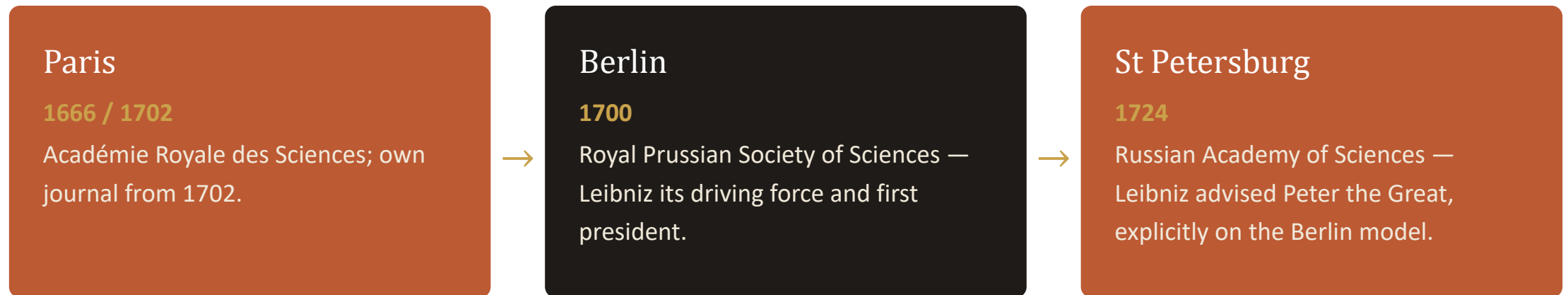
Colbert presenting the members of the Académie Royale des Sciences to Louis XIV, 1667 — Henri Testelin.

1702: the Académie Royale des Sciences begins publishing its own *Histoire et Mémoires* — alongside the *Philosophical Transactions*, it now dominates the European scientific landscape for much of the eighteenth century. Both journals are now exclusively scientific and backed by a society's institutional funding, unlike Oldenburg's private venture; the French journal, however, stays closed to outside authors until well into the second half of the century.

4.4 • THE MODEL SPREADS

Paris to Berlin to St Petersburg

The Paris Academy's model — a state-sponsored society with its own house journal — was widely imitated over the following decades, with Leibniz as the connecting figure.



Historiographical note — mind the order

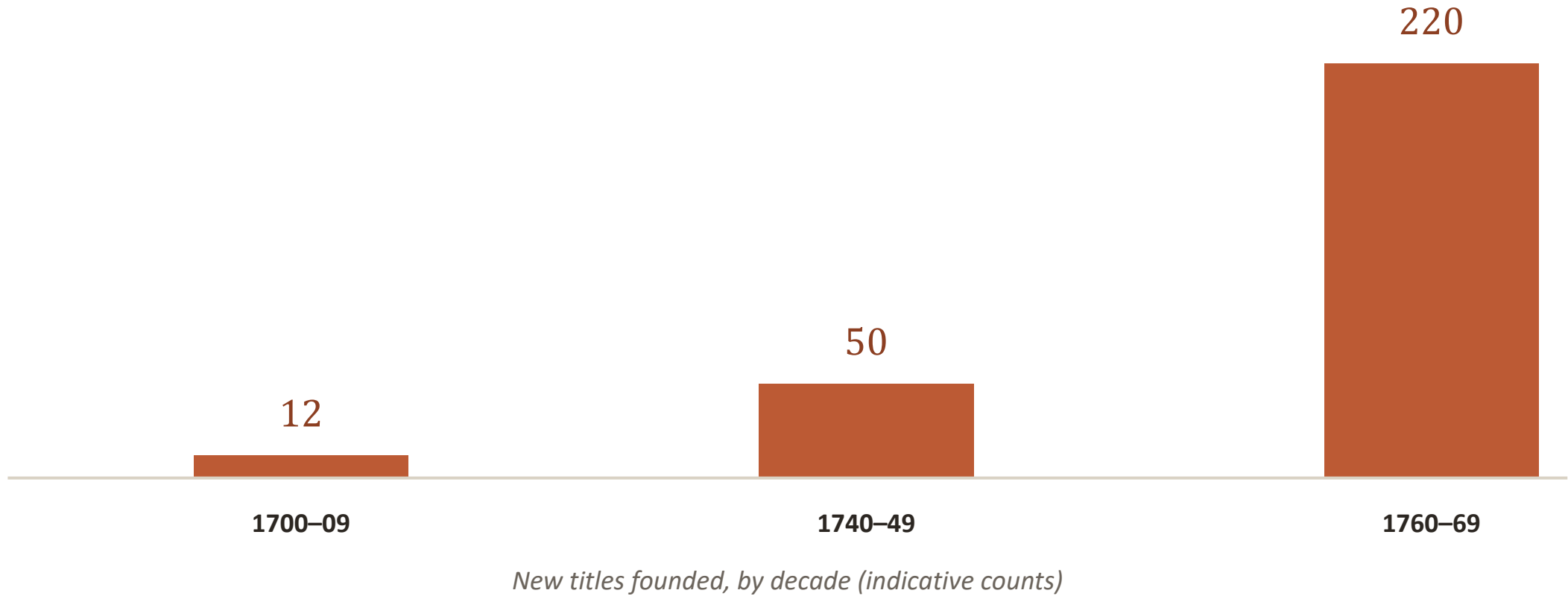
The two academies are sometimes listed in the wrong order. Berlin (1700) came first and was explicitly used as a model for St Petersburg (1724), founded a generation later, only after Peter the Great's own correspondence with Leibniz.

Academies in most of Europe's other major capitals followed over the following decades.

4.4 · THE EIGHTEENTH-CENTURY ACCELERATION

The number of periodicals explodes — while all stay generalist

The eighteenth century saw a marked acceleration in the sheer number of periodicals founded across Europe.



More than 400 journals of this kind are attested across Europe between 1700 and 1770.

CHAPTER 4 · SCIENTIFIC JOURNALS IN EUROPE

The Nineteenth Century: The Specialization of Scientific Journals

From under two hundred generalist titles to some five hundred specialized journals — the sciences fracture into disciplines, and journals follow.

4.5 · SPECIALIZATION

From generalist press to disciplinary journals

It is worth stressing what the eighteenth century's new journals were not: essentially all of them, including the two flagship academic journals of §4.4, remained generalist — covering the sciences (and often much else) as a single undifferentiated whole.



4.5 · TWO CONNECTED DEVELOPMENTS

Why specialised journals broke free of the academies

Over the nineteenth century, specialised journals increasingly broke free of the academies that had underwritten the previous century's generalist titles — driven by two connected developments.

1

The sciences specialise

Progressive specialisation of the sciences themselves into distinct disciplines, each acquiring its own dedicated periodical literature.

2

Scientists work outside academies

A growing number of practising scientists worked outside any academy altogether — for whom an independent disciplinary journal, not an academy's house publication, was now the natural outlet.

Historiographical note

This “~500 by the 1860s” estimate depends on what counts as “specialised” and “scientific” — criteria historians (notably Alex Csiszar) treat with care, since the nineteenth century is also exactly when the category of “the scientific journal” itself was being actively constructed and contested.

*A striking increase, in under two centuries, from the two generalist titles this chapter began with — the *Journal des Sçavans* and the *Philosophical Transactions*, now joined by hundreds of disciplinary successors.*

LOOKING AHEAD

A transformation in the form of science, not only its content

This chapter has traced the scientific journal from a single, dual invention in 1665 to a specialised, disciplinary press numbering in the hundreds two centuries later — a transformation in the material and institutional form of scientific communication that ran alongside, and did much to enable, the transformations in scientific content and method the previous chapters have described.

The chapters that follow ask:

how did this new, rapid, and increasingly specialised communication infrastructure interact with the other great institutional developments of the seventeenth and eighteenth centuries — the learned societies and academies themselves, and the professionalisation of science as a distinct occupation?

FURTHER READING

- David A. Kronick, *A History of Scientific and Technical Periodicals: The Origins and Development of the Scientific and Technological Press, 1665–1790*, 2nd ed. (1976)
- Alex Csiszar, *The Scientific Journal: Authorship and the Politics of Knowledge in the Nineteenth Century* (2018)
- James E. McClellan III, *Science Reorganized: Scientific Societies in the Eighteenth Century* (1985)
- Jean-Pierre Vittu, “Instruments et pratiques de la communication savante: le Journal des Sçavans,” *Revue de synthèse* (2002)
- Marie Boas Hall, *Henry Oldenburg: Shaping the Royal Society* (2002)
- Elizabeth L. Eisenstein, *The Printing Press as an Agent of Change* (1979)

Chapter 4

Questions?

Next: the learned societies and academies themselves — and the professionalisation of science