

# Mathematical Specialisation in 18<sup>th</sup>- Century Journals: Early Attempts and the Question of the Audience

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Mathematical Specialisation, Editorial Strategies and  
Audiences of 18<sup>th</sup> to 20<sup>th</sup>-Century Periodicals, ESHS,  
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# Introduction

The aim of the paper is to shed light, with the help of some examples, on the (complex) notion of mathematical specialisation in the 18<sup>th</sup> century, a period when disciplines and disciplinary communities were only about to develop.

# Learned journals

- Created in the last third of the 17<sup>th</sup> century, learned journals can be considered a response to:
  - the increasing desire for information
  - the sheer unmanageable multitude of books
- Short pieces (by various authors) are juxtaposed and published in regular intervals under a same title.  
Ex.: *Journal des sçavans* (Paris, January 1665), *The Philosophical Transactions* (London, March 1665).
- Of generalist content, they addressed the narrow circles of the learned, but also a wider audience.

# Functions of learned journals

- Publication of topical knowledge: new inventions, machines, observations, original memoirs, theorems, etc
- Account of newly published books, of which excerpts were given.
- Collect news and announcements from the learned world, published in geographical order.
- Repository of knowledge stored under various headings (not necessarily disciplinary), labelled, classified, and made accessible via bibliographical tools like (monthly or/and annual) indexes and tables.

# 1-Mathematical information

- Information from the mathematical sciences was included in most of the general learned journals: astronomical observations, meteorological tables, instruments, original results, portraits or eulogies of savants, etc., the emphasis being on useful mathematical knowledge: “les inventions utiles que peuvent fournir les Mathématiques” (JS 1665).
- Accounts of mathematical books, especially for beginners, and mentions of more specialised mathematical publications.
- Information on mathematical training, courses, etc.
- Balance between scholarly information and more amusing material.

# Mathematics in the *Journal des sçavans*

- Among the headings of the tables, existence of an autonomous category “*Mathematici*” between 1675 and 1737, with the exception of the years 1675 and 1681 to 1685, when *mathematici* were associated with *astronomi*, and of the year 1696 when they were associated with *geographi*.
- 3,25% of pieces (memoirs and excerpts of books) devoted to mathematics in the period 1675-1737.
- From 1746 onwards, “*Mathematica*” are regularly associated with “*Philosophica*”.
- While *mathematici* can be considered an independent group, things mathematical or *mathematica* cannot be dissociated from philosophy. A community of mathematicians emerges, but mathematics as an autonomous discipline more difficult to trace.

# Example: Squaring the circle

LA CLEF  
DU CABINET  
DES PRINCES  
DE L'EUROPE,

Ou Recueil Historique & Politique sur  
les matieres du tenis.

*Contenant aussi quelques nouvelles de Litté-  
rature & autres Remarques curieuses.*

A O U S T 1704.



Imprimé

Chez JACQUES LE SINCERE,  
à l'Enseigne de la Verité.

M. D. CCIV.

- Includes, between 1711 and 1714, 12 letters concerning the quadrature of the circle, commented by the journalist Claude Jordan.
- Emphasis not on mathematical ideas, but on the competition between mathematicians and nations to solve the problem first.
- Assessment of the prove left to the mathematicians.
- Emergence of what some call a public sphere for mathematics.

## 2- Specific editorial strategies

Some of the early journals built specific strategies favouring the mathematical disciplines.

Best known example: the monthly *Acta eruditorum*, created in Leipzig, 1682, by Otto Mencke, professor of theology.

One of the rare journals in Latin.

Considered as the *organon* of the new Leibnizian analysis. Leibniz, Johann and Jacob Bernoulli published their results primarily in the AE. Due to the editorial strategy of the *collectores*.

Studied by Hubert Laeven, *The Acta eruditorum under the Editorship of Otto Mencke : The History of an International Learned Journal between 1682 and 1707*, Amsterdam & Maarsse: APA-Holland University Press, 1990 (first edition in Flamish, 1986).

# Acta eruditorum

ACTA  
ERUDITORUM  
ANNO M DCLXXXIV  
publicata,  
ac  
SERENISSIMO FRATRUM PARI,  
DN. JOHANNI  
GEORGIO IV,  
Electo Saxonici Hæredi,  
&  
DN. FRIDERICO  
AUGUSTO,  
Ducibus Saxonæ &c. &c. &c.  
PRINCIPIBUS JUVENTUTIS  
dicata.  
*Cum S. Cæsareæ Majestatis & Potentissimi  
Electoris Saxonie Privilegio.*

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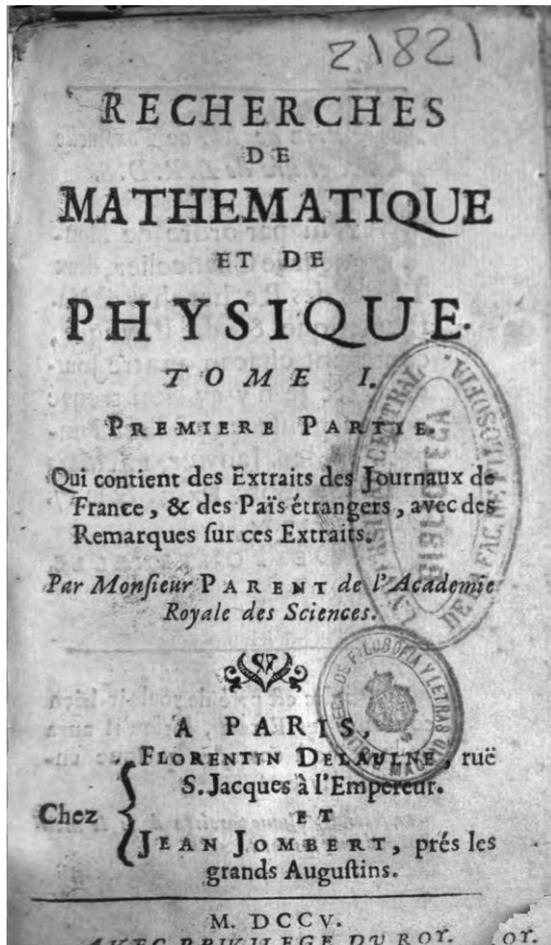
L I P S I Æ,  
Prostant apud J. GROSSIUM & J. F. GLEITTSCHUM,  
Typis CHRISTOPHORI GÜNTHERI.  
Anno M DCLXXXIV.

- The *collectores* of the AE made the decision to privilege, among the published memoirs, writings devoted to *Mathematica*, *Medica* and *Physica*.
- This editorial strategy was considered a *conditio sine qua non* for success, especially in foreign countries.
- As a result, between 1682 and 1706, 83,55% of the original memoirs devoted to mathematics (according to Laeven)
- This was not the case for the book accounts published in the AE.

# 3- Early demands for specialisation

- From the start, a demand for specialised journals was vivid among mathematicians.
- *Journal des sçavans* 1677, p. 133-134: “Les Physiciens ne peuvent souffrir les livres d’histoire, les Mathématiciens se plaignent qu’on les néglige pour donner trop aux experiences,...enfin chacun ne veut que des livres de sa profession, ou de son goût”.
- Manuscript compendiums excerpting say mathematical, medical or physical matters from journals survive in libraries.

# Early (failed) attempts



Example of the short-lived *Recherches de mathématique et de physique*, published by the physicist, Antoine Parent (1703-1713).

The remarkable **Preface** written by Parent gives an excellent description of what the demand for specialisation looked like in the early 18th century.

# Parent's 1703 Preface

- “Quel embarras est-ce à un homme qui ne prend plaisir qu’aux Mathematiques, de ne trouver presque sous sa main en feuilletant ces journaux, que des matieres étrangères pour lui ? Quelle peine est-ce de lire toutes les tables d’un si grand nombre de Volumes pour trouver un seul extrait dont on a besoin ?”

# Parent's Program

Considering the difficulties to find specialised knowledge in journals or in their tables, Parent described the program of a specialised journal:

- “ Cette considération m’a fait penser que l’on rendroit un bon service au public, si l’on rassembloit en differents corps tout ce qui est contenu d’excellent dans les divers Journaux qui ont paru jusques icy, ou qui paroistront dans la suite, **en faisant un seul corps des matieres qui concernent une mesme espece de Science**. C’est cette vüe qui m’a porté à entreprendre de donner au public l’abrégé des meilleures pieces de Mathématique & de Physique que l’on y trouve, laissant le reste à ceux qui voudront s’en charger”.

Two more aims :

- To add his own critical reflections to the republished memoirs
- To publish his own discoveries

# Realisation interrupted

- One volume published in 1703 with excerpts of:
  - Acta eruditorum
  - Journal des sçavans
  - Philosophical Transactions
  - Connaissance des temps.
- The second and third volumes, 1705 and 1713, of a different nature: a compendium of Parent's own memoirs.
- *Recherches de physique et de mathématique* failed. Why?

# Failure

- Antoine Parent addressed his Journal not only to a small number of first rank savants (“petit nombre de Sçavans du premier ordre”) who had access to all kind of scientific volumes, but to a wider audience (“plus grand nombre des Sçavans”), which did apparently not exist.
- Parent’s problematic personality, badly considered by the Parisian Academicians, who refused to include his writings in the *Mémoires*.
- Announced editorial strategy abandoned. No compilation of scientific papers, but a mixture of personal critical notes and memoirs.
- Loose style.
- A highly critical account by Joseph Saurin in the *Journal des sçavans* 1703.

## 4- Mathematical questions in popular journals

- At the same moment, Britain was able to build a mathematical journalistic tradition through “minor mathematical series” of which the *Ladies’ Diary* is one of the best known (and studied).
- Sloan Despeaux, in her recent dissertation “The Development of a Publication Community: Nineteenth-Century Mathematics”, quotes John Playfair who gave, in 1808, the following description of the periodicals comprised in this tradition:
- “In these, many curious problems, not of the highest order indeed, but still having a considerable degree of difficulty, and far beyond the mere elements of science, are often to be met with; and the great number of ingenious men who take a share in proposing and answering these questions, whom one has never heard of any where else, is not a little surprising. Nothing of the same kind, we believe, is to be found in any other country” (*Edinburgh Review* 11, p. 282).

# Questions-Responses

These serials may be ranged in the long tradition of *enigmata*, consisting of (often curious) questions to be answered by an audience.

Among the puzzles, charades, aenigmas, mathematical questions.

Example of the *Mercure suisse*.

## *Ladies' Diary, 1704-1840, (S. Despeaux)*

- Initially established in 1704 as an almanac.
- Each issue contained *circa* 30 pages with mathematical questions and their solutions.
- A list of contributors with the number of questions they had solved.
- At first, the mathematical questions were set in verse.
- After 1730, some prose questions appeared and by 1745 they predominated.
- Journal was immensely popular and a commercial success.
- Other titles: *Delights for the Ingenious* (1711), *Gentleman's Diary* (1741-1815), *Mathematician* (1745-1750), *Mathematical and Philosophical Repository* (1795-1835), etc.

## 5- Professional journals

- Addressed Philomaths
- Partly dedicated to mathematical methods considered useful for a profession
- Example: *Magazin für die Bergbaukunde* (1785-1799), created by Johann Friedrich Lempe, professor of mathematics at the mining academy of Freiberg, addressed to the mining profession in Saxony, recently studied by Thomas Morel in his thesis “Mathématiques et politiques scientifiques en Saxe. Institutions, acteurs et enseignements, Bordeaux 2013.
- A research-journal for practical mathematics

# Magazin für die Bergbaukunde

J. F. Lempe, Preface, 1(1785):  
“Ich werde darein Arbeiten aufnehmen, die, auf meine Veranlassung und unter meiner Aufsicht, von diesem oder jenem meiner Zuhörer gefertigt worden sind ; freilich nur solche Arbeiten, die mir eine Bekanntmachung nicht unwürdig scheinen ; doch dürften diese Arbeiten auch Proben meiner Bemühungen seyn, die Mathematik für den Bergbau so gemeinnützig, als in meinen Kräften steht, zu lehren.  
Quoted by T. Morel 2013, p. 174



# Conclusions

- Which journals, among the examples briefly described, may be labelled specialised mathematical journals, if any ?
  - A generalist Latin periodical like the *Acta eruditorum* with a clear editorial strategy in favour of *mathematica*?
  - A (failed) journal authored by an academic like Antoine Parent and exclusively devoted to the mathematical sciences, but without an audience?
  - A highly popular commercial journal addressing problems-for-answer, like the *Ladies' Diary*, to a broad audience?
- All these periodicals publish mathematics, at a more or less higher level.
- A highly specialised mathematical authorship is an important factor of success as is an adequate editorial strategy, but the success of the specialisation process depends firmly on the existence of an audience, may it be a lay audience, a mathematical profession or a community of mathematicians.
- As the example of the *Journal des sçavans* and its classificatory headings show, such a community was only about to be built in the 18<sup>th</sup> century as well as mathematical disciplines. By labelling and classifying knowledge cut in short pieces, periodicals in the 18<sup>th</sup> century may well have contributed to the building of communities and disciplines.