Circulating Mathematics via Journals: The Rise of Internationalisation 1850-1920

Conference at the Mittag-Leffler Institute

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Djursholm (20-23 June 2016)

Tom Archibald
Transforming local mathematics: the international publication activity of Charles Hermite as an index of the role of journals.

Approximately half the papers in Hermite's Oeuvres -- over 100 titles, and over half of the length -- were published in foreign journals. Slightly less than half of these were in German journals, notably Crelle-Borchardt and Math. Annalen, but ten other countries appear. The articles cover a wide-ranging set of topics reflecting the full spectrum of Hermite's research activities.

While networks of correspondents are implicit in this activity, we would like to look at the relation between the topics, local research interests, and the approaches that Hermite brings to bear on various topics. In this way we may obtain a preliminary look at the role of these journals in propagating both questions and techniques.

June Barrow-Green
Mittag-Leffler and **Acta Mathematica**

When Mittag-Leffler died in 1927, *The Times* of London carried a short obituary which began "As founder and editor-in-chief of the international journal, *Acta Mathematica*, Mittag-Leffler was probably the best-known mathematician in Europe, if not in the world." With *Acta*, it can be said Mittag-Leffler found his true *métier*. For forty-five years, from the journal's inception in 1882, his duties as editor of *Acta* were his main preoccupation, and he excelled in the role. The journal has remained in the front rank of mathematical periodicals from its inaugural volume up to the present day, and credit for establishing its enduring reputation lies firmly with Mittag-Leffler. In this talk I shall describe the founding of the journal and Mittag-Leffler's role in its development as one of the first truly international mathematical journals.

Umberto Bottazzini
National mathematical community and international audience: the first three series of the
Annali di matematica pura e applicata

The first series of the *Annali* was published in Rome by B. Tortolini between 1850 and 1866 (up to 1857 under the heading *Annali di scienze matematiche e fisiche*). The second series was published in Milan by F. Brioschi between 1867 and 1897 (jointly with L. Cremona up to 1873). The third series, published in Milan between 1898 and 1922 by an editorial board headed by U. Dini. In the talk I'll discuss the contemporary building of an international audience of the *Annali*

and its link with the local context, by focusing on the mathematical and social networks of the editors and the emergence of a national mathematical community as well.

Jenny Boucard
In search of the "géométrie de situation" in mathematical journals of the second half of the nineteenth century

In 1810, the "géométrie de situation" is defined by Louis Poinsot as a geometry where one "sees less the magnitude and proportion of the figures, than the order and location of the various elements that compose it." Poinsot also indicates some important figures in the development of it, including Leibniz, Euler and Vandermonde. Edouard Lucas devotes a chapter to the "géométrie de situation" in his *Théorie des nombres* (1891). It comprises a set of often ancient problems including chess, polygons, polyhedra or lattices. For both authors, the "géométrie de situation" is a domain linking number theory, geometry and combinatorics.
In this paper, we analyze the circulation of problems associated with the "géométrie de situation" in the second half of the nineteenth century in various mathematical and scientific journals. We will show how these can be integrated in various disciplinary configurations according to the different times and editorial spaces involved.

Frédéric Brechenmacher
On the interconnections between journals and institutions in the second half of the 19th century

This talk aims at investigating a specific form of circulation of mathematics in the 1860s through the connections between institutions, such as the Académie des sciences de Paris, and mathematical journals such as Liouville's, Crelle's, and the *Annali di Matematica Pura ed Applicata*. I will especially highlight the strong impact of the system of academic prizes in the circulation of papers of aspiring mathematicians such as Camille Jordan.

Such issues are especially documented in Jordan's scientific correspondence with Luigi Cremona, Francesco Brioschi, Giovanni Guccia, and Gösta Mittag Leffler. This correspondence also unveils Jordan's elitist conception of what should be a ``mathematical journal,'' as opposed to journals of engineers as well as publications targeting an audience of students and teachers. Further, this correspondence reveals a differentiation between the types of mathematics that may, or may not, be suitable for periodic publications.

Cinzia Cerroni, Maria Alessandra Vaccaro
The relationship between Gösta Mittag Leffler and Giovan Battista Guccia

Giovan Battista Guccia created the *Rendiconti del Circolo Matematico di Palermo* in 1887 and, from the start, he had the following aim: "I will make of the *Rendiconti* an international Journal of Mathematics". In May 1888 Gösta Mittag Leffler visited Palermo and stayed with Guccia for several days. Guccia was inspired by Mittag Leffler as he wrote to Luigi Cremona: "Can you imagine how much profit I've obtained for the Circolo!!"

In this talk we will examine the influence of the founding of *Acta Mathematica* on the birth and the initial policy of Guccia's *Rendiconti* and the relationship between Mittag Leffler and Guccia

through the edited correspondences. It is interesting to note that in his first letter to Mittag Leffler, dated May 1888 (after the latter's stay in Palermo), Guccia announced an exchange between *Rendiconti* and *Acta Mathematica*. Finally, we will compare the editorial policies of the two journals through their activities in the first ten years.

Barnabé Croizat
A new *Bulletin des sciences* in 1870: for whom, with whom?

In March 1870, a new periodical appeared in the wide spectrum of the mathematical journals: the *Bulletin des sciences mathématiques et astronomiques*. This journal, wanted by Michel Chasles but soon to be managed by Gaston Darboux and Jules Hoüel, differed from the existing ones, especially regarding the aims of its editorial staff: the issue is indeed not to publish original memoirs, but to "keep the readers informed about the progress of the mathematical sciences achieved in France and abroad ". We will briefly study the context of the creation of this journal, then we shall focus on the importance for its editors of the international nature of this undertaking. We will then study the means used by the editors to achieve producing and spreading their *Bulletin*: the constitution of a large team of co-workers, the exchanges with the editors of the other mathematical journals, the place of the reviews in the adopted editorial form.

Sloan Despeaux
***Questions and Answers, Questions et réponses: Exchange between the* Educational Times *and the* Nouvelles Annales de Mathématiques**

This communication will explore the circulation of mathematical problems between the *Educational Times (ET)* and the *Nouvelles Annales de Mathématiques (NAM)*. When one searches for *Jahrbuch* reviews of the mathematical problems that appeared in the *ET*, one often finds cross-references to problems in the *NAM*. How often did problems in the two journals actually reference each other? How often did the same problem appear in both journals? What motivated the posers and solvers to use both venues? This research is in its very first stages, but I hope it will shed some light on the international circulation of mathematics among a group of actors who did not play prominent roles on the international stage.

Maria Rosaria Enea
Le Matematiche Pure ed Applicate *by Cristoforo Alasia De-Quesada*

« When a new star comes out in the skies, thither turns the observing eye. 'Le Matematiche" is a new luminary among scientific periodicals, though sailing safely now far into its second year. Its director, its creator, Professor Alasia, has won the confidence and is attracting the attention of the mathematical world ». With these words Georg Bruce Halsted, professor at the University of Texas at Austin, informed the readers of *The American Mathematical Monthly*, about a journal, *Le Matematiche Pure ed Applicate pubblicazione periodica di matematiche superiori ed elementari ad uso dell'istituzione media e superiore*, published by Cristoforo Alasia.
Actually the journal, founded in 1901, was short-lived (Città di Castello from 1901 to 1903), but it contained a lot of contributions from important foreign mathematicians.
We will investigate this little known periodical and its fascinating editor.

Livia Giacardi

The* Bollettino della Mathesis *(1896-1920): local, national and international aspects.

In past years several articles concerning Mathesis, the Association of Italian Mathematics Teachers, and its *Bollettino* have been published, however either they refer to a particular period, or the attention is mainly dedicated to the activities directed at the improvement of mathematics education. The study we intend to present aims to go back to the history of the *Bollettino,* from the beginning in 1896, when it was little more than a newsletter, to 1920, focusing the attention mainly on the following points: the Executive Committee's editorial strategy which changed over the years, as the modification of the journal's name from *Bollettino della Associazione MATHESIS fra gli insegnanti di matematica* to *Bollettino della "Mathesis" Società italiana di matematiche* clearly testifies; the opening to the university professors, denied several times before 1908; the predominance, as of 1909, of the Italian geometers, who were at that period at the peak of their international reputation (the presidents: F. Severi, G. Castelnuovo, L. Berzolari, F. Enriques); the growing importance of the local branches of Mathesis (officially introduced by the article 7 of the 1908 Statute) and the debates with the central Committee; the circulation of ideas - not only in the field of mathematics education - through exchanges with international journals and bibliographic reviews with a predilection for Germany and France; the emergence on the international scene, when G. Castelnuovo, president of Mathesis, together with Enriques and G. Vailati were nominated Italian delegates of the ICMI. Castelnuovo made the *Bollettino* the vehicle for presenting the work of the ICMI and the Italian sub-commission, publishing reports, translations of talks and lectures, reviews, inquiries in order to make the Italian debate on education less provincial: his aspiration was to turn the bulletin into "the publishing organ" (letter to Vacca, January 27, 1911) of the Italian sub-commission of International Commission on the Teaching of Mathematics. Alongside these, other topics deserve to be treated concerning the relationships with other journals and institutions and, after the First World War, the debate about the harmonization of the mathematics programs and teaching methods in the two provinces, Trento and Trieste, recently annexed from Austria, with those in Italian schools.

Hélène Gispert
Build up a "frankly and highly international" mathematical culture for a community of users: the sections of l'*Enseignement mathématique *(1899-1920)

L'*Enseignement mathématique* was launched in 1899 with the aim of creating a kind of "mutual, continuous correspondence" between men who dedicated their life to the mathematical education of youth in the various nations of the mathematical world (Europe and the United States). Studying the various sections of this journal - general articles, chronicles, bibliography and book reports, I shall try to seize the features of this collective acculturation of a "highly and openly international character" that the editors Fehr and Laisant wanted to build and promote with their periodical. I will thus examine, according to the sections, the topics, not necessarily related to teaching, that the two editors think useful to circulate and share with this whole community, as well as the authors of the papers or books reports, and cities, nations, institutions referred to. Becoming the organ of the CIEM in 1908 gave more weight and credit to the journal and its editors' ambition. This study should thus inform how a mathematical periodical took part in "this great movement of scientific solidarity" which was, for Fehr and Laisant, the internationalization of mathematics in these first decades of the century.

Erika Luciano
Constructing an international library: the collections of foreign journals in Turin's Special Mathematics Library (1883-1920)

Many archival sources related to the constitution and the enrichment of one of the most important mathematical libraries in Italy are now available.
The *Special Mathematics Library of the Turin University* was founded in 1883 and directed by E. D'Ovidio (1883-1906), C. Segre (1907-1924), G. Fano (1924-1938). Since the beginnings it kept dozens of collections of international journals that were imported from both centres and peripheries, and circulated via the 'schools' of Segre and Peano until the first half of the 20th century.
A systematic study of these collections will give interesting insights in the local and material aspects of the circulation of mathematics at different scales and in various contexts in Turin, in the years 1883-1920.
This study will also lead to a better understanding of the mathematical, social and commercial networks of exchanges on which rely the construction, the shaping and the development of a 'research school'.

Philippe Nabonnand
Emile Mathieu, Henri Poincaré, Elie Cartan : Trois manières de construire une stratégie éditoriale internationale

Silvia Roero
Internationalization and translations in Peano's Journals of mathematics

The talk will focus on the *Rivista di Matematica* (1891-1908) edited by G. Peano and on the relationships of Peano and the members of his *équipe* with authors and editors of mathematical journals in Europe and North America.

Martina Schiavon
The circulation of practical mathematics seen from the library (and the minutes) of the Bureau des longitudes and, in particular, the **Annales du Bureau des longitudes** *(edited between 1877 and 1949)*

The *Annales du Bureau des longitudes* : *travaux faits par l'observatoire astronomique de Montsouris (section navale) et mémoires divers*, were published between 1877 and 1949 by the Bureau des longitudes. This scientific institution also published (1795 - …) the *Connaissance des temps* and the *Annuaire du Bureau des longitudes* : however, compared to these last two publications, the *Annales* are almost unknown among the community of historians (with the exception of Guy Boistel's book, in which they are just quoted in relation to the history of the Parc Montsouris in Paris).
In this talk, I will present the 13 volumes of the *Annales* with the scope to explore its content, editor, authors and subjects. I will also link this publication with some other periodicals kept in the library of the Bureau des longitudes, and with its minutes (nowadays digitized and edited on a special website), in order to question the way in which practical mathematics circulate with the support of this scientific institution.

Reinhard Siegmund-Schultze
Norsk matematisk tidsskrift *(Norwegian mathematical journal) (1919-1952): a semi-popular organ of the Norwegian Mathematical Society*

Norsk matematisk tidsskrift (NMT) was founded in 1919, in the aftermath of the foundation of the Norwegian Mathematical Society (NMSD, 1918). The journal was financed partly by the Norwegian state, by the Nansen Fund, and by insurance companies. The main founder was immigrant from Denmark, Poul Heegaard, who had experience from editing the older Danish *Matematisk Tidsskrift*. Even though original plans to publish doctoral theses of young Norwegians in NMT were abandoned after founding a special series for this purpose, NMT's role was not restricted to communication between various members of the NMS, among them teachers, researchers and students. It also carried valuable survey articles, e.g. on number theory, numerical analysis and on historical topics, the latter often connected to Abel and Lie. In 1952 the publication of NMT was discontinued in favour of two joint Scandinavian (Nordic) journals, one semi-popular and published in Scandinavian languages, called *Nordisk Matematisk Tidskrift* (NORMAT), one research oriented and published in English, called *Mathematica Scandinavica*. Both journals were primarily destined to contain contributions from Scandinavian mathematicians. At that time *Acta Mathematica* had reached such a broad international standing that its unofficial Scandinavian subtitle *Nordisk Matematisk Tids(s)krift* was dropped.

Rossana Tazzioli
The journals of Sicilian academies and the **Rendiconti of the Circolo Matematico di Palermo** *(1884-1920)*

In 1884 Giovan Battista Guccia founded the *Rendiconti of the Circolo Matematico di Palermo* that became a celebrated international journal at the turn of the century. Historians of mathematics published several works on Guccia and his involvement in the *Circolo* and in its mathematical journal, the *Rendiconti*. However, very few systematic studies exist on mathematics in Sicilian journals. In the period 1850-1920 several Sicilian journals appeared, especially related to naturalistic research or to astronomy. In my talk, I focus on the journals of Sicilian academies, such as the *Atti dell'Accademia dei Peloritani* (Messina), *Atti e Rendiconti dell'Accademia degli Zelanti* (Acireale), *Atti dell'Accademia di Scienze e Lettere di Palermo*, and *Bollettino dell'Accademia Gioenia* (Catania). Some of these academies date back to the seventeenth century. The questions I try to answer are the following: What is the (large or small) role of mathematics in these "local" journals? Is mathematics pure or applied to other sciences? Who are the authors of the mathematical papers? Who are the mathematicians, members of the academies? And finally, which is the dynamics (if it exists) between the "international" *Rendiconti del Circolo* and the journals published by the Sicilian academies?

Dominique Tournès
Maurice d'Ocagne's papers on nomography

Between 1884 and his death in 1938, Maurice d'Ocagne published more than fifty papers on nomography in important journals of engineering (*Annales des Ponts et Chaussées*, *Le Génie Civil*…) and mathematics (*Nouvelles Annales de mathématiques*, *Acta Mathematica*, *Archiv der Mathematik und Physik*…), but also in journals intended for popularization and teaching.

Moreover, several of his papers were adapted or translated by himself or other authors in many languages all over Europe and elsewhere. Through these papers and d'Ocagne's correspondence, we will analyse his strategies of publication and his efforts to promote nomography in different professional milieus and different countries.

Norbert Verdier
A new French Publisher for **Acta Mathematica***: Arthur Hermann (1839-1929)*

In the first part of the 19th century, the French publisher, Bachelier, played a very important part in the publication of mathematics. He published a lot of books and journals specialized in mathematics. For example, he is the publisher of the *Journal de mathématiques pures et appliquées* founded by Joseph Liouville (1809-1882). With the death of Liouville in 1882, there is a change of generations: a new generation of mathematicians arrived, but also a generation of new publishers such as Arthur Hermann.

In 1876, a teacher of mathematics, Arthur Hermann (1829-1929), founded a bookshop for mathematics and he – and not the successor of Bachelier, Gauthier-Villars, published the new international journal *Acta Mathematica*, founded in Stockholm by Gösta Mittag-Leffler in 1885. Thanks to newly found archives (Mittag-Leffler's archives in Stockholm and Archives nationales in Paris) and also our last studies about mathematical publishing [Verdier, 2013a, b, 2015 & 2016], we will investigate Hermann's bookshop in order to better understand the material and economical circulation of mathematics in France at the end of the 19th century.

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