

MATHEMATICAL COMMUNITIES IN THE RECONSTRUCTION
AFTER THE GREAT WAR (1918-1928)

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Abstracts

Thomas Archibald

Research Values in Analysis : the work of Otton Nikodym

Abstract : The development of mathematical analysis in the period following the First World War involves many threads that interact in complicated ways. The development of the theory of measure, notably in the hands of C. Carathéodory, and the almost simultaneous development of point-set topology, presented a set of new questions and methods. These were tackled in a wide variety of different settings, both national and local, against the background of varying interpretations of the role of axiomatization. The precise uses of set-theoretic, topological and algebraic notions in these different contexts form indices for analyzing the nature of these contexts and the respective values dominant in them. In this paper, we examine in particular the researches of Otton Nikodym on integration theory, attempting to situate it in the context in which he worked, as well as with respect to broader currents in research in analysis. In particular, Nikodym's landmark generalization of the Radon integral and the introduction of the Radon-Nikodym derivative may be placed in the context of the Krakow group in which he functioned, and is linked rather directly to work of Sierpinski. At the same time, it may be seen in the wider currents of the nascent functional analysis being developed by Banach; and it has echoes in the work of von Neumann of the same period. Our goal is to identify the differences in the ways in which such results are seen and used in these various approaches to research in analysis of the period around and following 1930. An additional aim is to grasp the different taste cultures in the theory of integration and measure that were to become evident later, for example in the work of Bourbaki, Halmos and others.

Michel Armatte

Economic Cycles : From Descriptive Statistics to Formalization

Abstract : In order to explore the advances made on the economic issue of business cycles, I will present the work of the American economist Henry Ludwell Moore, who published four works on the question between the years 1911 and 1923. Within this framework, I will introduce several issues, such as the duality of empirical and theoretical approaches, the causal and semiological interpretations of the correlation, the notion of the ceteris paribus law in economics, the notion of non-probabilistic statistical mathematics, the development of the notion of the dynamic model at the end of the 1920s, the diverse analysis techniques of chronological series and their artefacts. I will also make reference to the contributions of other actors in this field.

Frédéric Brechenmacher

The matrix of mathematical standardization

Abstract : The emergence of matrix algebra as an international mathematical theory highlights a complex phenomenon of standardization in mathematical research and education. Although this phenomenon took place within a decade, in the 1920s, it involves the long term interrelations of various local mathematical cultures, involving specific practices, forms of representations, values, and ideals. This phenomenon challenges not only the usual description of the history of algebra as a progress toward more and more abstraction, but also the importance that has usually been given to a few specific mathematical theories, individuals, and social environments in the 1920s. For instance, while the historiography of algebra has tended to lay the emphasis on German developments in algebraic number theory, the standardization of matrix algebra highlights the key role played by the circulations of specific practices involving mostly French and American mathematicians. Investigating such circulations between the local and the global raises the issue of the relevant categories for describing collective organizations of knowledge or the social identities of groups of actors.

João Caramalho Domingues

Mathematics in post-WWI Portugal : attempts at internationalization

Abstract : In addition to direct effects of World War I, Portugal went through dramatic political changes in the first three decades of the 20th century (from the proclamation of the Republic in 1910 to the establishment of a military dictatorship in 1926). Two new universities were established in 1911, whereas only one had existed since mid-18th century. Regarding mathematics, this period appears less interesting than the "mathematical movement" of the 1940's - a series of initiatives trying to update Portuguese mathematics, actually starting in 1937. However, there were a few noteworthy attempts to internationalize the Portuguese mathematical community, including the Iberian congresses for the advancement of sciences, which started in 1921 (three more were held before 1928) and the participation in the foundation of the IMU. These attempts can be seen as a bridge between earlier similar attempts, centred on the first Portuguese mathematical journal, aiming at international exchange (Teixeira's Journal, 1877-1902), and the mathematical movement of the 1940's.

Rémi Catellier

The dawn of the Wiener measure

Abstract : I will present how, at the beginning of the 20ies, several mathematical ideas led to the development of the so called Wiener integral, and by consequently to the first proper definition of a fundamental object of the theory of probabilities : the Brownian motion. Several strong personalities played a role in this story, including Wiener, but also Lévy, Gateaux and Daniel, and their roles will be pointed out.

Matthias Cléry

Building a common interest ? Borel, the Rockefeller foundation and the creation of the Institut Henri Poincaré in 1928.

Abstract :

During the 20's, partly because of the damages of WWI, North American philanthropic foundations (Carnegie and Rockefeller) financed projects in order to create, maintain or develop a high level of scientific activities throughout Europe. The action of those philanthropic foundations is rooted in local networks and local dynamics. In this regards, the creation of the Institut Henri Poincaré in 1928 can be seen as the result of an intense activism of Emile Borel in the parisian academical sphere with the aim of delineating a space for the theory of probability in the mathematical area.

Guillermo Curbera

Elites and the international organization of mathematics. The case of William Henry Young

Abstract : The process of international organization of mathematics, which had started at the end of the 19th century, suffered a period of stagnation during the years 1918-1928. The activity of William H. Young in the Union Mathématique Internationale allows to reflect on the involvement of the mathematical elite of the time in such process.

Antonietta Demuro

The Institut de Mécanique des Fluides in Lille and the status of fluid mechanics in France in the inter-war period

Abstract : Since the early 20s, frequent practical applications, such as wind tunnels and hot-wire anemometers, allowed significant progress in fluid mechanics research, particularly in boundary layer theory, turbulence and gas dynamics. In France, where priority was given to theoretical aspects of this domain, the creation of several centres of fluid mechanics in the 1930s (Lille, Marseille, Paris and Toulouse) represented an attempt at a rapprochement between fluid mechanics, experimental aerodynamics and hydrodynamics. In Lille, the leadership of the Institut de Mécanique des Fluides (IMFL) was entrusted to Joseph Kampé de Fériet (1893-1982), who played a dual role in this institute. On the one hand, he used a probabilistic approach in contributing to the mathematical formalism of turbulence theory. On the other hand, he performed experimental research with the team of IMFL, such as aerological expeditions and laboratory tests. In this talk, we will rely on the analysis of Kampé de Fériet's scientific and institutional position within the IMFL in order to attempt answering some fundamental questions about the status of fluid mechanics in France during the interwar period.

Dikran Dikranjan

The Polish School of topology in 1918-1928

Abstract : We intend to discuss the contribution of the Polish (more specifically, Warsaw) School of topology in the period 1918-1928, with prominent members Sierpinski, Mazurkiewicz, Kuratowski, Marczewski, Knaster and Borsuk, among others. A sample line to follow is the development of the various levels of the notion of disconnectedness. Hereditarily disconnected spaces (i.e., spaces with trivial connected components) were introduced by Hausdorff in 1914, while totally disconnected spaces (i.e., spaces with trivial connected components) were introduced by Sierpinski in 1921, who introduced at the same time also zero-dimensional spaces (prior to the birth of dimension theory). Zero-dimensional spaces are totally disconnected, while totally disconnected spaces are hereditarily disconnected. Examples distinguishing total and hereditary disconnectedness were given by Knaster and Kuratowski in 1921, totally disconnected spaces of dimension one were constructed by Sierpidnski and by Knaster and Kuratowski in 1921, Mazurkiewicz built similar examples for each finite dimension in 1927. These examples inspired Erdős to produce later an example of a totally disconnected topological group of dimension one.

Helena Durnova

Tradition : an advantage, or a hindrance for research in mathematics ?

Abstract : Continuing in the tradition of the 19th century romantic revival of the Czech language, Czechoslovak national community jumped into the international endeavours of mathematicians. The young geometer Bohumil Bydžovský (1880-1969) joined the ICM in 1908 as a participant and twelve years later at the ICM in Strasbourg, he was one of the speakers, thus becoming a regular representative of Czechoslovakia at this event. Between the congress in Rome and the one in Strassbourg, the new Czechoslovak republic was founded. The overall political change brought alterations also in scientific life : although the offsprings of the split of Prague university in 1882, the Czech and German universities in Prague, continued to co-exist until 1939, the setting in which they were operating changed. Until the founding of Masaryk University in Brno in 1919, Prague university was the only one where mathematics, among other disciplines, was practised in Czech. In 1919, the simple existence of brought the competition intended by Masaryk. Not only in differential geometry, tradition in Prague was suddenly challenged by novelties in Brno.

Alicia Filipiak

The aftermath of World War I in Hungary : following the journey of Béla von Kerékjártó

Abstract : As part of the defeated side during World War I, Hungary suffered severe losses after the signature of the Treaty of Trianon and tried to recover from it in the 1920s. The University of Kolosvár that was moved to Szeged is a good example of this post-war reconstruction attempt. In the mathematic field in particular, the University of Szeged promoted new young professors to rebuild a community whose influence was just emerging before the beginning of the War. Béla von Kerékjártó was one of them. Through his path across the world, we will give a portrait of a young Hungarian mathematician beginning his career in the aftermath of World War I.

Hans Fischer

Richard von Mises's "Grundlagen der Wahrscheinlichkeitsrechnung" (1919)

Abstract : In 1919, Richard von Mises published a comprehensive exposition of frequentist probability, combining aspects of experience with purely mathematical considerations on sets and measures. The conceptual basis was the postulate that so called "collectives" ("Kollektive") exist, i.e., infinite sequences of repeated random experiments obeying a certain "irregularity condition" ("Regellosigkeit") such that, for all possible outcomes (corresponding to point sets in \mathbb{R}) the respective relative frequencies tend to a limit. By means of distribution functions and Stieltjes integrals referring to them, von Mises introduced even nowadays common standards of analytical methods in probability theory. Yet, in order to establish basic notions concerning composite probabilities, like independence or conditional probability, von Mises had to rely on intricate considerations of the basic properties of collectives, which, together with a quite cumbersome terminology, provide some difficulties to the reader. In this lecture, a brief outline of the historical scope of the 1919 paper will be given, but the main focus will be on the most prominent ideas of von Mises's theory ; these shall be explained and illustrated by representative problems.

Alexandre Gaudillière

Limit theorems or the study of cumulated randomness

Abstract : We will study some theorems developed along a Paris-Moscow line of the post-war period. We will see how it makes it possible to characterize both residual randomness and determinism emerging from cumulative random phenomena. We will also see how their proof took in the following decade to the foundation of modern probabilities.

Livia Giacardi

The first years of the Unione Matematica Italiana and its Bollettino (1922-1928)

Abstract : The Unione Matematica Italiana (Italian Mathematical Union, UMI) was founded in 1922 according to a motion approved in Brussels in July 1919 by the International Research Council, which promoted the creation of national scientific committees. The recent reorganization of the UMI Archives has made significant documents available to science historians. By using some of these unpublished letters and documents, we focus on the following issues :

- (i) The foundation and early years of the UMI and its journal, the Bollettino della Unione Matematica Italiana ;
 - (ii) The international models for the new society, in particular the Deutsche Mathematiker-Vereinigung, the Société mathématique de France and the American Mathematical Society ;
 - (iii) The impact of national and international events on the UMI, including the International Congresses of Mathematicians.
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Hélène Gispert

La revue L'Enseignement mathématique et ses ambitions internationalistes à l'épreuve des années vingt. Un certain regard sur les nouvelles données du monde mathématique de l'entre-deux guerres.

Abstract : Créée en 1899 sous le parrainage de personnalités mathématiques de tous pays, la revue l'Enseignement mathématique se veut un instrument "universel et confraternel" au service de toutes les personnes intéressées par l'enseignement des mathématiques dans le monde. Elle devient en 1908, au quatrième congrès international des mathématiciens, l'organe officiel de la CIEM (Commission internationale de l'enseignement mathématique). Les volumes jusqu'en 1914, arborent fièrement sur la première de couverture le comité de parrainage avec sa liste des noms de ces illustres mathématiciens d'une quinzaine de pays, liste remplacée à partir de 1915 par la mention d'organe officiel de la CIEM indiquée au milieu de la couverture, mention qui à son tour disparaît à partir de 1924 où seule figure la qualité de "revue internationale". On retrouve donc dans le seul affichage de l'identité internationale de la revue sur sa couverture, des manifestations des impacts qu'eut la première guerre mondiale sur la vie mathématique internationale. M'intéressant à deux rubriques régulières, la Bibliographie consacrée aux journaux et la partie consacrée aux activités de la CIEM, j'examinerai leurs évolutions avant et après-guerre, dans les années vingt, et ce qu'elles disent du nouveau paysage mathématique de l'après guerre et de ses institutions, les nouvelles, avec l'arrivée de nouveaux périodiques, et les anciennes, avec les difficultés de la CIEM.

Katalin Gostonyi

Leopold Féjér and the emergence of the Hungarian mathematical culture

Abstract : Lipót Fejér is considered as the first Hungarian mathematician constructing a coherent mathematical school around him. His students and disciples remembers him as a particularly influential teacher, and he was also famous for his artistic taste and his friendships with artists. I will present the development of his career in the context of the emerging Hungarian mathematical culture and the radical political and social changes, before and after the first world war.

Angelo Guerraggio

Fascism and the Paretian heritage in Italy

Abstract : In between the two World Wars, the development of mathematical economy in Italy was based on the significant heritage left by Wilfred Pareto. Unfortunately, Pareto's teaching was mistrusted by the Fascist regime and by many economists close to it, due to the liberal ideology behind his analysis and the deductive mathematical framework that left little room to politics. The same cultural environment would affect the young Bruno de Finetti and Luigi Amoroso, the most well known mathematical economist in Italy at that time. Amoroso believed that Pareto's teaching was not to be abandoned, but simply "updated" based on the new Italian social and political situation as well as the arduous challenges that the economic system faced at the end of 1920s. Amoroso thus embraced the corporatism and nourished an interest for the data pertaining to the real economy, statistical analyses, and econometrics. He embraced the analysis of the economic cycle and opened up to macroeconomic research. As he complied to the Fascist economic directives - and he accepted important professional and public positions during the Fascist regime - in the immediate aftermath of WWII Amoroso was involved in the purge of those professors who had been most closely associated with the regime.

Ulf Hashagen

***Two East European Mathematicians in Berlin and Munich in the 1920s :
Salomon Bochner and Johann von Neumann***

Abstract : The talk will analyze the career of two outstanding East European mathematicians in the Weimar Republic, who received their mathematical education after the end of WWI in Germany. While doing this, this talk aims to give a better understanding of the relationship between German and East-European mathematicians from the former Austro-Hungarian Empire after WW I. An important aspect of this topic is the question, if and how much German mathematicians were willing to took these scholars in their academic communities and offer them academic careers in Germany Universities and how much they were influenced by political and societal forces. Salomon Bochner (1899-1982) and Johann von Neumann (1903-1957) were both scholars of Jewish origin, who were born in the former Austro-Hungarian Empire. Moreover both scholars studied with Erhard Schmidt at the Friedrich-Wilhelms-University of Berlin, and both scholars were seen as outstanding scientific offspring mathematicians by the German and European mathematical community in the late 1920s. While there was a certain similarity in the biography of Salomon Bochner and John von Neumann, the talk will show that their different origins from parts of the former Austro-Hungarian Empire had a major impact on their academic careers in Germany and that they were hindered in a different way in their academic career in Germany by their Jewish origin.

Miroslav Hušek

Development of topology in 1918-1928, mainly in Russia

Abstract : Our attention will be devoted mainly to general topology. After Hausdorff published his famous book Grundzüge der Mengenlehre in 1914, a boom of new results in general topology started. There is a long list of mathematicians contributed substantially to that new area of mathematics. We shall concentrate on a group of Russian topologists, their results and connections to, for instance, Frechet, Brouwer and mainly to Hausdorff. Special attention will be devoted to Aleksandrov and Urysohn.

Frédéric Jaëck

A look at Banach's work through his publications in the two journals : Fundamenta Mathematicae and Studia Mathematica

Abstract : Under the influence of the brand new mathematical society founded in Cracow in 1917 with Banach, Leja, Nikodym, Steinhaus and Zaremba, opens a new era for Polish mathematics. The mathematical society of Poland was founded in 1919 and new mathematical journals were set up : Fundamenta Mathe (1920) in Warsaw, Studia Math (1929) in Lwów. The involvement of Polish mathematicians was very important and in particular Banach would publish a large amount of his work in those two journals. Through his publications, we will cover a few research themes that will be at the origin of the revival of Polish mathematics at the beginning of the 20th century.

Alexander Karp

In the Struggle for Red Integrals. (On Several Figures in Post-Revolutionary Russian Mathematics Education)

Abstract : One of the figures in post-revolutionary mathematics education is reported to have remarked that a class struggle also exists in mathematics, and that consequently integrals can be white and red. Not everyone went so far, but the aims, problems, and character of the teaching of mathematics undoubtedly came to be understood in a new way after the revolution of 1917. Instead of the old "school of routine and rote memorization," plans were made to build new educational institutions that would prepare new free people. Mathematics, in this context, was seen not as a dry and formal discipline, which putatively developed reasoning ability, but as a science that grew out of practical experience and for the sake of practical experience, and therefore did not even require separate classes and specialized teachers. Bold reformers relied on the ideas of American progressive education and the proposals of the international reform movement, headed by Felix Klein ; but at the same time, they by no means constituted a homogeneous group, differing both in their political views and, often even more so, in their pedagogical views. This presentation will discuss certain figures from that period, their pre-revolutionary and post-revolutionary work and the debates in which they took part.

Jan Kotůlek

Emil Schoenbaum and the reconstruction of Social Insurance in Czechoslovakia after the Great War)

Abstract : In connection with industrial and economic development in 19th century, social insurance was gradually introduced in many West and Central European countries. It led to rapid evolution of insurance mathematics/actuarial sciences and there were first professorships, journals and societies established. The end of WW1 brought severe economic turbulences, which caused an urgent need to reform the social insurance system. This brought unique opportunity to combine new theoretical knowledge with existing practical experiences. In Czechoslovakia, a special commission was named at the Ministry of Social Care, responsible for preparation of financial, insurance mathematical and statistical part of social insurance law for workers in 1922-24. Emil Schoenbaum (1882-1967), a Privatdozent for applied mathematics of collective phenomena at Prague university and one of the directors in the General Institute of Pensions in Prague, was its leading expert. The explanatory memorandum of the new law was translated to several foreign languages and accelerated Schoenbaum's career. He was named full professor of insurance mathematics and made responsible for a two-year course in insurance mathematics and mathematical statistics at Charles University in Prague. It also brought him international renown immediately, as the International Congress of Social Policy, with more than 500 participants, took place in Prague in October 1924.

Jan van Mill

On the history of dimension theory

Abstract : In the early days of dimension theory, the concept of a separator caused much confusion. It was the cause of a controversy between L. E. J. Brouwer (1881-1966) and K. Menger (1902-1985). In this talk we will take a closer look at the concept of a separator and try to elucidate the causes of the confusion. To this end, we will describe two well-known and easy to visualize subspace of the plane which are known counterexamples to several problems. They also turn out to be fundamental in our discussion of separators.

Roman Murawski

Mathematical foundations and logic in reborn Poland

Abstract :

Poland belonged in the interwar period to the leading centers of mathematical logic and the foundations of mathematics in the world. Logical and foundational researches concentrated mainly in Warsaw. One says about Warsaw School of Mathematical Logic and Warsaw School of Mathematics, in particular set theory. The former was a part of Lvov-Warsaw School of Philosophy founded by Kazimierz Twardowski (1866-1938), the latter was founded mainly by Zygmunt Janiszewski (1888-1920) and Waclaw Sierpiński (1882-1969). One should stress the close collaboration and mutual influence of logicians (having mainly a philosophical background) and mathematicians in Warsaw. It was possible since Warsaw mathematicians were interested in philosophical problems concerning mathematics and on the other hand philosophers and logicians were opened to mathematics and its philosophical and methodological problems. In the paper we will present the history of both mentioned groups, their philosophical background and motivations as well as the most important achievements in mathematical logic and the foundations of mathematics (in particular in propositional calculus, many-valued logics, Lesniewski's systems, history of logic, theory of truth, model theory, decidability theory and set theory). The role of philosophical ideas in technical research will be considered.

José-Miguel Pacheco Castelao

1918-1936 : Was there a mathematical community in Spain ?

Abstract : The outbreak of WWI represented the beginning of the end of 19th Century European cultures in many aspects, and when the war was over, a number of things had dramatically changed. Frontiers appeared out of nowhere when the Austrian Empire collapsed, new political regimes emerged. Nevertheless, to a larger extent there existed a certain continuity across the war in many scientific disciplines. Compare : WWII is known for having been the origin of a number of newer physical and mathematical topics, which was not the case for Mathematics during WWI. During WWI Spain was a neutral country whose main problem was how to mitigate the loss of the last remnants of the overseas empire in 1898, and the intellectual circles were involved in a wave of regeneracionismo overarching politics, science, and education. Thus, the mathematical war years were devoted to planning the adaptation of Spanish mathematical sciences to the higher standards achieved in the second half of the 19th Century, particularly in Germany, Italy, and France. To this aim the Spanish Mathematical Society was created in 1911, together with its corresponding Bulletin, in a way similar to sister Societies in Germany and France. The main character in this story was the then very young Julio Rey Pastor (1888-1962) who after two stages in Germany started a year-long frenetic activity during WWI and the war aftermath. Rey had obtained his doctorate in 1909, advised his first one in 1912, and in between he had time enough to occupy a Mathematics chair at Oviedo in northern Spain. Indeed, a mathematical group was gathered around Rey for some twenty years 1915-1936, but in the 1920s, the so-called Edad de Plata de la Ciencia Española (the silver age of Spanish science) no unity can be observed in it : e.g. when relativity was fashionable, someone had to write a couple of PhDs on it ; the old topic of divergence and series summation also received attention from the group between 1928 and 1935 with some valuable results, but it is difficult to say that the group evolved into a school in those years after WWI... And then the Spanish Civil War broke out in 1936. The aim of the presentation is to analyse to what extent the answer to the initial question could be a positive one.

Giovanni Paoloni

Vito Volterra's commitment in the scientific politics of the 1920s

Abstract : Very early his academic career, Vito Volterra got actively involved in institutional activities, at the national and international level. The broad ranging experience he made in the decades between 1890s and the outbreak of the Great War, enabled him to play a very important role in the reorganization of the scientific community in the postwar years. Since the years before WWI Volterra was aware of the growing influence of the USA in the future of international research, and worked to implement scientific networks inside Europe and between the two shores of the Atlantic. By the end of 1917, scientists and science policy makers in the allied countries were already debating projects to shape the international research institutions of the postwar period. His colleagues, in particular the French mathematicians Émile Borel and Émile Picard, and the American astronomer George Ellery Hale (with whom he was in close touch since 1909) involved Volterra in the inter-allied academic conferences that brought in the end to the creation of the International Research Council (IRC). In addition, Volterra was one of the postwar European referees of the International Education Board (IEB) of the Rockefeller Foundation, and also the president of the Bureau International des Poids et Mesures, based in Paris. In the years from 1918 to 1923, Volterra successfully worked at the international level to organize the IRC and at the national level to establish the Italian Consiglio Nazionale delle Ricerche (CNR). In those years, he also was involved in granting, through the IEB, resources for the international mobility of young European mathematicians and physicists, and financial support for a number of institutional initiatives in different European Countries. In the mid-1920s, however, Volterra had to deal with the transformation of the Kingdom of Italy from a liberal State in a fascist dictatorship. His siding with antifascism weakened his position in the national scientific institutions, and brought a diminution of his influence on the

Italian scientific community. This was not without consequences at the international level. The most blatant event was in 1928, when he had to face the opposition of the Italian representatives to his renewal as vice-president of the IRC. On the other hand, he would keep the leadership of the Bureau International des Poids et Mésures, which simply refused to comply with the requests of the Mussolini government to dismiss him. Three main features are remarkable in Volterra's view of science policy : 1) the need for the scientific community to keep a close relationship with political and economic players ; 2) the development of applied science and the crossing over of disciplinary boundaries ; 3) the involvement in developing research institutions beyond the borders of mathematics.

Thomas Perfettini

Mathematics and mathematicians in the Russian emigration in Paris

Abstract : The talk deals with mathematics in the Russian emigration in Paris in the aftermath of the Russian revolutions of 1917. Many aspects of this history have already been studied, mostly by Russian academics, but scarcely using the documentation available in France on this question. I try therefore to offer new perspectives and complements based on various documents I found during my reasearch. I present the activities of the Russian Academic Group and examine how it was involved in the mathematical life of Russian scientists who emigrated in Paris : let me mention, for instance, the creation of Russian sections at Paris university. I describe the trajectories of three individuals, Serguei Savitch, Ernest Kogbetliantz and Vladimir Kostitzin, emphasizing on their works, their links with French scientists and French laboratories, and how they managed to recreate propitious conditions for the continuation of their research in this particular context.

Pierre-Charles Pradier

Were the Foundations of 'Measurement without Theory' Laid in the 1920s ?

Abstract : In his 1947 essay, Tjalling Koopmans criticized the development of an empirical science that had no theoretical basis, what he referred to as 'measurement without theory'. The controversy over the status of relations based on mere statistical inference has not ceased since then. Instead of looking for the contemporary consequences, however, I will inquire into its early beginnings. As early as the 1900s, Walras, Pareto and Juglar exchanged views on the status of theory and its relation to economic data. These private exchanges acquired the status of scientific controversy in the aftermath of the First World War, with the dissemination of Pareto's work. It is precisely this moment that I will try to grasp, when engineers began to read and write pure economic treatises, questioning the relation between theory and empirical problems, the nature of their project and the expectations that the subsequent development of economics has tried to fulfill.

Raphaël Prunier

The circulation of ideas in 1920's mathematical statistics

Abstract : The presentation aims to study an example of the situation of mathematical statistics in the years 1920 through the circulation of texts in Europe. It focuses on French mathematical statistics, and especially on the book *Statistique Mathématique* by Georges Darmois. Darmois published this textbook in 1928 while he was professor at the Paris Institute of Statistics (ISUP) after having been called by Emile Borel in order to provide the students of the ISUP with lectures in mathematical statistics at a level comparable to what was done abroad . My talk especially examines how Darmois transferred the biometrical methods of Karl Pearson's school into the ISUP syllabus, though slightly transformed, in order to put them in a more systematic mathematical framework.

Patricia Reynaud-Bouret

Small stories around statistical testing

Abstract : How does a statistician answer to a Yes/No question ? He/she will never says Yes or No, but he/she will perform a statistical test. And usually the answer is of course largely misinterpreted by other people. After relating the origins of testing and the controversy between Fisher and Neyman, I will try to give some intuitions (with small stories and naive situations) about why testing is as it is and when it can be still trusted.

Tilman Sauer

Einstein, relativity and its influence on mathematics

Abstract : With its observational confirmation of gravitational light deflection by the British eclipse expedition in 1919, Einstein's theory of relativity was catapulted into the limelight of public debate. Its novel use of mathematical concepts that had not played a significant role in physical theorizing before made it an attractive field of studies for mathematicians, young and old, from established centers of academia as well as from the periphery. I will look at some of the reverberations of these debates within the mathematical community, especially with those working in the rapidly developing field of differential geometry.

Martina Schiavon

After-war geodesy, seen by the French Bureau des longitudes (1919-1928)

Abstract : The International Geodetic Association, created in 1866, was a prestigious pre-war international institution which had been at the origin of many important innovations in the domain of geodesy and of the disciplines associated with (i. e. metrology, Earth's figure, levelling, cartography, instrumentation, etc.). It had also been at the origin of the Bureau international de poids et mesures (the intergovernmental organization created in 1875 through which Member States act together on matters related to measurement science and measurement standards). Before 1919, geodesy was then a discipline linking science, war and power. However, after the First World War, it knew specialization, and also many and profound changes. Indeed, the International geodetic association was replaced, in 1919, by the International Unions, and the new "geodetic and geophysical Union" counted now with six independent sections : geodesy, seismology, meteorology, magnetism and earth electricity, physical oceanography and volcanology. Between breaks, changes and continuity, the purpose of this talk is to consider some of the many important transformations in the post-war geodesy and to link them with changes in the profession (or professional status) of geodesy. I will do this exploring the discussion of some members of the French Bureau des longitudes, whose 22 000 minutes (covering the period 1795-1932) have been recently put on-line on a special web-site.

Reinhard Sigmund-Schultze

Richard von Mises' Institute for applied mathematics in Berlin, his journal ZAMM and the society GAMM as new developments in German mathematics from about 1920

Abstract : The presentation goes into the foundation and development of three important German institutions for applied mathematics during the 1920s. Richard von Mises (1883-1953) at the University of Berlin was leading the two first of them and was involved in the third as managing director (Geschäftsführer). The after-effects of the War and the new connections between engineering and mathematics, particularly in the new industries, were behind these developments which all started around 1920.

Rossana Tazzioli

The first years of the Unione Matematica Italiana and its Bollettino (1922-1928)

Abstract : The Unione Matematica Italiana (Italian Mathematical Union, UMI) was founded in 1922 according to a motion approved in Brussels in July 1919 by the International Research Council, which promoted the creation of national scientific committees. The recent reorganization of the UMI Archives has made significant documents available to science historians. By using some of these unpublished letters and documents, we focus on the following issues :

- (i) The foundation and early years of the UMI and its journal, the Bollettino della Unione Matematica Italiana ;
 - (ii) The international models for the new society, in particular the Deutsche Mathematiker-Vereinigung, the Société mathématique de France and the American Mathematical Society ;
 - (iii) The impact of national and international events on the UMI, including the International Congresses of Mathematicians.
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Laura Turner

"A glorious opportunity to benefit mankind" : Mathematical projects and perspectives in postwar America

Abstract : In 1917, George A. Miller proposed the creation of an American mathematical dictionary to the newly-formed Mathematical Association of America. While this project was never realized in its intended form, enthusiastic support gave it significant momentum into the early postwar period. Emerging as a collective attempt to reconcile the belief in America's shining scientific future with the lackluster state of its handbooks and apparatus for publishing them, the project was, among other things, a highly symbolic means of asserting the nation on the international stage. What is more, because France and Germany were reduced by the war economically and otherwise, it was a means of testing the American infrastructure in preparation for the great new responsibilities many believed would fall upon the nation in the postwar period. American mathematicians, however, were not alone in exploring new disciplinary roles in the aftermath of the war. Accordingly, we will also contrast their narratives and strategies with those of another key nation vying for leadership, Sweden, and offer preliminary observations in this vein.

Lukas Verburgt

A Bolshevik menace : Brouwer's reception from Cambridge to Moscow in the 1920s

Abstract : This paper discusses the complex role of metaphors like 'revolution' and 'crisis' in the reception of the Dutch mathematician L.E.J. Brouwer's intuitionism. The topic has previously been discussed in the context of Western-Europe - so as to show that, contrary to the accepted view, not Hilbert's formalism but Brouwer's intuitionism was once seen as 'modern'. The aim of the paper is to add another dimension to the discussion by approaching the topic from the viewpoint of Soviet mathematicians and their position in the 1920s Brouwer-Hilbert debate about the foundations of mathematics'.
