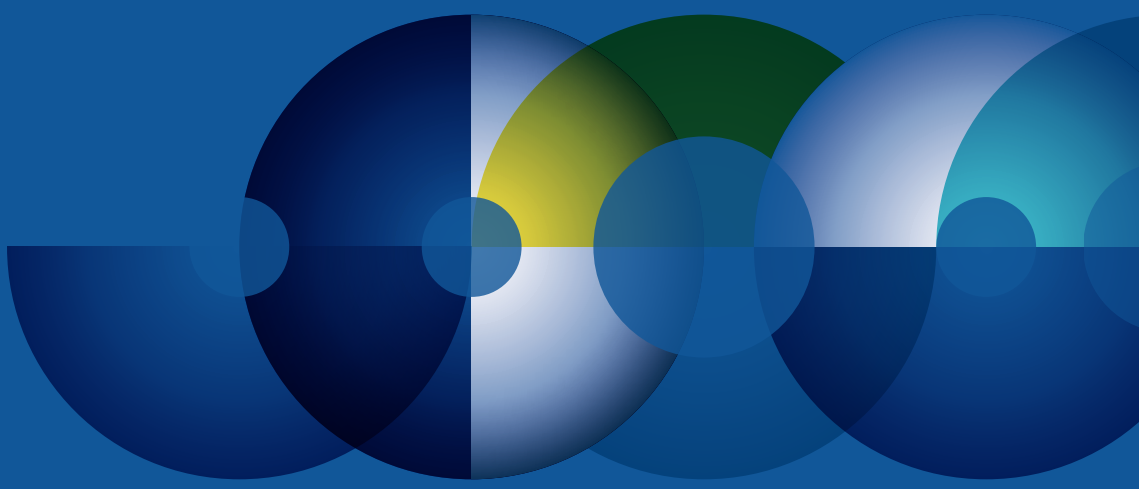
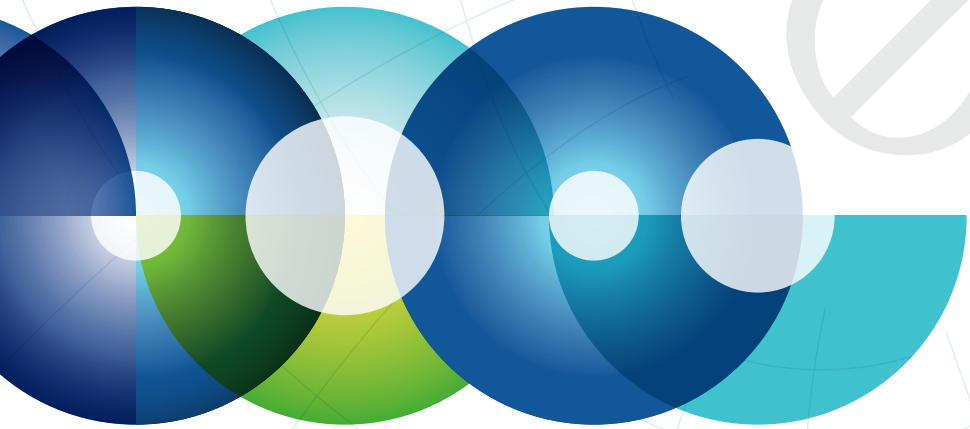
THIRTY YEARS OF EMS

THIRTY YEARS OF EMS REPORT 2020

European Mathematical Society

CONTENTS





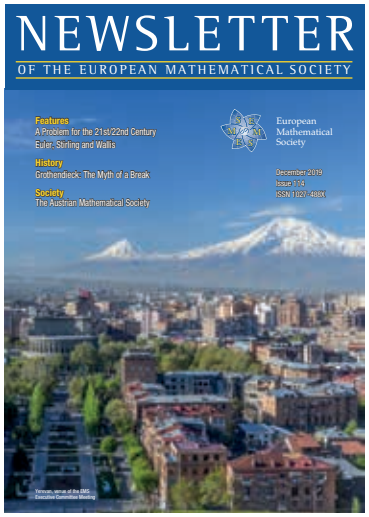
1. THE STORY OF THE "BOOKLET"

Europe has a long history, Mathematics even longer, and the European Mathematical Society (EMS) is starting to have its own history too. The Society is 30 years old and since 2000 there have been at least two Executive Committee (EC) meetings a year in 25 different "European" countries, including Armenia, Georgia and Turkey. In Fall 2019, during the EC meeting in Yerevan, we started talking about a "booklet" for the 30th year anniversary, describing the past, present and future of the EMS. We also hoped that such a booklet can help us explain our particular role in the research life of Europe to decision makers. It took no time to decide to ask Jean-Pierre Bourguignon, the second President of the EMS for a contribution. Our secretary and officers all added theirs allowing us to make this account of the Society as complete as possible. The plan was to bring it all together at the Spring 2020 EC meeting in Luminy and to present it at the Council in Bled and Congress in Portorož in Summer. Then history, and this story,

took an unexpected turn. Mathematics was certainly not confined to one home, but Europe and much more had to be. Our work had to continue virtually and all plans and schedules became "online". At a time when face-to-face and hand-in-hand seems remote history, a printed version of the booklet gained another meaning: the hope of having a face-to-face celebration in Edinburgh on October 29th, and offering it by hand to some of the people who have helped the Society to come to where it is today.

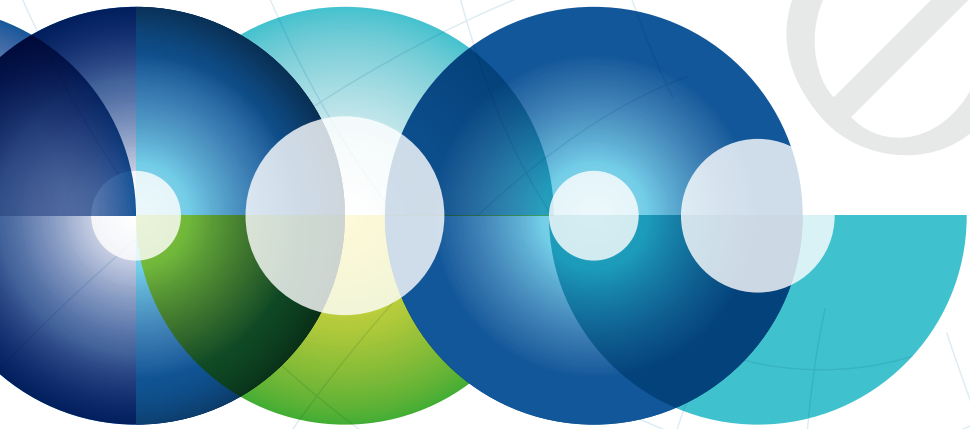
Executive Committee meeting, 28-30 September 2002 in Stockholm (in front of the monument of Sofia Kovalevskaya). From left to right: Ari Laptev, Doina Cioranescu, Luc Lemaire, Nina Uraltseva, Victor Buchstaber, Tuulikki Mäkeläinen, Bodil Branner, Robin Wilson, Sir John Kingman, Rolf Jeltsch, David Salinger, Helge Holden, Carles Casacuberta and David Brannan.

Executive Committee meeting, 11-13 October 2019 in Yerevan. From left to right: Yuri Movsisyan, Sjoerd Verduyn Lunel, Stefan Jackowski, Armen Sergeev, Betül Tanbay, Volker Mehrmann, Mats Gyllenberg, Elvira Hyvönen, Valentin Zagrebnov.



There are many people to thank besides the contributors and EC members. At a time when EMS is updating its image, from website to logo, Marc Brunaud tells the story of how he, Mireille Chaleyat-Maurel, and Marie-Claude Vergne created our first logo in the early nineties (see p. 30). François Tisseyre created the pictures of the First ECM in Paris, working on the movie « Mathématiques, mon village » © Atelier EcoutezVoir (see pg 12). Aydın Tibet, who also happens to be the creator of the logo of our Caucasian Mathematics Conference (see pg. 64) patiently and meticulously worked on the design during these long months. Our Publishing House EMS Press' team Laura Simonite, Apostolos Damialis and André Gaul wrote their section and took on all the pains of printing and publishing.

As the present EC members, we are thankful to all contributors and to every person and institution who has supported the EMS. Special thanks always goes to the University of Helsinki, to our secretaries and treasurers from Finland.



2. PAST

Jean-Pierre
BOURGUIGNON

2.1. TAKING THE LONG VIEW[1]

The celebration of the 30th anniversary of the European Mathematical Society (EMS) provides me with a good opportunity to look back and examine the conditions that made the EMS exist and what it achieved so far. It also allows me to highlight the transformations that affected the mathematical community, the European one in the first place but also the global one, in this very special period in human History. I will take both a scientific and an institutional point of view. All this happened while the world was changing a lot, and not surprisingly also our expectations and perceptions.

1 'Taking the Long View' is an expression that appears in the influential book "*The Art of War*" by SUN Tzu from the 5th century B.C. It is also the title of the movie by George CSICSERY dedicated to the late Professor CHERN Shiing Shen. This film director just produced "Secrets of the Surface", a moving documentary on Maryam MIRZAKHANI.

Founding a European mathematical society

The context in which the idea of a European mathematical society developed was that of the Cold War. It limited considerably the exchanges between mathematicians, and scientists in general, from behind the Iron Curtain and from Western Europe. Two typical examples of the impact of such a situation: first, when attending the 1978 International Congress of Mathematicians (ICM) in Helsinki Soviet mathematicians stayed on a Soviet ship stationed in the harbour while Gregori MARGULIS could not be present to receive the Fields Medal; and second, the postponing of the ICM to be held in Warsaw in 1982 to the next year because of the Martial Law. As I had the privilege of being one of the French delegates to the International Mathematical Union General Assembly held in Warsaw in 1982, I can testify of the very high level of tension caused by the political situation that induced severe limitations to freedom of movement. Another example of the extreme difficulty Soviet colleagues faced to travel is the extraordinary efforts it took to get Israel Gelfand to attend the meeting dedicated to Élie Cartan's Mathematical Heritage in 1984 in Lyon, and the fact that he was accompanied by a chaperon[2] who had to make sure of the people he was meeting.

It is the more remarkable that, at the 1978 Helsinki ICM, some mathematicians met to discuss what could be a European structure that would help overcome this very damaging separation. They set the basis for the EMS, a continental structure since, in order to address the issue I just described, Europe had to be understood in the most extensive way. Then the European Union consisted of 9 countries.

Still, one should never forget that, already in 1972, a Southeast Asian Mathematical Society was created, and that, in 1976, African colleagues

2 I had the good fortune of being asked to be his Western 'chaperon' during the meeting. This provided me with the great opportunity to have a first direct interaction with this extraordinary mathematician during the 1 week-long conference.

made the move to create a continental society, the African Mathematical Union, acting much earlier than us Europeans. Our colleagues from Latin America created the Unión Matemática de América Latina y el Caribe (UMALCA) in 1995.

Of this complicated period for an optimal development of science, one should remember the remarkable contribution of centres such as the Banach Center in Warsaw, created in 1948 as a Polish initiative, and the International Institute for Applied Systems Analysis (IIASA) based in Laxenburg near Vienna, that was created in 1972 as a truly international initiative involving the Soviet Union, the United States and 10 other countries. This was in the spirit of the Conference on Security and Cooperation in Europe held in Helsinki in 1973.

The European Mathematical Council, a temporary structure meant to prepare for the EMS, had Sir Michael ATIYAH as convenor with the patient support provided by Finnish colleagues[3]. It met often at the Mathematisches Forschungsinstitut Oberwolfach, one of the oldest meeting places for mathematicians with a worldwide visibility. We wanted to have more opportunities and to help establish a sense of identity among mathematicians working in Europe.

MFO, Oberwolfach

IIASA, Laxenburg

Banach Center, Warsaw

3 It is not so well known that the Finnish Mathematical Society is one of the oldest mathematical societies in the world: it celebrated its 150th anniversary in 2018.

EMS Objectives and Achievements

The purpose of the Society is "to further the development of all aspects of mathematics in the countries of Europe, promoting research in mathematics and its applications, and assisting and advising on problems of mathematical education". At the time of the founding meeting of the EMS in 1990 in Mądralin (Poland), the fundamental problem it was supposed to address, namely facilitating a fluid space of exchange, was on the way to be solved with the fall of the Berlin Wall, and the reconfiguration of the world that followed it.

Still, already at the time of the European Mathematical Council, two conceptions for the EMS were put on the table: one, mainly pushed by our British colleagues, would make it a society of societies, and the other one, pushed in particular by colleagues having a more integrated view of Europe, would make it a society with individual members. This led to rather tense exchanges in Mądralin, with no conclusion at the

Sir Michael Atiyah signing the official charter of the Foundation in Mądralin, 1990. Others from left to right: Fritz Hirzebruch, László Marki, Aatos Lahtinen, Jean-Marc Deshouillers, Andrzej Pelczar and Chris Lance. (Photo Courtesy of Prof. Ivan Ivansic.)

end of the first day. I attended the meeting as President of the Société Mathématique de France (SMF) and was one of the trouble makers on the basis of the mandate given to me by the SMF Council. It took the high diplomatic skills of Professor Friedrich HIRZEBRUCH, who had been approached to become the first EMS President, to obtain, at the end of a hotly debated evening session behind closed doors, that a compromise, based on the coexistence of the two models, be accepted by all parties. A key sign of success was that Sir Michael[4] agreed to become the EMS individual member number 1. As you know, the compromise proved of a real value, since the EMS runs efficiently under this dual structure.

The EMS was established as an association under Finnish law, a tribute to the contribution by Finnish colleagues and the solidity of their tradition. A symbolic trace of this is the fact that the EMS treasurers have been Finnish, with Aatos LAHTINEN inaugurating the function. For a number of years, the EMS enjoyed the great support provided by Tuulikki MÄKELÄINEN, in charge of the secretariat in Helsinki, a very appreciated support that continued after her retirement.

One of the first projects that, under the leadership of Professor HIRZEBRUCH, the EMS Executive Committee pushed was the creation of a high-level scientific journal, JEMS, the Journal of the EMS. First published by Springer-Verlag, it could find its present form thanks to the generous partnership offered by the ETH Zurich allowing the creation of the EMS Publishing House (EMSPH). You all know how the latter developed, adding book series to the various journals that joined JEMS under the EMSPH banner, now renamed EMS Press and based in Berlin.

4 I recall the key role of Sir Michael played in the birth of the EMS in the video I shot for a memorial event held in Edinburgh on 6 April 2019. It is accessible at: https://www.maths.ed.ac.uk/school-of-mathematics/sir-michael-atiyah .

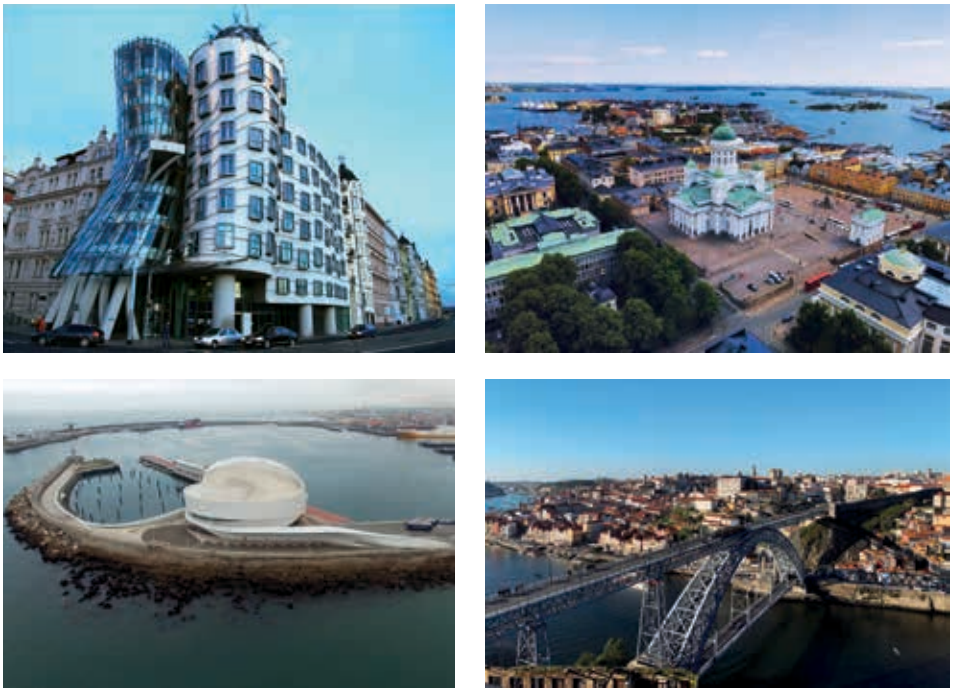
First ECM, Paris 1992
copyright: ©AtelierEcoutezVoir

Another key initiative came soon from some French colleagues under the determined leadership of Max KAROUBI, namely setting up a European Congress of Mathematics (ECM) under the EMS auspices. The gestation proved painful as getting the proper format and the adequate support led to rather bitter fights within the French community. Still, thanks to the wise arbitrage by Professor Henri CARTAN and President HIRZEBRUCH, the first ECM could be held in Paris in 1992. As you know, the initiative showed its relevance since the 8th ECM will be held in Portorož this year, after successful congresses in Budapest, Barcelona, Stockholm, Amsterdam, Krakow and Berlin.

I must recognise that, after my two rather disruptive involvements in EMS affairs, I was a bit surprised to be contacted in 1993 by President HIRZEBRUCH asking me to accept to stand for election to be his successor. Taking over from him was for sure a real challenge because of his well-known ability to get things done right beyond his obvious scientific fame. A condition I put was that Professor Peter MICHOR be asked to become the EMS Secretary. I had been impressed by his vision that the EMS should develop an online digital mathematical library. Today it may sound as a totally obvious move for the EMS to have an ambitious website. I can tell you that, at the time, it was not the case. The first difficulty we met was that the obvious name 'EMS' was already taken

by the German city of Ems! Hence the denomination chosen: 'EMIS' for European Mathematical Information Service.

One of the initiatives the EMS could develop during my presidency, thanks to the support of several colleagues, in particular Bernd WEGNER, the then editor-in-chief of Zentralblatt MATH, was to obtain that the EMS joins the Heidelberger Akademie der Wissenschaften, the Fachinformationszentrum based in Karlsruhe and Springer-Verlag as a partner of the database. The support by Professor Dieter PUPPE from the Akademie and by Joachim HEINZE from Springer was very important. The issue was nothing less than the survival of the database. This came after a failed attempt to develop a joint venture with Mathematical Reviews that the American Mathematical Society (AMS) rejected as they would only accept just a take-over. The partnership with the EMS provided more visibility to the database and another dimension to its action. Access to the database was one of the services offered by EMIS to EMS members. Thanks to the dedication of Olaf TESCHKE and to several expert contributions, in particular from the Cellule MathDoc, based at the Institut Fourier in Grenoble, financed by the CNRS and supported by the European Commission, it was possible to improve the service the database provides to the mathematical community, to the point that several studies done by independent bodies have shown that Zentralblatt MATH is competitive vis-a-vis MathSciNet, the digital version of Mathematical Reviews. This proved that a European initiative could stand to an American one, with an a priori much stronger financial basis. As you can imagine, I was more than pleased to learn a few months ago that these efforts to develop the database have been brought to another level by the recent decision that, with the support of German public structures, Zentralblatt MATH will become public domain starting in 2021, a very significant step in the battle for free Open Access by the mathematical community.



The Diderot Mathematical Forum "Mathematics and Architecture" in Prague, Helsinki, and Porto, 8 June, 2019

Another initiative taken during my presidency, the Diderot Mathematical Forum, aimed at exploring the interfaces of mathematics in an original way. The format, namely meetings of a small size occurring simultaneously in three cities, was meant to highlight the diversity of approaches in different parts of Europe. After a good start, it had a gap of more than 10 years. This gives me an opportunity to mention the great support the Forum received from Mireille CHALEYAT-MAUREL, including for its revival in 2013. Altogether 8 such Fora[5] have been organised: the first one, held in 1996 in London, Moscow and Zurich, was dedicated to "Mathematics and Finance", and the most recent one, held in 2019 in Helsinki, Porto and Prague, to "Mathematics and Architecture".

5 Besides the ones mentioned in the text, the topics external to Mathematics covered were: "Mathematics and Environment: Problems related to Water", "Mathematics as a Force of Cultural Evolution", "Mathematics and Music", "Mathematics and Telecommunications", "Mathematics of Planet Earth" and "Mathematics and Medicine". I still have a vivid memory of the one dedicated to "Mathematics and Music" held in Lisbon, Paris and Vienna in 1999 that had a long lasting impact in the form of the creation of a mathematical team at IRCAM, the *Institut de Recherche et de Coordination Acoustique/Musique* created by Pierre BOULEZ.

Of course, the EMS developed successfully many other activities: summer schools, support to women in mathematics when our discipline continues to involve one of the lowest percentage of women in spite of some recent progress, a committee on ethics whose first task was to edit a 'Code of Practice', a committee on developing countries, a platform for jobs in mathematics, ... and its Newsletter has become a reference among mathematical societies because of its very substantial content thanks to the dedication of its successive editors.

Living through an Extremely Quick Change of the World

During this 30 year period, often considered just the interval of time needed for a generation to take over from the previous one, the world has changed drastically in many respects: politically, economically, and socially. These changes came through an unexpected combination of factors, as often happens, but especially at a pace and with a breadth for which it is difficult to find any equivalent in the past human History. Let us go through some of them as science, and mathematics in particular, played a key role in them.

Besides the major political transformation that followed the collapse of the Soviet Union and the fall of the Iron Curtain, the main driver of change has undoubtedly been the impact of Science and Technology on Society: in just two decades, computing capacities increased hugely and very fast while becoming accessible to almost everybody. Two simultaneous processes made it possible: the miniaturisation of chips accompanied by the lowering of their production cost, and the introduction of appropriate protocols: the first one has certainly to be put to the credit of new developments in Physics and Engineering; the second follows, after preliminary work done by the American agency DARPA with military applications in mind, the introduction in 1989 of

The corridor where WWW was born. CERN, ground floor of building No.1

the World Wide Web, initiated by the British physicist Tim BERNERS-LEE, to allow scientists from all around the world taking part in experiments at CERN to exchange information instantly.

Within 20 years, all this grew into the proliferation of networks making possible the widespread use of internet that has radically changed access to information and the use of telecommunication. It led to the availability of completely new services and the development of some giant companies having a world impact. Google is one of them; its starting point was in 1997 the search engine PageRank designed by two Stanford students, Larry PAGE and Sergei BRIN[6], using cleverly results on random walks, a piece of mathematical research supported by the US National Science Foundation. Transforming it into a money-making machine required developing new economic models, something they did very successfully. This is actually a characteristic of the economic transformation we are discussing: to offer a multitude of new services to millions of customers while having them pay indirectly because they provide a lot of data, the new fuel, without hardly noticing it. This model holds both social promises for the future and serious threats. The emergence of a data-driven society led to new needs to sort out and analyse data. Statistics became central for these developments driven by new tools such as deep learning, fundamentally a piece of mathematics. We must keep such historical examples in mind when thinking on how the future can be shaped by initiatives taken by scientists.

6 the son of our colleague Misha BRIN.

Another dimension of the transformation of the world in the last 30 years has been the new role played by some large countries (China, India, Brazil to name a few) in which many regions reached quickly a high level of development. In these countries too the level of technological sophistication of the production apparatus grew rapidly, making them new major players also on the scientific and technological fronts.

The Place and the Role of Mathematics in Science and Society

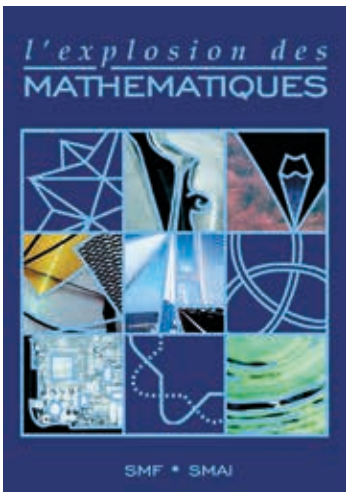
The transformations mentioned above had a considerable impact on the internal architecture of mathematics, a process that has happened almost continuously in History. What has been new was the speed at which the change occurred and its breadth. Overall, it meant a different balance between pure and applied mathematics as many new domains became accessible to mathematical modelling requiring enhanced attention. Many contacts had been established with several industries in the second part of the 20th century and also in the space sector[7]. An area in which this developed in a spectacular way in the 1990s was Finance with an unusual consequence: in some countries it led the mathematical community to face a severe shortage of manpower as a number of mathematical graduates left the academic sector quite early for well-paid jobs in the banking and the insurance sectors. As mentioned earlier, the first Diderot Mathematical Forum addressed the domain.

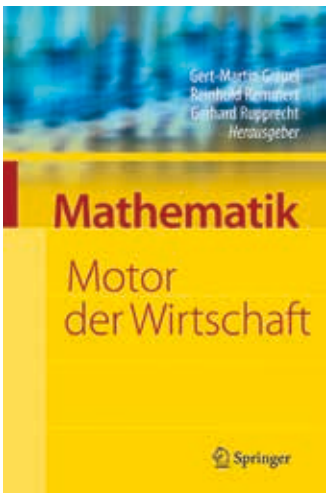
In the late 1990s, with the emergence of a data-driven society, the role of Statistics as well as the interplay of Statistics with several other branches of mathematics became more prominent. In some countries, like France, the change was not obvious to face as the mathematical

7 So much so that it appeared natural to ask the mathematician Jacques-Louis LIONS to become the Executive President of the French '*Centre National d'Études Spatiales*' (CNES).

and the statistical communities had not developed so close relations. With the turn taken in the last ten years by Artificial Intelligence, now relying much more on the reliance on massive data and the use of pattern recognition, the urge for a more intimate relation between the two communities became even more evident and the situation has considerably changed.

At the turn of the century, it became clear to a number of mathematicians that more attention should be dedicated to the relevance of mathematics for society at large. In 2002, for example, the brochure "L'explosion des mathématiques"[8] was published in France. In 2008 I took part in a committee set up by the OECD to draft a report on "Mathematics and Industry"[9]. The same year the book "Mathematik, Motor der Wirtschaft"[10] was published at the initiative of the Oberwolfach Stiftung. In 2011 a Forward Look on Mathematics and Industry, a joint initiative of the EMS Committee on Applied Mathematics and the European Science Foundation funded by the European Commission, led to the publication of the book "European Success Stories in Industrial Mathematics"[11].





Another trend also at work has been to recognise the need for a deeper study of the interaction between continuous and discrete approaches.

8 Produced by the SMF, the Société de Mathématiques Appliquées et Industrielles (SMAI) and the Société Française de Statistique (SFdS), it is available at smai.emath.fr/spip.php?article121 . In 2013, they produced an updated version entitled "*Mathématiques l'explosion continue*" available at https://smf.emath.fr/node/98057 .

9 The report is accessible at www.oecd.org/dataoecd/47/1/4109441.pdf .

10 Published by Springer with Gert-Martin GREUEL, Reinhold REMMERT and Gerhard RUPRECHT as editors.

11 Published by Springer with Thibaut LÉRY, Mario PRIMICERIO, Maria J. ESTEBAN, Magnus FONTES, Yvon MADAY, Volker MEHRMANN, Gonçalo QUADROS, Wil SCHILDERS, Andreas SCHUPPERT, and Heather TEWKESBURY as editors.

It is part of the description of a new mathematical landscape where great developments in stochastic models, dynamical systems, combinatorics and interactions between them have modified, within mathematics, the positioning of probability theory, the theory of differential equations and graph theory.

Mathematical modelling could be put in action in new scientific and engineering areas: in particular the development of High Performance Computing made it pertinent in areas where it was not before. Physics has had very close relations with mathematics for centuries, and manifold interactions continued unabated in relation, in particular, with the deepening importance of quantum physics requested by the access to much smaller scales in space and time (nano, pico, femto). The fundamental paradigm shift introduced in biology by the understanding in 1953 by Francis CRICK and James WATSON of the role and the structure of the DNA made new relations with mathematics possible. With the sequencing of many genomes, in particular the Human Genome for the first time in 2003, biology and medicine became a new frontier for mathematics. The incredible adventure of genomics, proteomics, and other -omics is exemplary of the radical transformation that happened in very few years: remember! It took an incredible internationally coordinated effort of more than 10 years to achieve the sequencing of the Human Genome for the first time and its cost was of the order of magnitude of billions of Euros. Nowadays, it can be done in many places for a cost making it accessible to individuals; this could actually become a routine exam in the context of personalised medicine. Even more challenging than sequencing, and actually much more involved, the understanding of pathways determining how and when a gene gets activated relies heavily on the geometric conformation of molecules. In combination with new imaging techniques, to make progress on the issue required totally new optimisation tools, and therefore has a

fundamentally mathematical dimension. The EMS recently created a new journal entitled "Mathematical Statistics and Learning".

Another deep tendency that, in my opinion, has been largely underestimated is the dominating role taken today by images in the society at large. For us mathematicians, for whom a strictly structured discourse is our way of life, this can hardly be missed. Part of it of course is perfectly sound and leads to major progress in understanding the world around us, in particular at very small scales, in medical diagnosis and treatment for example. It gives me the opportunity of pointing briefly to the history of wavelets, a fascinating interplay between engineering, as it all started in the Elf company with the trick introduced by Jean MORLET, theoretical physics, thanks to the understanding of their relevance for quantum mechanics by Alex GROSSMANN, and mathematics, and there many names could be given, but those of Yves MEYER and Ingrid DAUBECHIES can probably be singled out. With these tools based on multi-scale analysis, and many sophistications of them, the world of Signal and Image Processing has been deeply changed and its impact fantastically broadened in sound and image coding and transmission.

I could also discuss the relations of mathematics with social sciences with the advent of a data-driven approach to a number of fields but I will end this thematic review by discussing briefly the massively interdisciplinary developments related to the Environment. Many different communities had to coordinate their efforts to identify patterns and propose scenarios for the possible evolution of the climate when the evidence of its change could not be challenged anymore. The general circulation model, an intricate mathematical exercise, lies at the basis of these efforts to conceptualise what was happening, and its development rested on very significant progress in Partial Differential Equations and their numerical treatment.

All these developments raise the issue of how mathematicians can best cope with such new developments. Several domains touched in the previous description have organised themselves around scientific programmes. They found these the natural way of moving forward. Mathematicians have not been used to such a modus operandi... even if the expression 'the Langlands Programme' for example has been around in mathematics for some time.

Another aspect the new role played by mathematics took in its relation with other Sciences and Society at large implied is the typical positions that mathematics PhDs take after obtaining their degree: in several European countries, it has become standard that about one half of the graduates take jobs in the private sector. It goes along with the reinforcement, in many companies, of the hiring of engineers with a very mathematical profile, a tendency that is even growing with the spreading of Artificial Intelligence. Mathematicians have to learn how to face such a demand and take advantage of it in an optimal way without harming their capacity to develop their field.

The new intricate relation mathematics entertains with production and services led to reports evaluating its impact in the economy. It was the purpose of the report "Measuring the Economic Benefits of Mathematical Science Research in the UK"[12] in 2012 and of the report "The Mathematical sciences and their value for the Dutch economy"[13] in 2014. They were followed by similar studies in France[14] in 2015 and in Spain[15] in 2019. A more open view, based on the same basis, was the source of the report "THE ERA OF MATHEMATICS, An Independent

12 Report "*Measuring the Economic Benefits of Mathematical Science Research in the UK*" also commissioned to Deloitte by the Engineering and Physical Sciences Research Council (EPSRC) accessible at https://epsrc.ukri.org/newsevents/pubs/deloitte-measuring-the-economic-benefits-of-mathematical-science-research-in-the-uk/

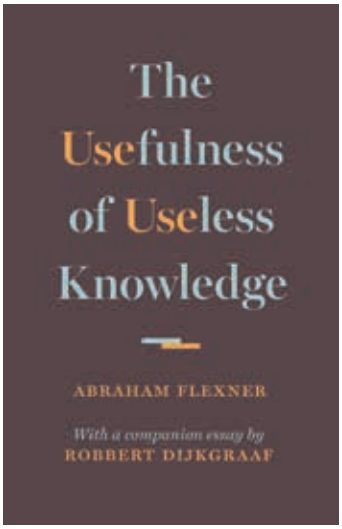
13 Report "*The Mathematical sciences and their value for the Dutch economy*" commissioned to Deloitte by the Platform Wiskunde Nederland accessible at https://euro-math-soc.eu/system/files/uploads/DeloitteNL.pdf.

14 Report "*Étude de l'impact socio-économique des Mathématiques en France*" accessible on the AMIES website.

15 Report "*Socio-economic impact of mathematical research and mathematical technology in Spain*" accessible on the institucionales.us.es website.

Review of Knowledge Exchange in the Mathematical Sciences"[16] in 2018. It inspired the Japanese report "The Coming Era of Mathematical Capitalism – How the Power of Mathematics Changes our Future"[17] in 2019. Any of these documents would have been unthinkable 20 years ago.

Still, it raises the issue of how to keep the absolutely indispensable independence mathematicians need to have in designing their research. We know that enjoying such freedom is the only way to develop new tools that, due to the unexpected efficiency of serendipity, will prove key to solve problems that will not find solutions when approached in a narrow way. In my opinion, mathematicians have to lead the battle for the recognition of the 'Usefulness of Useless Knowledge', as put forward by Abraham FLEXNER[18] in a remarkable essay published in 1939. This brings me to consider how the mathematical communities organised themselves to address the new challenges.



The Mathematical Communities and their Functioning

In our community we know how much mathematics has been impacted by outstanding contributions coming from individuals. Of course, the towering historical figures of Isaac NEWTON, Gottfried Wilhelm LEIBNIZ,

16 Report "*THE ERA OF MATHEMATICS An Independent Review of Knowledge Exchange in the Mathematical Sciences*" under the leadership of Philip BOND accessible at https://epsrc.ukri.org/newsevents/pubs/era-of-maths/ . The report was also commissioned by the EPSRC

17 The METI and MEXT Report "*The Coming Era of Mathematical Capitalism – How the Power of Mathematics Changes our Future*" has an English summary accessible at https://www.meti.go.jp/english/press/2019/0326_004.html; the full Japanese version can be accessed at https://www.meti.go.jp/press/2018/03/20190326005/20190326005-2.pdf .

18 He founded the Institute for Advanced Study in Princeton in 1930 and was its first Director until 1939.

Leonhard EULER, Carl-Friedrich GAUSS, Joseph FOURIER, Bernhard RIEMANN, and Henri POINCARÉ have all created new branches of mathematics. But the process has not stopped with the massive increase in the size of the community. In the 20th century during which the number of mathematicians exploded, the process of creation or radical transformation of whole branches of mathematics has continued through the contributions of a number of truly revolutionary mathematicians such as John VON NEUMANN, Andrey Nikolaevich KOLMOGOROV, Alexander GROTHENDIECK, John NASH[19], Peter LAX, Misha GROMOV or Alain CONNES, just to name a few. In view of the very intricate relation between mathematics and computer science I should probably add the name of Alan TURING to this necessarily somewhat biased list. Still, mathematics would not be what it is without the very diversified contributions coming from thousands of mathematicians, and one must insist that, without all of them, our discipline would neither be the same, nor have the remarkable impact I have been describing before. This is one of the strength of the community.

Even if our community increased its size considerably – today one tends to say that worldwide there are about 100 000 mathematicians active in research – and probably will continue to grow due to the new remarkable developments in a number of emerging countries, we must be aware that we represent probably only about 1/20th of the community of biologists. Such a figure has to be kept in mind when negotiating at national and/or European levels about the appropriate way of supporting mathematical research. We all know the most appropriate ways to develop research in our field, and we also know that the dominating schemes coming from other fields, such as delayed hiring, the importance given to projects over recurrent funding, tend to become the norm. A very good example of such a situation is the difficulty met

19 John NASH received in 1994 the Prize of the Bank of Sweden in memory of Alfred Nobel for his Game Theory work.

by Professor HIRZEBRUCH who succeeded in creating the Max Planck Institut für Mathematik in Bonn only at his fourth attempt!

Still, there is one feature for which we share the views of many other communities, namely the importance of mobility in the advanced training to benefit from the diversity of approaches and points of view. It is why we should care for the quality of the Marie Skłodowska-Curie Actions, the tool developed by the European Commission for mobility. This leads me to speak briefly on other tools that have been developed either globally at European level or nationally.

The European Framework programmes to support Research and Development appeared more than 30 years ago but, until 2007 and the Lisbon Treaty, European treaties did not include Research in the shared responsibilities. Hence the emphasis on networks contributing to cohesion and on consortia with industrial partners contributing to wealth creation. It is in this context that the battle for the creation of the European Research Council (ERC) lasted more than ten years. It is in my capacity of EMS President that, in 1995, I heard about the 'dream' of having a programme where researchers would have the full initiative. The ERC came to life in 2007... after a lot of ups and downs that made many supporters wonder whether it would ever exist. For the successful lobbying work, we owe a lot to European biologists and a few politicians: Mariano GAGO and Lord SAINSBURY, when they were Ministers in charge of Research in their respective countries, Portugal and the UK, and Philippe BUSQUIN, a Belgian political figure then European Commissioner. The EMS played its role in that process, through direct contact with the European Commission and its participation to the 'Initiative for Science in Europe' group.

In a number of countries in Europe, besides mathematical departments and institutes in Universities, various types of dedicated structures

played a key role in developing mathematical research. It is worth recalling here that the creation of the Mittag-Leffler Institute goes back to 1916, more than a century ago. The success of the Mathematical Sciences Research Institute in Berkeley, created in 1980, and of the Institute for Mathematics and its Applications in Minneapolis, created in 1982, triggered more interest in Europe for such structures. Besides the Banach Center I mentioned earlier and the Forschungsinstitut für Mathematik created in 1964 at the ETH in Zurich, several other institutes capable to host trimester or semester sessions were created: in 1990 the (renovated) Institut Henri Poincaré in Paris, in 1992 the Erwin Schrödinger Institute in Vienna and the Newton institute in Cambridge (at the initiative of Sir Michael), in 2002 the Bernoulli Centre at the EPFL in Lausanne and several others later. The creation of the Mathematisches Forschungsinstitut Oberwolfach goes back to 1944, and it was so successful that many mathematicians tried to get similar structures to host many one week-long sessions in their own country: it was the case in France with the Centre International de Rencontres Mathématiques (CIRM) in Luminy and in Poland with the Bedlewo Conference Centre... but also in Canada with the Banff Research Station.

Some other more collective efforts to share best practices or to facilitate mobility took place in the last 25 years. The European Post-Doctoral Institute (EPDI) was initiated in 1995 by Sir Michael, Friedrich HIRZEBRUCH and myself, in our capacities of directors of respectively the Newton Institute, the Max-Planck-Institut für Mathematik in Bonn and the IHÉS. Its purpose was to share post-doctoral fellows. The three founding

institutes were later joined progressively by 7 other institutions, but the EPDI had to cease to exist because of the imbalance in the requests made by applicants about the places they wanted to visit and unsuccessful attempts to get central funding. This stresses the difficulty mathematicians meet sometimes in getting their needs properly addressed. Progress on this front is needed and requires a better collective organisation.

ERCOM, the European Research Centres of Mathematics, created in 1997, is today an EMS committee bringing together the directors of 28 research centres. Several common actions have been put in place in the context of ERCOM, in particular in reaching out to a wider public. This shows that the level of organisation reached by the European mathematical community has considerably progressed in the last 30 years. In the process, the EMS played a significant role.

The last issue that has been impacting our community in the last period concerns Open Access to publications. In the context of an explosion of the production of texts, due in part to the increased number of mathematicians but also to the pressure to publish, the challenge is of course to keep enough control of the quality while gaining wide access to published documents. Mathematicians have clearly expressed their massive adhesion to the Green and Diamond formats, in particular because of the key role played by academic publishers in mathematics. In mathematics, publications represent the end product. The EMS has been a partner organisation in the EU Digital Mathematics Library project (EUDML) supported by the European Commission. Coordinated by the Instituto Superior Técnico in Lisbon, Portugal, it involved 14 partners from 2010 to 2013. It continued in 2014 under the coordination of the Fachinformationszentrum in Karlsruhe, Germany. The project aimed to develop a collaborative digital library service making mathematics literature available online in the form of

an enduring open access digital collection, developed and maintained by a network of institutions.

The Role of Quality Education

From its inception, the EMS showed great interest in questions related to mathematical education. Still, we all know how having an impact on this issue is a delicate matter because of the diversity of situations. Even now that being at ease with mathematics has become so important, the field is often considered hostile. Mathematicians are very conscious that teachers have a double role: to train every pupil to reach a good level of understanding of basic mathematics and to stimulate the best motivated and able ones to develop their interest in the field. These two goals are sometimes presented as conflicting when they should be seen as complementary; in my young years, I personally benefitted a lot from being used by a teacher as a tutor for the other students who had difficulty understanding.

As suggested earlier when I spoke of the development of a data-driven economy, mathematical literacy has become a major issue because of its extended role in the society at large. It is one of the reasons why, in recent years, the results of the PISA[20] reports have gained greater visibility in the media, creating a pressure to improve the situation when they pointed to deficiencies.

More than ever, attracting motivated and well-trained people to the profession of teacher is important. For Europe, a key of its competitiveness will be the quality of the education it can provide to every young person living there, while, at the same time, identifying those who could form the next generation of mathematicians, in particular

20 PISA stands for 'Programme for the International Student Assessment'. These tests have been organised under the auspices of the OECD every 3 years since 2000 for Reading and since 2003 for Mathematics.

women. Still, most likely, the greatest challenge will be to design new programmes of life-long education as, with the potentially widespread impact of Artificial Intelligence, many people will need to be retrained. It will require a new kind of teachers to address needs of a quite different nature from those they usually face with younger students.

There is one more issue that I want to raise, namely the critical fight against 'Fake news'. The only way out to avoid decent exchanges be destroyed by the proliferation (a deliberate action by some) of 'alternative facts' is to develop the next generations to critical thinking. This requires exposing them to processes that allow checking the information one is exposed to. A key battle if one hopes to get rational thinking play a more central role in our public opinions. Scientists, and among them of course mathematicians, have a special role to play in this tough battle!

Taking the Long View

My attempt to put in perspective the massive transformations our societies and our professions have been going through in the last 30 years, while showing what our community has achieved through the hard work of many people, aims to encourage you to imagine for yourself what the next changes will likely be and how to tackle them.

I already stressed that, for me, the growing role taken by images in our communication and our exchanges needs to be taken seriously as it diminishes drastically the importance of linear discourse, a pillar of our profession. This change may actually be a main driver for some of our problems. In a similar vein, the new intervention, explicit or implicit, of Artificial Intelligence tools may result in a narrowing of our intellectual landscape. Indeed, because of the reliance on recorded data, we will be more and more often only exposed to information for which we showed, in the past, some interest. Certainly not the ideal

path towards stronger incentives to creativity and out of the box thinking! And we know how much this is of critical importance for our science to move forward.

As a community, we need to continue our efforts to get connected in many directions: teachers, other scientists, politicians, journalists and the media at large, the wider public. This does not mean forgetting our specific needs, and the key values we know are essential for the development of our science: creativity, rigour, and perseverance. Mathematical research can only thrive if enough freedom is guaranteed, in particular to our younger colleagues. Clearly, leaving them enough room to develop their own ideas is fundamental. They are the ones who are in the best position to anticipate the next changes, and we must make this very clear in the way we train them.

All this takes place in a disturbing world in which, in my opinion, we, intellectuals, have not put enough effort into understanding its most recent dynamics. Still, one of its features is certain: the new world balance will make Asia and Africa play a bigger role than we are used to. They are necessarily a big part of our future. As Europeans, are we prepared for that? I am not sure but taking the Long View should help us make the necessary changes for that matter.

In the last 30 years, our community has proven its capacity to make significant steps forward and to act diligently together to conceive and implement them. Let us make sure we keep this capacity in a world that will surely be quite different. I am very confident this will be the case because of the soundness of our community provided mathematicians dare to take initiatives and... sufficiently many of us 'take the Long View'.

Jean-Pierre BOURGUIGNON

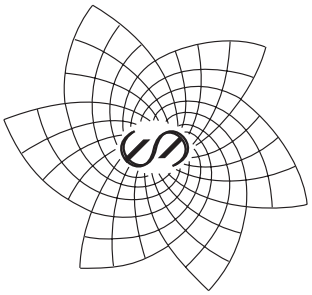
Bures-sur-Yvette, π-Day (3.14), 2020.

BIRTH OF A LOGO, A SHORT STORY...

Creating and using a logo seems nowadays absolutely obvious for any kind of human group, big or small, non-profitable or commercial. Of course, the very need of a graphic form to testify the existence of any organisation goes back to very old times, as one can see its various forms: symbols, emblems, signs, etc.

The European Mathematical Society (EMS), formally founded in 1990 in a small town near Warsaw, Poland, quickly began to launch, beside the overwhelming tasks tackled by its newborn Committees, concrete projects, such as the EMS Newsletter. After the embryonic and first infancy years of development of the EMS, the intensity of which is highly unthinkable, Jean-Pierre Bourguignon, President of the new executive team, pointed out several aims to focus on, in particular, the use of all new electronic technologies and communication tools.

At the same period, namely the end of autumn 1994, after a well-known and demanding probability seminar, I incidentally shared with my former teacher and then senior colleague Mireille Chaleyat-Maurel some words about the necessity that maths should receive new and modern treatments to be better socially understood. Mireille immediately tried to convince me to do and not only to speak and asked me to join her ! And, so did I.



During the 1995 first trimester, after learning all I could about the EMS and meeting two or three times with Mireille and Jean-Pierre, I remembered having asked about the graphic signs and symbols that could be used by the EMS for different purposes. Of course, this question has been already discussed and pushed forward for a few months. Jean-Pierre introduced me to Marie-Claude Vergne, a then member of the I.H.É.S. administrative staff, who, fond of paintings and graphic arts, had also thought about it. Marie-Claude proposed a blossomed flower as a symbol of openness and universality and with a colorful graphic treatment. This beautiful idea was submitted to discussion and tested. Jean-Pierre insisted to find some tricks to clearly evoke mathematics inside, so that the edges of the flower petals became yellow and their shapes derived from a Fibonacci spiral. Furthermore, the acronyms EMS and SME were put symmetrically and the well known symbol ∞ was added in a distorted way to also contain twice the first letter « E » of Europe. All this preliminary work resulted in a first logo, a scanned and reduced file of the modified original painting.

It very fast happened that an electronic and more web-friendly version of the EMS logo was urgently needed, so that a new version was edited and has been serving until now.

Marc Brunaud
May 28, 2020

EMS PRESIDENTS

FRIEDRICH HIRZEBRUCH
1991-1994

JEAN-PIERRE BOURGUIGNON
1995-1998

ROLF JELTSCH
1999-2002

SIR JOHN KINGMAN
2003-2006

ARI LAPTEV
2007-2010

MARTA SANZ-SOLÉ
2011-2014

PAVEL EXNER
2015-2018

VOLKER MEHRMANN
2019-2022

2.2. EXECUTIVE COMMITTEES

1991-1992

President: Friedrich Hirzebruch
Vice President: Alessandro Figà-Talamanca
Vice President: Czesław Olech
Secretary: Christopher Lance
Treasurer: Aatos Lahtinen
Member: Eva Bayer-Fluckiger
Member: Alois Kufner
Member: Pierre-Louis Lions
Member: László Márki
Member: António St. Aubyn

1993-1994

President: Friedrich Hirzebruch
Vice President: Alessandro Figà-Talamanca
Vice President: László Márki
Secretary: Christopher Lance
Treasurer: Aatos Lahtinen
Member: Eva Bayer-Fluckiger
Member: Isabel S. Labouriau
Member: Pierre-Louis Lions
Member: Andrzej Pelczar
Member: Vsevolod A. Solonnikov

1995-1996

President: Jean-Pierre Bourguignon
Vice President: László Márki
Vice President: David A.R. Wallace
Secretary: Peter W. Michor
Treasurer: Aatos Lahtinen
Member: Eva Bayer-Fluckiger
Member: Alberto Conte
Member: Isabel S. Labouriau
Member: Andrzej Pelczar
Member: Vsevolod A. Solonnikov

1997-1998

President: Jean-Pierre Bourguignon
Vice President: Andrzej Pelczar
Vice President: David A.R. Wallace
Secretary: Peter W. Michor
Treasurer: Aatos Lahtinen
Member: Bodil Branner
Member: Alberto Conte
Member: Rolf Jeltsch
Member: Marta Sanz-Solé
Member: Anatoly Vershik

1999-2000

President: Rolf Jeltsch
Vice President: Andrzej Pelczar
Vice President: Luc Lemaire
Secretary: David Brannan
Treasurer: Olli Martio
Member: Bodil Branner
Member: Doina Cioranescu
Member: Renzo Piccinini
Member: Marta Sanz-Solé
Member: Anatoly Vershik

2001-2002

President: Rolf Jeltsch
Vice President: Bodil Branner
Vice President: Luc Lemaire
Secretary: David Brannan
Treasurer: Olli Martio
Member: Victor Buchstaber
Member: Doina Cioranescu
Member: Renzo Piccinini
Member: Marta Sanz-Solé
Member: Mina Teicher

2003-2004
President: Sir John Kingman
Vice President: Bodil Branner
Vice President: Luc Lemaire
Secretary: Helge Holden
Treasurer: Olli Martio
Member: Victor Buchstaber
Member: Doina Cioranescu
Member: Pavel Exner
Member: Marta Sanz-Solé
Member: Mina Teicher

2005-2006
President: Sir John Kingman
Vice President: Pavel Exner
Vice President: Luc Lemaire
Secretary: Helge Holden
Treasurer: Olli Martio
Member: Victor Buchstaber
Member: Doina Cioranescu
Member: Olga Gil-Medrano
Member: Carlo Sbordone
Member: Klaus Schmidt

2007-2008
President: Ari Laptev
Vice President: Pavel Exner
Vice President: Helge Holden
Secretary: Stephen Huggett
Treasurer: Jouko Väänänen
Member: Victor Buchstaber
Member: Olga Gil-Medrano
Member: Mireille Martin-Deschamps
Member: Carlo Sbordone
Member: Klaus Schmidt

2009-2010
President: Ari Laptev
Vice President: Pavel Exner
Vice President: Helge Holden
Secretary: Stephen Huggett
Treasurer: Jouko Väänänen
Member: Zvi Artstein
Member: Franco Brezzi
Member: Igor Krichever
Member: Mireille Martin-Deschamps
Member: Martin Raussen

2011-2012
President: Marta Sanz-Solé
Vice President: Mireille Martin-Deschamps
Vice President: Martin Raussen
Secretary: Stephen Huggett
Treasurer: Jouko Väänänen
Member: Zvi Artstein
Member: Franco Brezzi
Member: Rui Loja Fernandes
Member: Igor Krichever
Member: Volker Mehrmann

2013-2014
President: Marta Sanz-Solé
Vice President: Martin Raussen
Vice President: Franco Brezzi
Secretary: Stephen Huggett
Treasurer: Jouko Väänänen
Member: Alice Fialowski
Member: Gert-Martin Greuel
Member: Laurence Halpern
Member: Volker Mehrmann
Member: Armen Sergeev

2015-2016

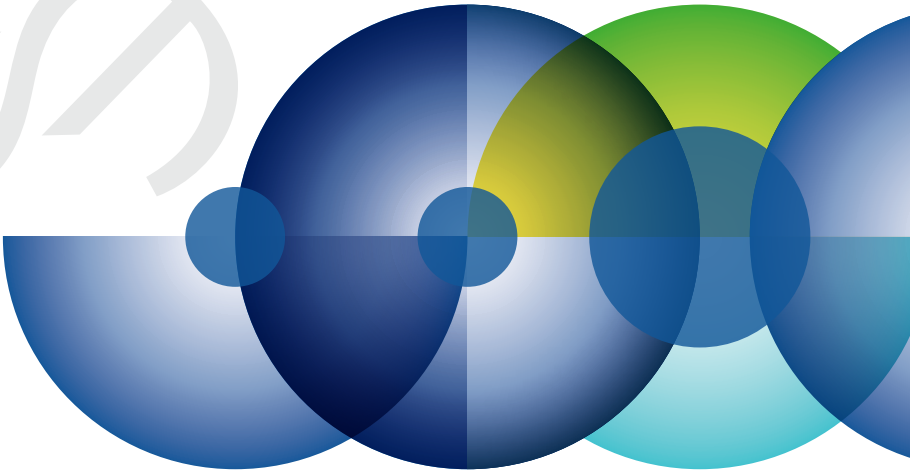
President: Pavel Exner
Vice President: Martin Raussen
Vice President: Franco Brezzi
Secretary: Sjoerd Verduyn Lunel
Treasurer: Mats Gyllenberg
Member: Alice Fialowski
Member: Gert-Martin Greuel
Member: Laurence Halpern
Member: Volker Mehrmann
Member: Armen Sergeev

2017-2018

President: Pavel Exner
Vice President: Volker Mehrmann
Vice President: Armen Sergeev
Secretary: Sjoerd Verduyn Lunel
Treasurer: Mats Gyllenberg
Member: Nicola Fusco
Member: Stefan Jackowski
Member: Vicente Muñoz
Member: Beatrice Pelloni
Member: Betül Tanbay

2019-2020

President: Volker Mehrmann
Vice President: Armen Sergeev
Vice President: Betül Tanbay
Secretary: Sjoerd Verduyn Lunel
Treasurer: Mats Gyllenberg
Member: Jorge Buescu
Member: Nicola Fusco
Member: Stefan Jackowski
Member: Vicente Muñoz
Member: Beatrice Pelloni



2.3. SECRETARIES

Quoting David A. R. Wallace who wrote a history of the foundation and first years of the EMS, "A very important administrative arrangement was made with the University of Helsinki by which an office was set up and staffed on a part-time basis by Ms. Tuulikki Mäkeläinen. This arrangement was to prove very beneficial to the EMS - for Tuulikki Mäkeläinen was to give, unstintingly, superb administrative support over the years."

Indeed, the continuous support of the University of Helsinki and the subsequent secretaries have been crucial for the development of EMS.

Tuulikki Mäkeläinen 1991-2006
Riitta Ulmanen 2006-2009
Terhi Hautala 2010-2013
Erica Runolinna 2013-2016
Elvira Hyvönen 2014 -

2.4. CONGRESSES & PRIZES

The European Congress of Mathematics (ECM) is organised by the European Mathematical Society (EMS) every four years and is the second largest event of mathematics in the world.

1st European Congress of Mathematics, Paris, July 6-10, 1992
2nd European Congress of Mathematics, Budapest, July 22-26, 1996
3rd European Congress of Mathematics, Barcelona, July 10-14, 2000
4th European Congress of Mathematics, Stockholm, June 27-July 2, 2004
5th European Congress of Mathematics, Amsterdam, July 14-18, 2008
6th European Congress of Mathematics, Krakow, July 2-7, 2012
7th European Congress of Mathematics, Berlin, July 18-22, 2016

EMS Prizes

The EMS prizes were established in 1992. At each ECM up to ten EMS prizes are awarded to young researchers not older than 35 years, of European nationality or working in Europe, in recognition of excellent contributions in mathematics.

EMS Prizes of 1992

- Richard Borcherds
- Jens Franke
- Alexander Goncharov
- Maxim Kontsevitch
- François Labourie
- Tomasz Łuczak
- Stefan Müller
- Vladimir Šverák
- Gábor Tardos
- Claire Voisin

EMS Prizes of 1996

- Alexis Bonnet
- William Timothy Gowers
- Annette Huber
- Aise Johan de Jong
- Dmitri Kramkov
- Jiří Matoušek
- Loic Merel
- Grigory Perelman
- Ricardo Pérez-Marco
- Leonid Polterovich

EMS Prizes of 2000

- Semyon Alesker
- Raphaël Cerf
- Dennis Gaitsgory
- Emmanuel Grenier
- Dominic Joyce
- Vincent Lafforgue
- Michael McQuillan
- Stefan Yu. Nemirovsky
- Paul Seidel
- Wendelin Werner

EMS Prizes of 2004

- Franck Barthe
- Stefano Bianchini
- Paul Biràn
- Elon Lindenstrauss
- Andrei Okounkov
- Sylvia Serfaty
- Stanislav Smirnov
- Xavier Tolsa
- Warwick Tucker
- Otmar Venjakob

EMS Prizes of 2008

- Artur Avila
- Alexei Borodin
- Ben Green
- Olga Holtz
- Bo'az Klartag
- Alexander Kuznetsov
- Assaf Naor
- Laure Saint-Raymond
- Agata Smoktunowicz
- Cédric Villani

EMS Prizes of 2012

- Simon Brendle
- Emmanuel Breuillard
- Alessio Figalli
- Adrian Ioana
- Mathieu Lewin
- Ciprian Manolescu
- Grégory Miermont
- Sophie Morel
- Tom Sanders
- Corinna Ulcigrai

EMS Prizes of 2016

- Mark Bravermann
- Vincent Calvez
- Hugo Duminil-Copin
- James Maynard
- Guido De Philippis
- Peter Scholze
- Péter Varjú
- Geordie Williamson
- Thomas Willwacher
- Sara Zahedi

EMS Prizes of 2020

- Karim Adiprasito
- Ana Caraiani
- Alexander Efimov
- Simion Filip
- Aleksandr Logunov
- Kaisa Matomäki
- Phan Thành Nam
- Joaquim Serra
- Jack Thorne
- Maryna Viazovska

Felix Klein Prize

Nowadays, mathematics often plays the decisive role in finding solutions to numerous technical, economical and organisational problems. In order to encourage such solutions and to reward exceptional research in the area of Applied Mathematics the EMS decided, in October 1999, to establish the Felix Klein Prize. The mathematician Felix Klein (1849-1925) is generally acknowledged as a pioneer with regard to the close connection between mathematics and applications which lead to solutions to technical problems.

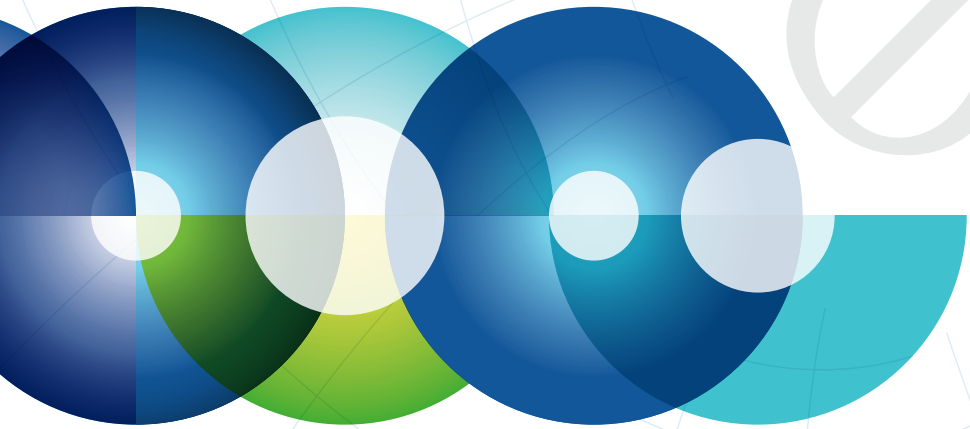
The Prize is to be awarded to a scientist, or a group of at most three scientists, under the age of 38 for using sophisticated methods to give an outstanding solution, which meets with the complete satisfaction of industry, to a concrete and difficult industrial problem.

- Prize of 2000: David C. Dobson
- Prize of 2004: not awarded
- Prize of 2008: Josselin Garnier
- Prize of 2012: Emmanuel Trélat
- Prize of 2014: Patrice Hauret
- Prize of 2020: Arnulf Jentzen

Otto Neugebauer Prize

The Prize (established in 2012) is to be awarded for highly original and influential work in the field of history of mathematics that enhances our understanding of either the development of mathematics or a particular mathematical subject in any period and in any geographical region. The prize may be shared by two or more researchers if the work justifying it is the fruit of collaboration between them. For the purposes of the prize, history of mathematics is to be understood in a very broad sense. It reaches from the study of mathematics in ancient civilizations to the development of modern branches of mathematical research, and it embraces mathematics wherever it has been studied in the world. In terms of the Mathematics Subject Classification it covers the whole spectrum of item 01Axx (History of mathematics and mathematicians). Similarly, there are no geographical restrictions on the origin or place of work of the prize recipient. All methodological approaches to the subject are acceptable.

- Prize of 2012: Jan P. Hogendijk
- Prize of 2016: Jeremy Gray
- Prize of 2020: Karine Chemla



3. PRESENT

Sjoerd Verduyn LUNEL
Evira HYVÖNEN

3.1. MEMBERS AND NUMBERS

From the beginning of the society the membership has a unique hybrid structure with both corporate and individual members. There are four categories of corporate members. Full members, restricted to societies primarily devoted to promoting research in pure and applied mathematics in Europe. Associate members, open to all societies in Europe having a significant interest in any aspect of mathematics. Academic institutional members and other institutional members, open to academic institutions and commercial organisations and industrial laboratories.

In this section we present the data to show that the EMS has a loyal membership base and that membership in all categories is flourishing and well distributed over Europe.

We start with graphs to show the growth of corporate and individual membership since 1990.

We continue with two pie charts that show the distribution of the approximately two hundred fifty individual members of the society that have been a loyal member ever since the very beginning of the society in 1990. The pie charts are organised by country in Figure 3 and by society in Figure 4.

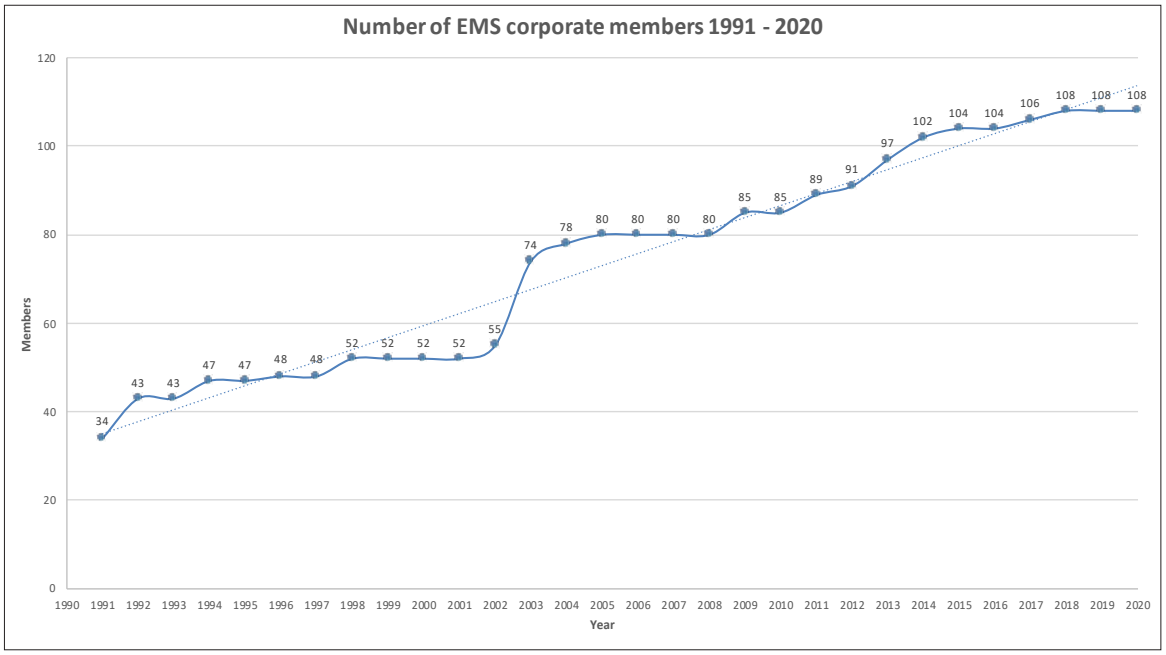


Figure 1: Growth of corporate membership

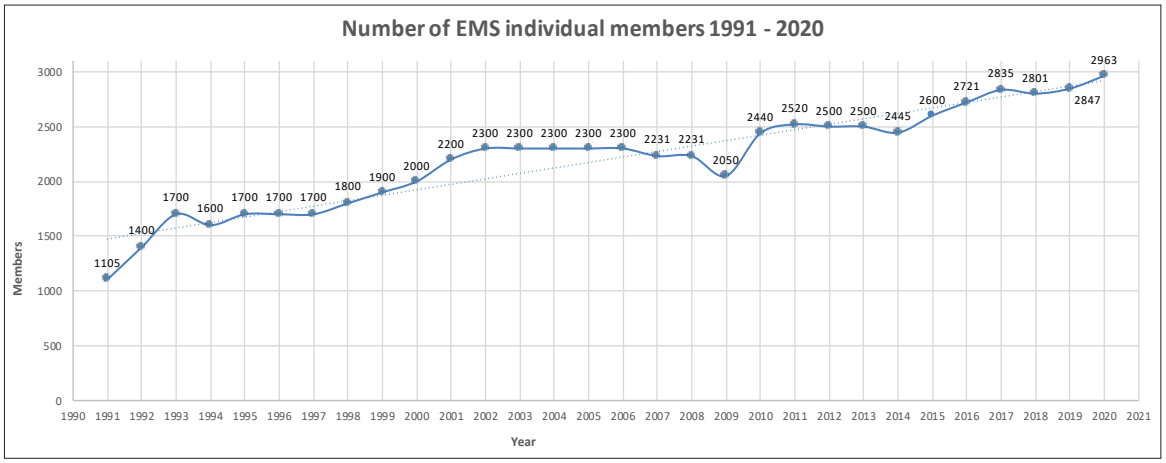


Figure 2: Growth of individual membership

We conclude the section with some recent data and show the distribution of current individual members by society in Figure 5 and by European country in Figure 6. The World map in Figure 7 illustrates that albeit the EMS is a European society with a strong membership base in Europe it has quite a few members overseas as well.

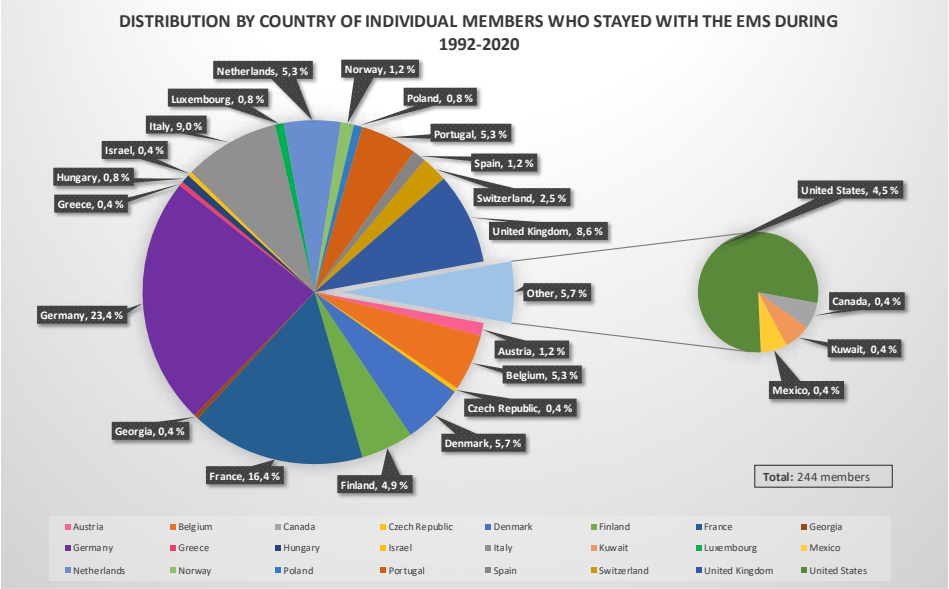


Figure 3: Distribution of the loyal individual members grouped by country

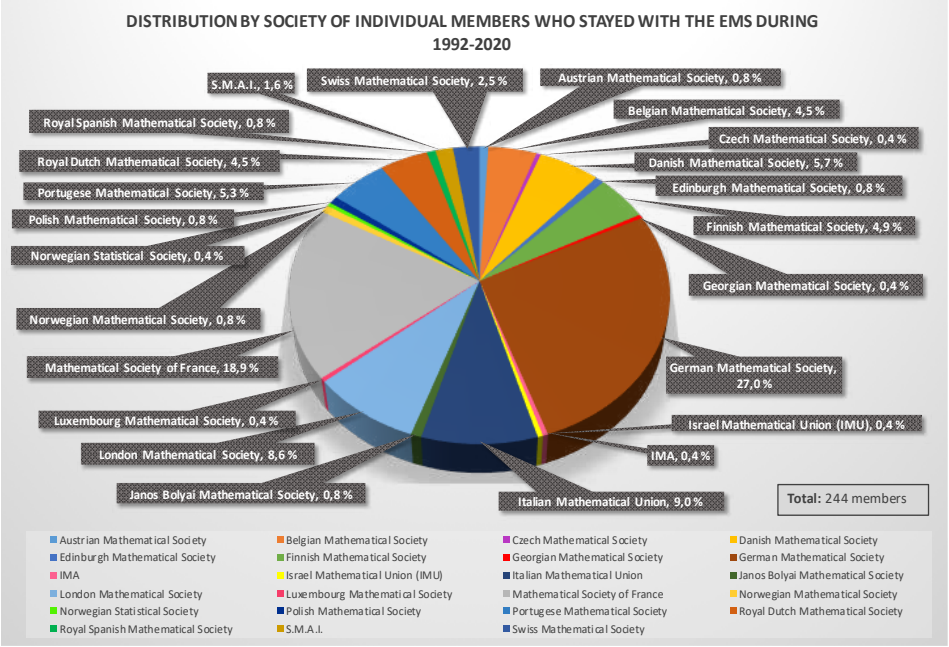


Figure 4: Distribution of the loyal individual members grouped by society

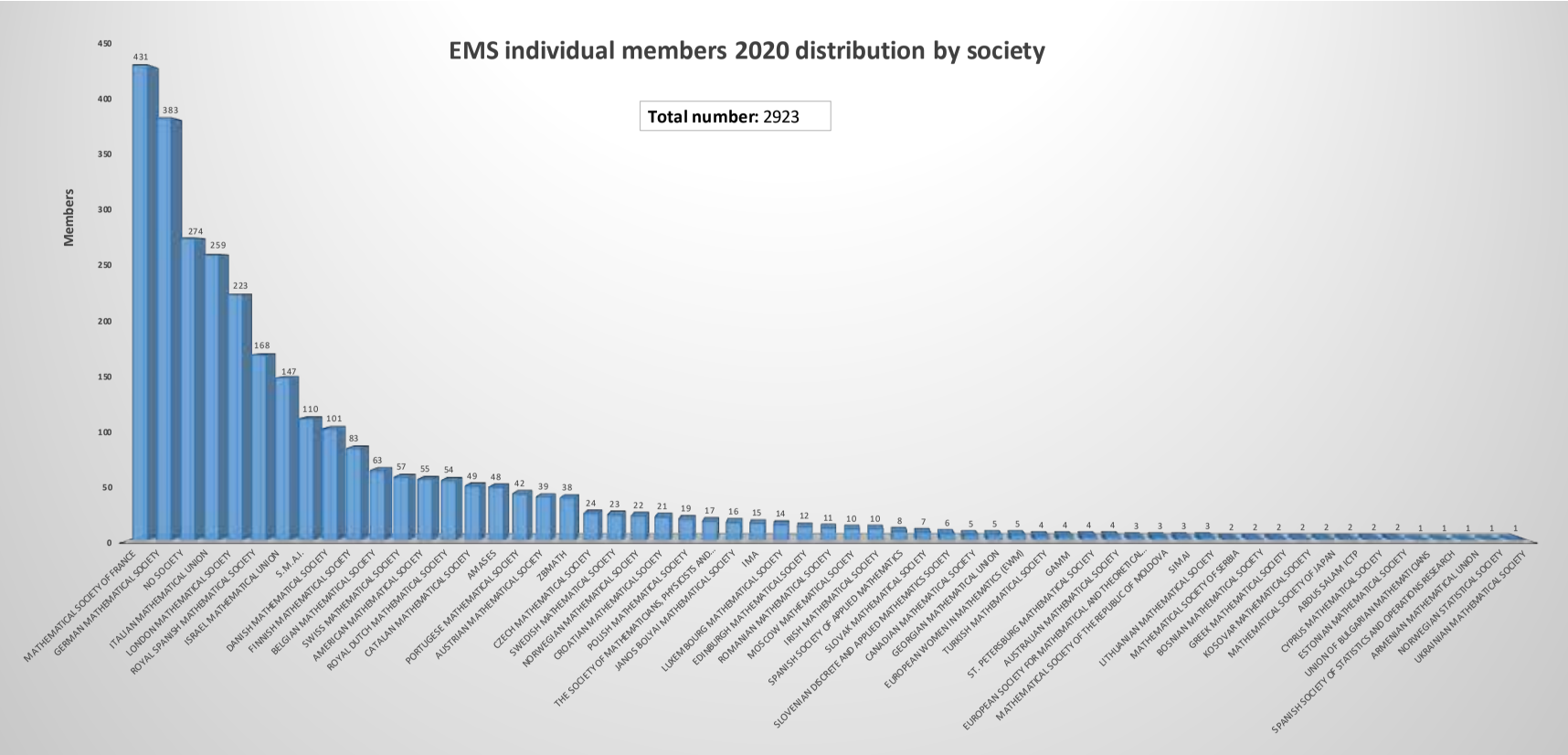


Figure 5: Distribution of individual members by society in 2020

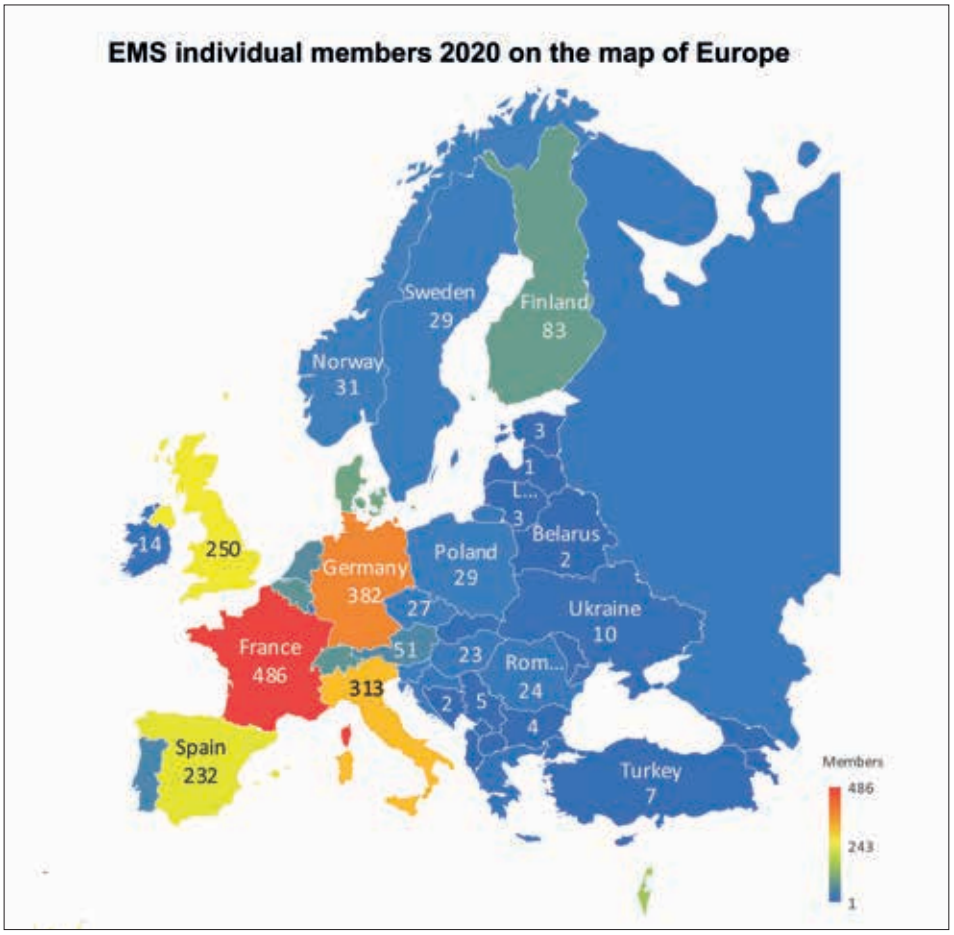


Figure 6: Distribution of individual members by country in 2020

Figure 7: Distribution of individual membership over the world

3.2. GOVERNANCE

The governing body of the EMS is its Council. The Council has delegates from all of the national societies which are members of the EMS, and it also has delegates representing the individual members of the Society. So, typically, a Council meeting includes about a hundred people from all over Europe. Evidently, it is not practical for Council meetings to be held very often, and in fact the Council meets every two years.

In between Council meetings, the Executive Committee (EC) represents the Society and carries out the wishes of the Council. The EC consists of up to ten members, including the President, two vice-Presidents, the Secretary, and the Treasurer. It meets at least twice each year, and of course it also transacts much of its discussions by email. It is also responsible for appointing committees to deal with particular aspects of the Society's work, and for convening and preparing the business for Council.

The work of the Society is mainly done through committees set up by the Executive Committee to cover all areas of mathematics.

The Applied Mathematics Committee wants to promote Applied Mathematics as a whole through and within EMS. It wants to cooperate with other, sometimes more specialised, societies on the European and global level and with applications-oriented member societies, especially in further improving the public and political awareness about the importance of mathematics to cultural, economic and social development.

The Committee for Developing Countries assists developing countries in all possible ways, such as developing mathematics curricula, libraries and sources of support funds.

The Committee for Education reports and where appropriate acts, on educational issues that are, or should be, of concern to EMS members, while not replicating work that is the responsibility of national mathematics societies.

The Ethics Committee focuses on promoting ethical behaviour in mathematical research, publication, and related matters. It will challenge unethical behaviour which includes, for example, plagiarism, duplicate publication, inadequate citations, inflated self-citations, dishonest refereeing, failing to address conflicts of interest or incorrect handling of submissions.

ERCOM is an EMS committee consisting of Scientific Directors of European Research Centres in the Mathematical Sciences, or their chosen representatives. Only European centres which are institutional members of the EMS, predominantly research oriented, with an international scientific board and a large international visiting programme, covering a broad area of the Mathematical Sciences are eligible for representation in ERCOM. The eligibility of centres is decided by the EMS Executive Committee after consultations with ERCOM.

The Committee for European Solidarity will undertake actions to foster the development of mathematics in economically less-favoured regions within the geographical area of EMS membership and is in charge of offering financial support to young researchers and organisers of events from institutions with a shortage of resources for mathematical research, among other funding initiatives.

The Meetings Committee offers advice to the Executive Committee in all questions related to meetings and summer school activities, proposals for EMS Weekends, as well as manages nominations for EMS Lecturers and EMS Distinguished Speakers.

The Committee on Publications and Electronic Dissemination was established as a result of the merger of the previous Committee on Electronic Publishing and the Committee on Publications in order to address issues relating to the publishing of scholarly mathematical literature including electronic publishing, Open Access and Digital Mathematics Libraries among others.

The Committee of Raising Public Awareness encourages and inspires actions directed towards raising public awareness of the importance of mathematics for contemporary society in a cultural and historical perspective and assists in the furtherance of concerted actions with other European or international organisations and societies in matters of raising public awareness of science and technology and other important aspects of society with a strong component of mathematics.

mathematics-in-europe.eu

The Committee for Women addresses issues relating to the involvement, retention and progression of women in mathematics, supports and promotes the recognition of the achievements of women mathematicians.

3.3. FINANCES

EMS and the Helsinki Office

As crazy as it may sound, there are no European societies. Even if the members come from all over Europe, a society has to be registered in one country and follow the law of that country. For the European Mathematical Society that country turned out to be Finland.

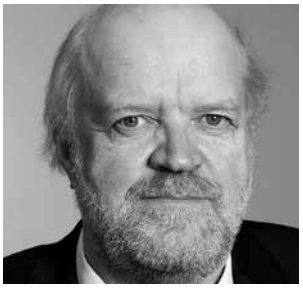
For a small country like Finland it is important to be visible in the international arena. As a neutral country standing outside the conflicts of the superpowers, Finland has often been entrusted with important international tasks such as high positions in the International Mathematical Union and the European Science Foundation. It was therefore natural for Aatos Lahtinen to offer Helsinki as the seat of EMS and easy for the founding meeting in Mądralin on 27-28 October 1990 to unanimously accept this offer.

Mats GYLLENBERG

TREASURERS

Aatos Lahtinen
1991-1998

Olli Martio
1999-2006



Jouko Väänänen
2007-2014

Mats Gyllenberg
2015-2022

In Finland the reactions to the decision in Mądralin to make Helsinki the seat of EMS were positive. The Finnish Ministry of Education provided funding for establishing the EMS office at the University of Helsinki. With the support of the ministry the EMS office in Helsinki could appoint Tuulikki Mäkeläinen as its first office manager. Since the initial support of the Ministry of Education ceased, the EMS office has been generously funded by the University of Helsinki. Tuulikki Mäkeläinen stayed with the EMS until 2006 and was succeeded by Riitta Ulmanen, Terhi Hautala and Erica Runolinna. The current office manager Elvira Hyvönen began her job with EMS in 2014. The Helsinki office employs also Matti Pauna as an IT-expert.

According to the Finnish Act of Societies, the president of a Society registered in Finland has to be a resident of the country unless the Finnish Patent and Registration Office grants exemption from this rule. In the early 1990s it took some efforts to convince the Patent and Registration Office of the necessity of allowing for a non-Finnish

president of the European Mathematical Society, but fortunately it has in recent years been more of a pushover. However, all the treasurers of EMS have been Finns. Although there is no rule to this effect, it has turned out to be useful. All legal documents including the financial statements are written in either Finnish or Swedish and without any member fluent in the two domestic languages of Finland it would be difficult for the Executive Committee to function properly. Being located in Helsinki the EMS naturally uses Finnish banks and it has therefore been convenient that the treasurer has been Finnish. The EMS has had four treasurers to date Aatos Lahtinen 1991-1998, Olli Martio 1999-2006, Jouko Väänänen 2007-2014 and Mats Gyllenberg 2015- , all Professors of Mathematics at the University of Helsinki.

The finances of the EMS are in good shape. During the first two decades the value of the assets of EMS grew more or less linearly reaching 335 000 Euro in 2010. Following a conservative investment policy 70 000 Euro were invested in funds and shares in the year 2000 and this was increased to 80 000 Euro only ten years later in 2010. Starting in 2015 the EMS is now employing a more active investment policy. The acquisition value of the EMS portfolio was 645 000 Euro on 31 December 2019. The market value was considerably higher: 789 911 Euro. When closing the books in 2019, the acquisition value of the EMS assets was 1 480 296 Euro. This includes the aforementioned shares in investment funds and also the ownership of the EMS Press.

The European Mathematical Society has now reached a stage of maturity and financial stability that makes it possible for the Society to support its members, both individual and institutional, more openhandedly than before. It is now up to the members to propose projects and activities that could be funded by the EMS. I foresee a great future for the European Mathematical Society.

3.4 MAIN ACTIVITIES

EMS Lecturer

Every year, the EMS appoints an EMS Lecturer. This is an honorary post, bestowed on an internationally renowned researcher, affiliated to a European institution. An EMS Lecturer is asked to deliver several lectures in various European places; one of the lectures is tied to an international conference in Europe. Costs of EMS Lecturers are supported by the EMS.

EMS Distinguished Speaker

An EMS Distinguished Speaker is a prestigious appointment, awarded by the EMS to an internationally renowned researcher. An EMS Distinguished Speaker is asked to deliver a plenary lecture at a large regional or international European conference. Costs of EMS Distinguished Speakers are supported by the EMS.

EMS Joint Mathematical Weekend

An EMS Weekend is a regional European conference, interdisciplinary and covering several mathematical fields; usually organised jointly with one or several corporate societies. The EMS provides partial financial support to the organisation.

Special Activities

In special circumstances, the EMS may consider contributing to scientific activities not belonging to any of the types listed above. Since resources are scarce, only a very limited number can be partially supported.

Activities endorsed by the EMS

The EMS provides the logo as sign of scientific quality, but not financial support. These activities are susceptible of hosting EMS Distinguished speakers and EMS Lecturers.

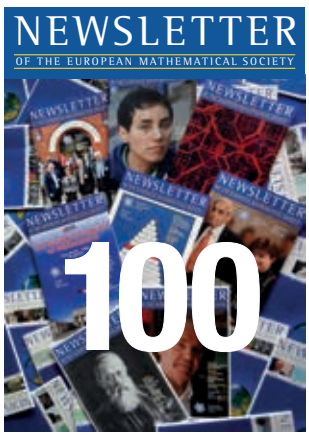
Summer Schools

A prototype event is a one-week school on a given mathematical area, with at least two courses of 10 hours each. The core programme can be complemented with tutorials and poster sessions by the participants. Proposals should be on topics contributing to the advancement of mathematics and its applications.

EMS NEWSLETTER

The EMS Newsletter is the journal of record of the European Mathematical Society and is one of the most widely read periodicals in Europe dealing with matters of interest to the mathematical community. The Newsletter features articles outlining current trends in the mathematical sciences, interviews with mathematicians, reports on the life and the initiatives of the EMS and its member societies, announcements and reports on meetings and conferences, and many other issues.

The Newsletter appears four times a year (March, June, September, December). It is sent to all individual members of the EMS, approximately



EDITORS-IN-CHIEF

Ivan Netuka
issues 1-21

David Singerman
issues 1-21

Roy Bradley
issues 22-30

Robin Wilson
issues 31-49

Martin Raussen
issues 50-68

Vicente Muñoz
issues 69-86

Lucia Di Vizio
issues 85-100

Valentin A. Zagrebnov
issues 101-116

2500 mathematicians, and to mathematical institutes and member societies. The Newsletter of the EMS is therefore an excellent medium for companies and institutions to advertise products and services to the community of mathematicians, statisticians, computer scientists, engineers, and other professionals who are regular readers of this popular publication.

PUBLISHING HOUSE

The EMS Publishing House was first established in 2001 in Zurich, under a legal entity called "the European Mathematical Foundation" - this allowed the publisher to remain true to the not-for-profit mission of the European Mathematical Society. Founding Managing Director, Thomas Hintermann, strongly supported by the EMS president Rolf Jeltsch and ETH Zürich, undertook this venture with the aim of better serving the mathematics community by taking control of publications back from large commercial publishers. The new publisher was founded on an editorial principle that remains a core part of the Press's philosophy to this day:

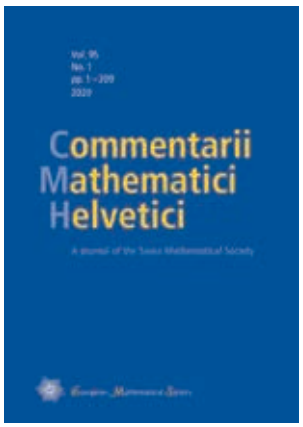
"The collection and presentation of scientific results belong in the hands of people who can do it

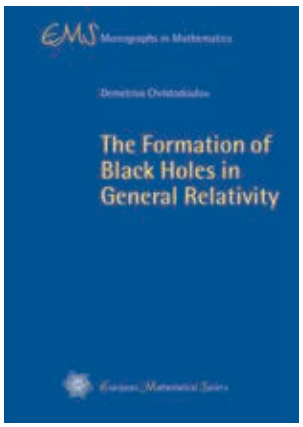
effectively [...] However, commercialism should not determine or influence the way this process is being conducted."

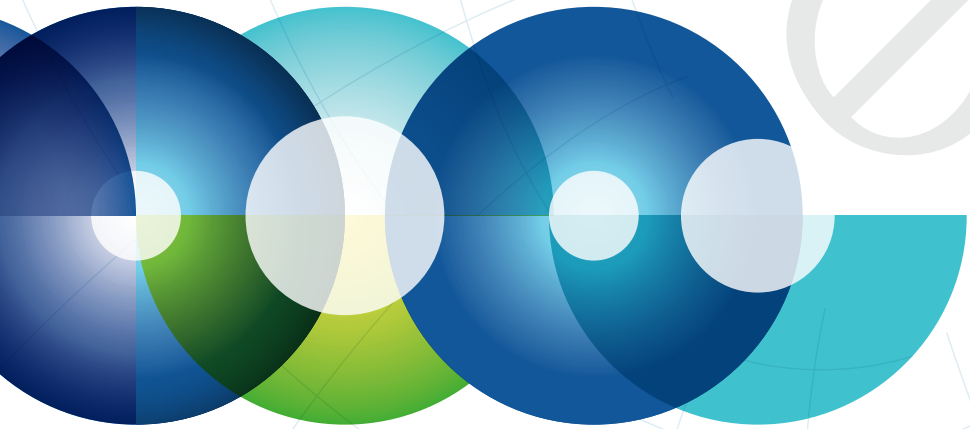
With robust editorial practices and strong leadership, the publishing house grew and became the established and successful organisation you see today. In 2019 Hintermann announced his retirement and a new leadership team took the helm.

Moving to Berlin, the Publisher was refounded as the EMS-owned European Mathematical Society - EMS - Publishing House GmbH. The newly established organisation also gained a new Managing Director in Dr. André Gaul, a bold rebrand, and a new imprint - EMS Press. The Publishing House is overseen by an EMS supervisory board, which meets biannually and authorises major decisions within the company. Today the Press publishes 20 journals and around 15 books per year, and has a backlist of some 200 titles.

The future will see the Press transition its publications to a fair model of Open Access that best serves both the Society and the wider mathematics community. By employing modern technologies, the Press aims to increase editorial output and improve researcher experiences when working with us to publish their research. Ultimately, the Press aims to sit at the heart of the mathematics community, as the home of accessible, high-quality mathematical research.







4. FUTURE

Volker MEHRMANN

Taking up on Jean-Pierre Bourguignon's excellent account of the last 30 years, let us look at the future of mathematics in Europe and the EMS. Mathematics has always been, and will be even more so in the future, a key factor in the development of our highly complex world. As someone who is mainly working on the applied side of mathematics, let me cite from the vision of the mathematical research centre MATHEON in Berlin, which I chaired from 2008 to 2014.

Key technologies become more complex, innovation cycles get shorter. Flexible mathematical models open new possibilities to master complexity, to react quickly, and to explore new smart options. Such models can only be obtained via abstraction. This line of thought provides our global vision: innovation needs flexibility, flexibility needs abstraction, the language of abstraction is mathematics. But mathematics is not only a language, it adds value: theoretical insight, efficient algorithms, optimal solutions.

In view of the digital age with quickly evolving developments in areas such as artificial intelligence, machine learning, autonomous driving, or digital twins, this vision of the role of mathematics is still true but it needs some extensions such as:

Mathematics allows to quantify uncertainty and risk, it provides reliability and robustness to technological developments or the understanding of world-wide crises like corona or global warming.

Many colleagues in the mathematical community are taking up these challenges and work in interdisciplinary cooperation to further the developments in all areas of science and engineering, while others prefer to work on long-term mathematical conjectures or extend deep theories. The mathematical community of the future strongly needs all these research activities. And, we often get pleasantly surprised when centuries old mathematical results suddenly become 'applied' and are used. Since the development of new mathematical research is at an extremely high level and is going very strong in Europe, further successes can be anticipated.

So, can we just lean back and be proud of our great achievements of the past? **No!**

Today's developments are happening so fast and are so complex that we need many more mathematicians and we need better mathematics education, in particular for the students in all other sciences. I think that we are not prepared for this.

The mathematical community, and EMS in particular, has to fight for the necessary resources at the European Commission level and in

every country in Europe and the whole world. We have to keep and increase the high level of research that is going on in all areas of mathematics, keep and improve the level of mathematical education through Europe and at the time make major efforts to cooperate with other sciences and engineering to bring new research results and developments into practice.

4.1. STRATEGIES

As an active scientific organisation, the EMS has to move into many directions. Most EMS standing committees share this task by working hard to lower the gender gap, to bring mathematics into the public, to set ethical standards, or to get the attention of the funding bodies and political stakeholders. These are continuous tasks and the whole community has to work together on them.

Mathematics, despite its importance, is a very small scientific community, and to be successful we all have to work together. This requires mutual respect for the differences in fields, cultures, gender, or age.
Strategically, several unsuccessful attempts have been made to initiate a mathematical strategic research agenda within the EU and to lobby in Brussels, e.g. via the EU-MATHS-IN initiative that was founded by the EMS and ECMI, the European Consortium for Mathematics in Industry. Currently, a new attempt is being set up by allying forces with the Big Data and High Performance Computing groups.

4.2. OPEN ACCESS AND FAIR RESEARCH DATA

A disruptive development is currently taking place in the context of scientific publishing and the treatment of scientific data. There is an enormous increase in the numbers of publications, while very often the quality check is missing and the costs for journals and books are

very high. Many academic institutions require certain numbers of publications in high impact factor journals for promotions or salary increase. Even the mathematical community often uses very biased criteria in evaluating the quality of research, by mainly checking the publications in the leading journals.

How can we counteract this threatening development?

The mathematical community has been for a long time on the forefront of establishing an accessible, efficient, fair and transparent scholarly publishing system. Mathematicians typically make their papers available via the arXiv platform and use it as de facto standard for Open Access (OA) deposits. Many important journals have been turned to OA, or new community driven OA journals are established.

The EMS is leading the European Digital Mathematics Library (EuDML) and is also co-editing the Zentralblatt für Mathematik (zbMATH) jointly with FIZ Karlsruhe and the Heidelberg Academy of Sciences. It is great news that zbMATH will become fully OA in January 2021. The Newsletter of the EMS is directly OA and will be transformed to an EMS Magazine this fall.

For the EMS the primary goal of scientific publishing is *quality assurance and sustainable availability of scientific knowledge*. The EMS has strongly objected to the implementation of incentives that may pose a danger to scientific quality, like an economic bias towards wealthy authors or institutions, the substitution of content assessment in science by bibliometric measures or Plan S advocated by the European Commission.

But *all this is not enough* and therefore the EMS has decided to create an OA business model for the publications published by the recently reorganised EMS publishing house, which now operates as EMS Press. EMS Press will establish a Subscribe-to-Open model, which will give authors and readers direct and cost-free open access to the high-quality journals of the EMS, while the scientific libraries as our partners keep paying their usual subscription fees.

Another important development in which the EMS has to get active in the future is the concept of *FAIR (findable, accessible, interoperable and reusable)* research data. In Mathematics this not only includes publications and mathematical software but also geometric models, formulas, or theorems. These FAIR principles are a laudable goal that will improve the openness of science, but there are great challenges in achieving this goal. This not only concerns the storage of massive data, e.g. from numerical simulations, but also how to standardise the way to find and access mathematical formulas or theorems, when different communities use different terminology. Many people in the mathematical community seem to ignore this development. This may lead to real threats, if standards are decided that are incompatible with our current methods of presenting mathematical research. The mathematical community must unite to make the FAIR principles realistic for mathematics and the neighbouring sciences that use mathematics as their common universal language.

4.3. ACTIVITY GROUPS AND THEMATIC CONFERENCES

The EMS is lagging behind in the Europe-wide organisation of thematic research proposals, research training groups, conferences, workshops, and similar activities. As first step in this direction, the EC is proposing to the Council to introduce Europe-wide EMS activity groups on

specific topics and fields. Such groups will organise themselves across Europe, initiate consortia for research proposals to funding bodies like the European Commission, the ERC, or other international organisations. It will also organise workshops. The goal of each activity group will be to increase pan-European cooperation, to intensify the links and to be at the forefront of worldwide research in the group's area. Following similar models in member societies of the EMS, such activity groups are granted for a fixed number of years and report regularly to the EC, the Council and the whole EMS community.

Initiating within the activity groups, in the future the EMS will also host thematic pan-European or international conferences and workshops on some important specific and highly relevant research topics. The EMS will support these meetings, which also may take place jointly with other societies.

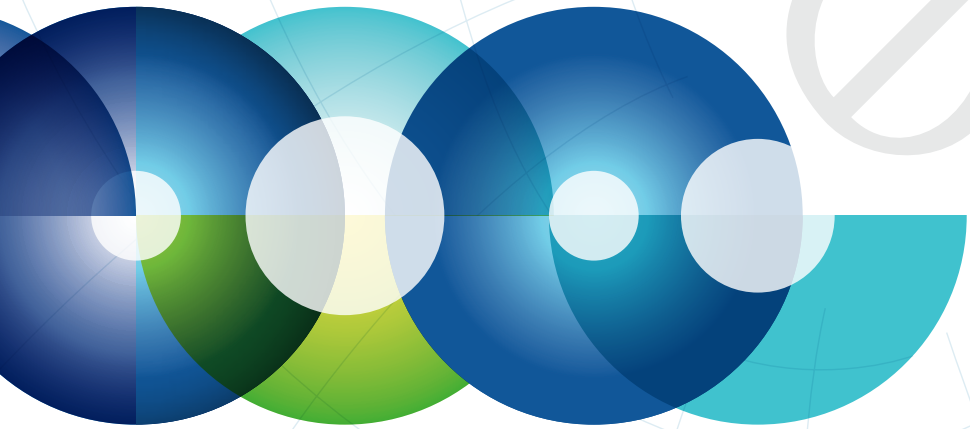
Following the successful model of the Caucasian Mathematics Conference which brings together mathematicians from countries which are not necessarily on good terms, the EMS is also planning to organise such regional meetings in other areas (such as the Balkans) where past political events still make cross-boundary scientific collaboration difficult.

4.4. THE YOUNG ACADEMY

The future of the mathematical community and the EMS lies in the next generation of researchers, but the strategic decisions are made by the old generation who often resist new ways of exchanging knowledge or new procedures and also set the rules how promotions are decided, how awards are given, etc.

Young researchers often ask why and how they should take part in the community and how they can bring fresh ideas into the decision-making processes. The EMS Executive Committee has therefore developed ideas on how to do this. It will propose to the Council to introduce an *EMS Young Academy*, where every year a number of young mathematicians are selected to form the youth organisation of the EMS. This group should highlight new research priorities, inject new thinking into the society, and make suggestions for change. It will actively participate in the Executive Committee, to move the EMS forward into the future.

The youngest academy: the last 3 presidents!



5. CAN THE STORY END?

Betül TANBAY

"There is no European society" wrote our Finnish treasurer. Treasurers are always right. Then why not ask: Is there a Europe? Is there Mathematics? All might be just a story, a tale, but so far the story continues.

We are in a place where ideas, discoveries coming from everywhere in the world became ideologies, theories. Europe, despite its size, is in some sense the continent of universalisation. Mathematics is a great example.

"Borders" have been a serious issue in mathematics as well as in politics. The political border of Europe is a variable. The mathematical border of Europe is rather a parameter. Politicians' attitudes vary unreliably, those of mathematicians' present a continuity. From the correspondence between Cartan and Hirzebruch in the nineties (see p.70) to the presentations of past and future of the EMS by Bourguignon

and Mehrmann in this booklet, the broad European vision and goals for mathematics have not changed much.

Coming from an "extreme point" of Europe, I have witnessed the warm welcome the Turkish Mathematical Society received during Ari Laptev's presidency, continued by the creation of the Caucasian Mathematical Conference under Marta Sanz-Solé, followed by the invitation of a Turkish mathematician in the Executive Committee during Pavel Exner's term, and all this, despite a period of continuously deteriorating political relations. The history of mathematics in this wide sense of Europe is too long to be threatened by forces of short-term politics. Thales is from Asia Minor and Thales is from Europe.

No matter how the planet evolves, the period during which this booklet was prepared will be marked by the pandemic that confined people in almost the whole world to their homes and changed probably forever the relation between culture and technology. With all its shortcomings, there has emerged again a "European way" of dealing with the crisis and there will have to be "European" solutions to find reasonable ways of life after this pandemic. Scientific policy makers will have to reevaluate the importance of basic research.

A historian colleague said in an interview that what he learnt from this crisis was the need for mathematical literacy. Biologists and medical doctors never needed mathematicians as urgently as in this crisis. Mathematics as a basis for common life has to be finally accorded its rightful place, from early education to high-level research.

In mathematics, as in music, dance or literature, the emergence of new ideas is the product of a long gestation, long readings, long interactions and a lot of repetition. The process has a rhythm and a content to be respected, including the "usefulness of useless knowledge". Technology can help to accelerate some of the process, but "thought" has its own time and timing.

The environment needed for "thought" and critical thinking is also crucial. If we still witness the solving of a famous long-standing problem by a graduate student, it is because the education-research relationship is still healthy. The university environment is a must for a young scientist as well as for an experienced one. Advancement in research is never solely the work of one "bright guy". The future needs and relies on the past and the present.

After a period of foolish traveling, huge investments, unnecessary consumption habits, human beings will have to learn to live with less. The work and consumption manners of mathematical communities and institutions can easily be taken as a reference. We have always liked optimization and feared waste.

The fine balance between remaining human and pushing the limits of curiosity is in the essence of mathematics. The EMS can certainly help Europeans in the quest to become a diverse but harmonious society and mathematics can certainly help humanity in the fight for a healthier and safer planet, and for a better world.

PROF. DR. FRIEDRICH HIRZEBRUCH
THÜRINGER ALLEE 197
4000 ST. AUGUSTIN 3
D-53757

3. Juli 1994

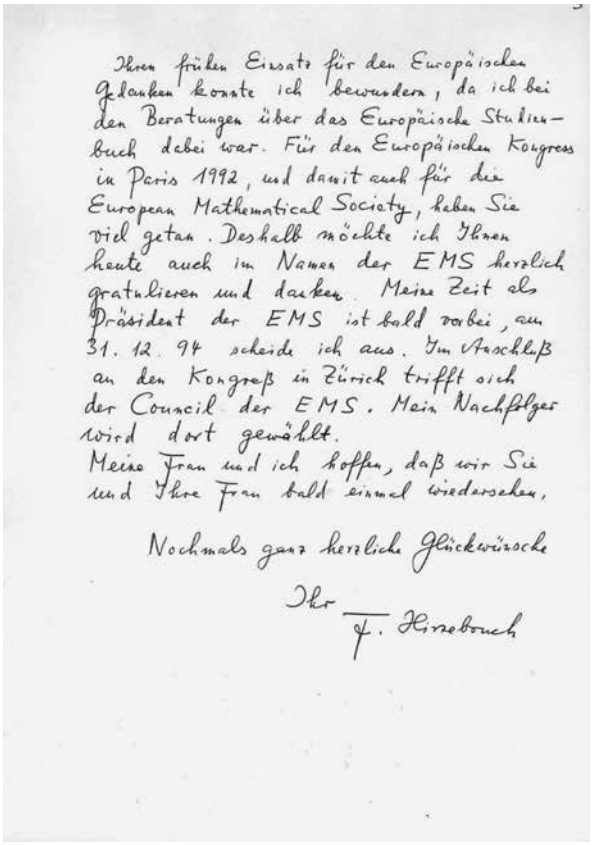
Lieber Herr Cartan!

Zu Ihrem 90. Geburtstag möchten meine Frau und ich ganz herzlich gratulieren und Ihnen und Ihrer Frau Gesundheit und Wohlergehen wünschen. Hoffentlich wird Sie dieser Brief zum 8. Juli rechtzeitig erreichen. Wegen gelegentlicher Poststreiks in Deutschland ist dies nicht ganz sicher.

Ich freue mich sehr, daß Sie die Ehrenmitgliedschaft der Deutschen Mathematiker-Vereinigung angenommen haben, und danke Ihnen sehr herzlich für Ihre Grüße an mich in Ihrem Antwortschreiben an Herrn Grötschel, wo Sie auch meine Habilitation erwähnen (1955). Damals fragte ich Behnke, wie mein Vortrag sein solle. Er antwortete: „Ganz einfach. Der Dekan, ein Pharmazeute, muß es verstehen, und Cartan muß es interessant finden."

Meine Frau und ich sind Ihnen und Ihrer Frau häufig begegnet. Das war immer eine große Freude für uns. Wir denken zum Beispiel an das Zusammentreffen in Dubna und Moskau beim ICM 1966, als Sie zum Präsidenten gewählt wurden und Ihre segensreiche Tätigkeit für die IMU, u.a. auch mit der Vorbereitung des ICM 1970 in Nizza, begann. Anfang August reisen meine Frau und ich zum ICM 1994 nach Zürich. Vorher ist die Versammlung der IMU in Luzern, an der ich teilnehme. Ich hoffe, daß dort die Einladung nach Berlin (1998) endgültig akzeptiert wird. Heinrich Behnke hat immer gesagt, der Kongreß müsse endlich einmal wieder in Deutschland stattfinden (zuletzt Heidelberg 1904), und war traurig, daß die Einladung nach Deutschland für 1966 nicht realisiert werden konnte, da die erste Einladung in die Sowjetunion natürlich vorging. Ähnlich war es 1990, als Ostasien vorging. Nun wird vielleicht im Jahre seines 100. Geburtstages der ICM nach Deutschland kommen.

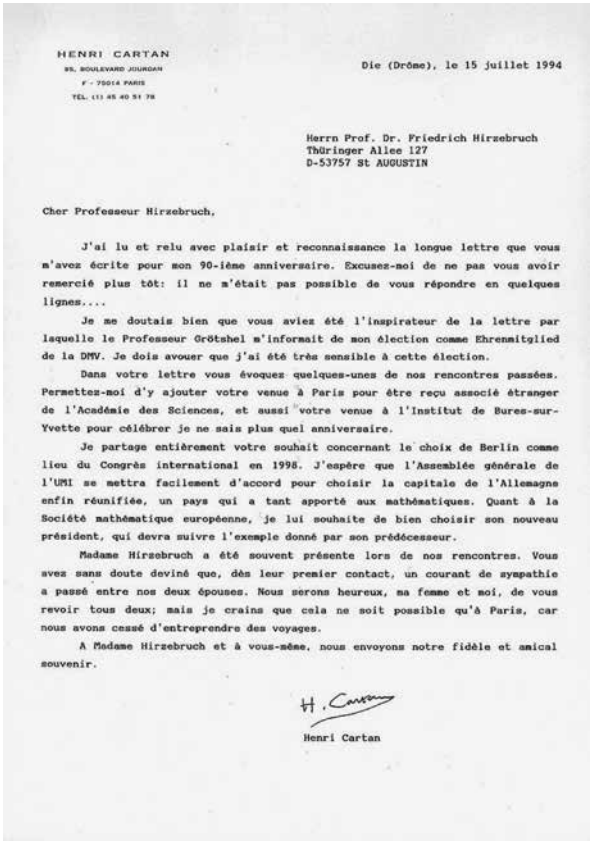
Ich weiß nicht, ob ich Sie bei Ihrem Besuch in Münster 1947 gesehen habe. Gesprochen habe ich Sie wohl zum erstenmal, als ich 1951/52 als junger Assistent von Erlangen aus nach Oberwolfach kam. Ich gehöre zu den vielen Mathematikern in Deutschland, denen Sie nach dem Kriege Mut und Kraft geschenkt haben. Im Dezember 1953 haben Sie im Bourbaki-Seminar über meine Dissertation vorgetragen. So denke ich dankbar an vieles zurück.



Ihren frühen Einsatz für den Europäischen Gedanken konnte ich bewundern, da ich bei den Beratungen über das Europäische Studienbuch dabei war. Für den Europäischen Kongress in Paris 1992, und damit auch für die European Mathematical Society, haben Sie viel getan. Deshalb möchte ich Ihnen heute auch im Namen der EMS herzlich gratulieren und danken. Meine Zeit als Präsident der EMS ist bald vorbei, am 31. 12. 94 scheide ich aus. Im Anschluß an den Kongreß in Zürich trifft sich der Council der EMS. Mein Nachfolger wird dort gewählt.
Meine Frau und ich hoffen, daß wir Sie und Ihre Frau bald einmal wiedersehen,

Nochmals ganz herzliche Glückwünsche

Ihr
F. Hirzebruch



HENRI CARTAN
85, BOULEVARD JOURDAN
F - 75014 PARIS
TÉL. (1) 45 40 51 78

Die (Drôme), le 15 juillet 1994

Herrn Prof. Dr. Friedrich Hirzebruch
Thüringer Allee 127
D-53757 St AUGUSTIN

Cher Professeur Hirzebruch,

J'ai lu et relu avec plaisir et reconnaissance la longue lettre que vous m'avez écrite pour mon 90-ième anniversaire. Excusez-moi de ne pas vous avoir remercié plus tôt: il ne m'était pas possible de vous répondre en quelques lignes....

Je me doutais bien que vous aviez été l'inspirateur de la lettre par laquelle le Professeur Grötshel m'informait de mon élection comme Ehrenmitglied de la DMV. Je dois avouer que j'ai été très sensible à cette élection.

Dans votre lettre vous évoquez quelques-unes de nos rencontres passées. Permettez-moi d'y ajouter votre venue à Paris pour être reçu associé étranger de l'Académie des Sciences, et aussi votre venue à l'Institut de Bures-sur-Yvette pour célébrer je ne sais plus quel anniversaire.

Je partage entièrement votre souhait concernant le choix de Berlin comme lieu du Congrès international en 1998. J'espère que l'Assemblée générale de l'UMI se mettra facilement d'accord pour choisir la capitale de l'Allemagne enfin réunifiée, un pays qui a tant apporté aux mathématiques. Quant à la Société mathématique européenne, je lui souhaite de bien choisir son nouveau président, qui devra suivre l'exemple donné par son prédécesseur.

Madame Hirzebruch a été souvent présente lors de nos rencontres. Vous avez sans doute deviné que, dès leur premier contact, un courant de sympathie a passé entre nos deux épouses. Nous serons heureux, ma femme et moi, de vous revoir tous deux; mais je crains que cela ne soit possible qu'à Paris, car nous avons cessé d'entreprendre des voyages.

A Madame Hirzebruch et à vous-même, nous envoyons notre fidèle et amical souvenir.

H. Cartan

Henri Cartan

the story continues ...

European
Mathematical
Society

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