International Study Group on the Relations Between the HISTORY and PEDAGOGY of MATHEMATICS An Affiliate of the International Commission on Mathematical Instruction

Nᵒ 106   **March 2021**

A MESSAGE FROM HPM CHAIR

As we approach the middle of March in 2021, we are all certainly hoping that the spring may bring an easier and healthier life to all around the globe. But as the pandemic still rages in different parts of the world, we also reflect on all those we lost in the past year: our loved ones, and our friends and colleagues. We also think of all the opportunities that are lost due to this dreadful disease. One of these of course was the postponement and final acceptance of the reality to have a (very) hybrid meeting of the HPM this year in Macau.

I am, however, pleased to say that this meeting will go ahead in July, and you will find the dates and all the currently known information in the next piece.

The Advisory Board has also spoken in the past about having online meetings during the pandemic; this summer's meeting in Macau will of course give us opportunities to meet either in person or online. We are planning a number of sessions when we will not only exchange knowledge and information, but relax and chat as we would have done had we been able to meet in person.

Please make sure also to look at the first call for paper proposals for the ESU-9, which will take place in the summer of 2022. Let us hope that by then we will be out of the restrictions and be able to meet again in person.

Until then, I wish you, and all your loved ones, the best of health.

Snezana Lawrence

HPM 2020
History and Pedagogy of Mathematics (HPM) 2020 – Satellite Meeting of ICME-14

New dates: 20–22 July 2021
University of Macau

Important Announcement:

The 2020 HPM Conference will be held in a hybrid system: **online** and in the **University of Macau** in SAR Macao, China.

Further information will be announced in the near future.

Website

The website is available at **https://www.um.edu.mo/fed/HPM2020/** You can use the website as an efficient tool to help promote the HPM 2020 Satellite Meeting to colleagues and friends around the world, for online registration, and to obtain information and the conference program.

1. *Aim and Focus*
HPM 2020 is the tenth quadrennial meeting of the International Study Group on the Relations Between the History and Pedagogy of Mathematics—the HPM Group. The HPM Group is an affiliated study group of the International Commission on Mathematical Instruction (ICMI).[1] By combining the history of mathematics with the teaching and learning of mathematics, HPM connects the past and the future of mathematics. Therefore, the group aims to stress the conception of mathematics as a living science, a science with a long history, a vivid present, and an as yet unforeseen future.

These quadrennial meetings are a major activity of HPM to bring together individuals with a keen interest in the relationship between the history of mathematics and mathematics education. They include:

- Researchers in mathematics education who are interested in the history of mathematics and mathematical thinking;
- Mathematics teachers at all levels who are eager to gain insights into how the history of mathematics can be integrated into teaching and how they can help students to learn mathematics;
- Historians of mathematics who wish to talk about their research;
- Mathematicians who want to learn about new possibilities to teach their discipline; and
- All those with an interest in the history of mathematics and pedagogy.

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[1] See https://www.mathunion.org/icmi/organization/affiliated-organizations

2. *Time and Place*

<mark>The 2020 HPM Conference will be held in **summer of 2021** in a hybrid system: **online** and in the **University of Macau** in SAR Macao, China.</mark>

With a fascinating history of 400 years of cultural exchanges between the East and the West, Macao is unique in its cultures and society. It boasts many cultural treasures of all types, including picturesque dwellings in traditional styles, ancient temples built during the Ming and Qing dynasties, buildings with Southern European architectural features, baroque style churches and impressive contemporary structures. In July 2005, the historic district collectively known as the "Historic Centre of Macao" was inscribed on the UNESCO World Heritage List. Today, Macao is a Special Administrative Region (SAR) of the People's Republic of China, benefiting from the "one country, two systems" policy. Macao SAR is growing in the number and diversity of its attractions; the greatest of these continues to be Macao's unique society, with communities from the East and the West complementing each other. It offers a perfect environment for an international conference.

Please note that HPM 2020 takes place after the conclusion of ICME-14 in **Shanghai, China.** Its scientific program includes oral presentations and activities on the history and pedagogy of mathematics (TSG 27) and on the history of mathematical teaching (TSG 55).

3. *HPM 2020 Topics*

The program and activities of HPM 2020 are structured around the following topics:

1. Theoretical and/or conceptual frameworks for integrating history in mathematics education.
2. History and epistemology in students' and teachers' mathematics education: Classroom experiments and teaching materials.
3. Original sources in the classroom and their educational effects.
4. Mathematics and its relation to science, technology, and the arts: Historical issues and interdisciplinary teaching and learning.
5. Cultures and mathematics fruitfully interwoven.
6. Topics in the history of mathematics education.
7. History of Mathematics in China and Eastern Asia.

4. *Activities During the 2020 HPM Conference*

The HPM Conference is a place where mathematicians, educators, historians, researchers, and students can make presentations and participate in discussions.

The program includes:

- plenary lectures;
- panels;
- workshops;
- parallel sessions where participants present research reports;
- poster exhibitions; and
- exhibitions of books and other didactical material.

Plenary sessions and the panel deal with the main topics of the conference. Plenary speakers and panelists are invited by the International Program Committee (IPC).

Social activities include a gala dinner and excursions.

5. *Plenary Lectures and Panel*

[As originally invited; confirmations for 2021 participation are pending.]

Plenary Lectures:

History of Mathematics as a Way of Relating to Mathematics of the Past: The Case of Edmond Halley and Apollonius
Michael N. Fried, Ben Gurion University of the Negev, Beer-Sheva, ISRAEL

"I would like to introduce history in my mathematics lessons but I do not know how to do it!"
Marc Moyon, University of Limoges, FRANCE

Using Original Sources in the Classroom to Enrich the Mathematical Learning Experience
Mary Flagg, University of St. Thomas, Houston, Texas, USA

Mathematical World (or Worlds?) in the Context of HPM
Man Keung Siu, The University of Hong Kong, Hong Kong SAR, CHINA

Algebra in Swedish Mathematics Textbooks During the Era of Great Power
Johanna Pejlare, Chalmers University of Technology and the University of Gothenburg, SWEDEN

Matteo Ricci and the Introduction of Euclid's Elements in China
Luis Saraiva, University of Lisbon, PORTUGAL

Plenary Panel:

History of Mathematics Education in China: Its Features, Influences, and Modern Values
Yiwen Zhu (Panel Coordinator), *Sun Yat-sen University,* The city of Guangzhou, Guangdong Province, CHINA
(With panel member Shuyuan Pan, CHINA; Shirong Guo, CHINA; and Alexei Volkov, TAIWAN, CHINA)

6. *Official Languages*
The official languages of the conference are English and Chinese. Oral presentations will be given in either English or Chinese.

7. *Proceedings*
Full texts for inclusion to the HPM 2020 *Proceedings* will be submitted *__after__* HPM 2020 and will be further reviewed by members of the IPC by the usual international standards. In all other cases, abstracts that have been accepted and presented at the conference meeting in Macao will also be included in these *Proceedings*. Details on the procedure and the deadline for submitting full texts, their size, the format guidelines, and the expected date by which the proceedings will be available to all registered participants, will be announced in due course in the HPM 2020 website (https://www.um.edu.mo/fed/HPM2020) and the HPM website (http://www.clab.edc.uoc.gr/hpm).

8. *Registration Fees*
More details will be provide in the future.

9. *Accommodation*
More details will be provide in the future.

10. *Visits and Excursions*
More details will be provide in the future.

11. *The International Program Committee (IPC)*
The IPC includes the following groups:

HPM 2020 Chairs
Snezana Lawrence, Middlesex University (UK), Chair
Chuang Wang, University of Macau (Macao), Co-Chair
Xuhua Sun, University of Macau (Macao), Co-Chair

HPM Executive Committee
Évelyne Barbin (France), former chair 2008-2012
Ewa Łakoma (Poland)
Frédéric Métin (France)
Luis Puig (Spain)
Michael N. Fried (Israel)

Participating HPM Advisory Board Members
Luis Carlos Arboleda (Colombia)
Janet Barnett (USA)
Aline Bernardes (Brasil)
Nathalie Chevalarias (France)
Renaud Chorlay (France)
Cecilia Costa (Portugal)
Teresa Costa (Portugal)
Adriano Demattè (Italy)
Olivera Đokić (Serbia)
Florence Fasanelli (USA)
Gail FitzSimons (Australia)

David Guillemette (Canada)
Sunwook Hwang (Korea)
Masami Isoda (Japan)
Uffe Thomas Jankvist (Denmark)
Tinne Hoff Kjeldsen (Denmark)
Dominic Klyve (USA)
Tsang-Yi Lin (Taiwan)
Po-Hung Liu (Taiwan)
Maria Rosa Massa-Esteve (Spain)
Iran Mendes (Brasil)
Marc Moyon (France)
Garrod Musto (UK)
Kostas Nikolantonakis (Greece)
Antonio M. Oller-Marcén (Spain)
Maurice OReilly (Ireland)
Danny Otero (USA)
Johanna Pejlare (Sweden)
David Pengelley (USA)
Hélder Pinto (Portugal)
Johan Prytz (Sweden)
Peter Ransom (UK)
Leo Rogers (UK)
Sebastian Schorcht (Germany)
Gert Schubring (Germany)
Man Keung Siu (China)
Bjørn Smestad (Norway)
Yi-Wen Su (Taiwan)
Constantinos Tzanakis (Greece)
Desiree van den Bogaart (Netherlands)
Caterina Vicentini (Italy)
Ysette Weiss (Germany)
Greicy Winicki-Landman (USA)

12. *The Local Organizing Committee (LOC)*

Co-Chairs: Chuang Wang, Pak Sang Lou

Co-Associate Chairs: Kong Chi Meng

UM Members: Kwok Cheung Cheung, Boby Ho-Hong Ching; Chunlian Jiang, Xiaoqing Jin

Macao School Members: Hong Yuan Hong, Ian Nam Wong, Tak Seng Lai, Sao Kei Si, Ka Lei Che

Mainland Committee:

Wang Xiaoqin (East China Normal University)

Ji Zhigang (School of History and Culture of science, Shanghai Jiao Tong University)

Xu Zelin (Donghua University)

Song Naiqing (Southwest University, China)

Zou Dahai (Chinese Academy of Sciences)

Zhang Hong (Sichuan Normal University)

Dai Qin (Inner Mongolia Normal University)

Cao Yiming (School of Mathematical Sciences, Beijing Normal University)

Pu Shuping (College of Elementary Education, Chongqing Normal University)

Taiwan Committee:

Liu Po-hung (National Chin-Yi University of Technology)

Jia-Ming Ying (National Taipei University of Education)

Tung-Shyan Chen (National Chin-Yi University of Technology)

Hong Kong Committee:

Chan Yip-Cheung (Chinese University of Hong Kong)

Wong Ka-Lok (University of Hong Kong)

Tang Mei-yue (formerly Hong Kong Education and Manpower Bureau)

13. *Contact*

For further information, please contact:

• Snezana Lawrence (Chair), snezana@mathsisgoodforyou.com
• Xuhua Sun (Co-Chair), hpm2020macao@gmail.com

ESU 9
9th EUROPEAN SUMMER UNIVERSITY ON THE HISTORY AND EPISTEMOLOGY IN MATHEMATICS EDUCATION

18-22 July 2022

*University of Salerno
(Department of Mathematics)
Fisciano (SA), Italy*

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https://www.instagram.com/esu9_salerno
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FIRST ANNOUNCEMENT

A Summer University (SU) on the History and Epistemology in Mathematics Education began as an initiative of the French Mathematics Education community in the early 1980s. From those meetings emerged the organization of a SU on a European scale and became the *European Summer University (ESU) on the History and Epistemology in Mathematics Education*. The first ESU was organized in Montpellier (France), 1993. Since then, ESU has been successfully organized in different places in Europe: Braga (Portugal), 1996; Louvain-la-Neuve and Leuven (Belgium), 1999; Uppsala (Sweden), 2004; Prague (Czech Republic), 2007; Vienna (Austria), 2010; Copenhagen (Denmark), 2014, Oslo (Norway), 2018. It has now been integrated into one of the main international activities of the HPM Group, which - from 2010 onwards - is organized every four years. Thus, every two years at least one major international meeting of the Group takes place; namely, ESU and the HPM Satellite Meeting of ICME.

1. Aim
The principal aims of the ESU are:
- to provide a forum for presenting research in mathematics education and innovative teaching methods based on a historical, epistemological and cultural approach to mathematics and their teaching, with emphasis on actual implementation;
- to offer an opportunity for mathematics teachers, educators and researchers to share their historical knowledge, their teaching ideas and classroom experience related to this perspective;
- in this way, to motivate further collaboration along these lines, among members of the mathematics education community in Europe and beyond.

2. Rationale
ESU attempts to bring out the following aspects of mathematics:
• Mathematics is a human intellectual enterprise with a long history and a vivid present. Besides its "polished" products, those that can be communicated, criticized and incorporated into the body of mathematical knowledge, the process of "doing mathematics" is equally important, especially from a didactical point of view;
• From this perspective, the meaning of mathematical knowledge is determined not only by the circumstances in which it becomes a deductively structured theory,

but also by the procedures that led, or may lead to it and which are indispensable for its understanding.

• Therefore, learning mathematics should include the understanding of implicit motivations, sense-making actions and reflective processes aimed at the construction of meaning, while teaching mathematics should give the learners the opportunity to "do mathematics."

• As a consequence, perceiving mathematics both as logically structured collections of intellectual products and as processes of knowledge production, should form the core of the teaching of mathematics as well as the image of mathematics spread to the outside world.

Along these lines, emphasizing the integration of historical and epistemological issues in mathematics teaching and learning constitutes a natural way for exposing mathematics in the making. This, in turn may lead to a better understanding of specific parts of mathematics and a deeper awareness of what mathematics as a discipline is. This is important for mathematics education in that it can help students understand that mathematics:

• is the result of contributions from many different cultures;

• has been in constant dialogue with other scientific disciplines, philosophy, the arts and technology;

• has undergone changes over time according to shifting views of what it is and how it should be taught and learnt;

• has constituted a constant force for stimulating and supporting scientific, philosophical, technical, artistic, and social development.

In this way, learning mathematics and stimulating students' interest in it can be enhanced at all levels of education. Like other approaches, it maintains that mathematics is central to our modern society and a mathematically literate citizenry is essential to a country's vitality; but it also shows the crucial importance of historical and epistemological issues in mathematics. The harmony of mathematics with other intellectual and cultural pursuits, moreover, makes the subject interesting, meaningful, and worthwhile. In this wider context, history and epistemology of mathematics have an additional important role to play in providing a fuller education of the community: not being a natural science, but a formal science closer to logic – hence to philosophy – mathematics has the ability inherent in itself to connect the humanities with the sciences. Societies, of course, value the sciences and want young people to be scientifically educated. A cultural approach to mathematics and science aims to show how these subjects are deeply connected to the humanities: integrating history and epistemology in mathematics education can make this connection visible to students. This is most important, especially today when there is much concern about the level of mathematics that students are learning and about their decreasing interest in mathematics, at a time when the need is rising for both technical skills and a broader education.

3. Focus and main themes of ESU-9
The ESU is more a collection of intensive courses than a conference for researchers. It is a place where teachers and researchers meet and work together. It is

also a place where beginners, more experienced researchers and teachers present their teaching experience to the benefit of the participants and get a constructive feedback from them—and it refers to all levels of education, from primary school to tertiary education, including in-service teachers' training.

The programme and activities of ESU-9 are structured around the following main themes:

Theme 1: Theoretical and/or conceptual frameworks for integrating history and epistemology of mathematics in mathematics education;

Theme 2: History and epistemology in students and teachers mathematics education: Curricula, courses, textbooks, and didactical material of all kinds - their design, implementation and evaluation;

Theme 3: Original historical sources in teaching and learning of and about mathematics;

Theme 4: Mathematics and its relation to science, technology, and the arts: Historical issues and socio-cultural aspects in relation to interdisciplinary teaching and learning;

Theme 5: Topics in the history of mathematics education;

Theme 6: History of mathematics in Italy.

Emphasis is placed on empirical findings from actual classroom experiments and/or produced teaching & learning materials. Insightful theoretical ideas and/or historical analysis with visible didactical implications, however, are also welcome.

4. Activities during ESU-9

All activities should refer to the ESU-9 main themes. Its scientific program will be structured along these themes, consisting of a few plenary lectures & panels, as well as, parallel sessions of oral presentations, short communications and posters, for participants, who want to speak about their own experience, or research. A major part of the programme, however, consists of workshops.

• There will be at most one plenary lecture per theme, normally conceived as an introductory lecture for related workshops.

• In the panels, participants will work together, well in advance, so that, during the panel session, there is a real discussion among them and/or with the panel coordinator.

• Workshops consist in studying a specific subject and having a follow-up discussion. The workshop organizer prepares, presents and distributes the historical/epistemological or pedagogical/didactical material, which motivates and orients the exchange of ideas and the discussion among the participants. Participants read and work on the basis of this material (e.g. original historical texts, didactical material, students' worksheets etc). Workshops will be scheduled in parallel sessions and will vary in duration (1.5 hours for workshops based on didactical – pedagogical material; 2 hours for workshops based on historical and/or epistemological material).

• Oral presentations will be allocated a 30-minute time slot each (25 minutes for presentation and 5 minutes for discussion), scheduled in parallel sessions. It is an activity in the spirit of a conventional research conference.

• Parallel sessions for 10-minutes short oral communications and poster presentations, as well as exhibitions of

books and other didactical material will also be possible.

5. Target population

Participants are expected to be mostly (elementary or secondary school) teachers who wish to gain new ideas on how they can integrate the history of mathematics into their teaching. However, there will be also university teachers and students, interested in the integration of the history and epistemology of mathematics into mathematics education, as well as, historians of mathematics, who may give a limited number of lectures and workshops to inform others about recent developments in their domain, and mathematicians with an interest in the relation between mathematics, its history and epistemology, and its role at present and in the past.

6. Time and place

The ESU-9 will take place from Monday 18 to Friday 22 July 2022 at the Department of Mathematics of University of Salerno, Fisciano (SA).

7. Official Languages

The official languages of ESU-9 are English, Italian and French.
More specifically:
- All plenary talks and panel discussions will be in English.
- It is preferable to organize Workshops in English. Nevertheless, workshop organizers who intend to organize their workshop in another language are advised and encouraged to prepare copies in English of the material to be distributed to the participants (e.g. slides, worksheets etc). This will certainly increase participation, as well as, facilitate communication among participants.
- Oral presentations can be delivered in any of the official languages. However, for presentations not in English, presenters will be asked to use two sets of slides; one set in the language they are going to give their presentation, and one set in English.

8. Submission of proposals

31 October 2021: deadline for submitting Abstracts of proposals for all types of activities.
15 December 2021: Notification of acceptance or not of the submitted proposals.

Important: Please, use the Application Form (https://esu9.unisa.it/proposal-submission/) and send it in electronic form to **esu9.sa@gmail.com**

The members of the Scientific Program Committee (SPC) will review the submitted abstracts. At this stage, acceptance of a proposal means that the proposed activity will be included in the ESU-9 Scientific Programme. However, this does not imply that a full text based on this activity will automatically be included in the ESU-9 Proceedings, which are going to be published after ESU-9. Full texts will be further reviewed by members of the SPC at the usual international standards. For more details, see Proceedings, §10 below.

9. The web site

Making known ESU-9 worldwide, is a major task to be realized by the SPC. To this end, a web site is operating at http://esu9.unisa.it
This is going to be an efficient tool for providing updated information, allowing

for online registration, submission of proposals and full texts, supporting the reviewing process, etc.

10. Proceedings

Publishing the Proceedings of the ESU is also a major task. In fact, Proceedings of the previous ESU have become standard references in this area.

The Proceedings will be published after ESU-9, so that authors are given the opportunity to enrich their text as a result of the feedback they will gain during ESU-9.

Each submitted full text for a workshop, or an oral presentation will be reviewed by at least one member of the SPC at the usual international standards.

More details on the deadline for submitting full texts, their size, the format guidelines and the expected date by which the proceedings will be available and sent to all registered participants, will be announced in due course from the ESU-9 and HPM websites

http://esu9.unisa.it

http://www.clab.edc.uoc.gr/hpm/meetings

You can connect with us through following social networks:

https://www.facebook.com/groups/170835957887148

https://www.instagram.com/esu9_salerno

https://twitter.com/esu9sa

The official email is esu9.sa@gmail.com

11. The (international) Scientific Program Committee (SPC)

- Marta Menghini, University Roma La sapienza, Italy (chair)
- Évelyne Barbin, University of Nantes, France (co-chair)
- Roberto Capone, University of Salerno, Italy (co-chair)
- Michael N. Fried, Ben-Gurion University of the Negev, Israel (co-chair)
- Hélder Pinto, University of Aveiro & Piaget Institute, Portugal (co-chair)
- Francesco Saverio Tortoriello, University of Salerno, Italy (chair of local committee)

- Luis Carlos Arboleda, Universidad del Valle, Cali, Colombia
- Janet Barnett, Colorado State University, USA
- Aline Bernardes, Federal University of the State of Rio de Janeiro, Brazil
- Nathalie Chevalarias, Lycée Jaunay-Marigny & IREM of Poitiers, France
- Renaud Chorlay, INSPE de Paris, Paris, France
- Cecília Costa, University of Trás-os-Montes e Alto Douro, Vila Real, Portugal
- Teresa Costa, Escola Secundária D. Maria II, Braga, Portugal
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- Olivera Đokić, University of Belgrade, Serbia
- Abdellah El Idrissi, École Normale Superieure, Marrakesh, Morocco
- Florence Fasanelli, American Association for the Advancement of Science, USA
- Gail FitzSimons, University of Melbourne, Australia
- Fulvia Furinghetti, Dipartimento di Matematica dell'Universita di Genova, Genova, Italy
- David Guillemette, Université du Québec à Montréal, Canada

- Masami Isoda, University of Tsukuba, Japan
- Ewa Łakoma, Institute of Mathematics Military University of Technology Warsaw, Poland
- Snezana Lawrence, Middlesex University, London, England, UK
- Po-Hung Liu, National Chin-Yi University of Technology, Taichung, Taiwan
- Maria Rosa Massa-Esteve, Universitat Politècnica de Catalunya. Barcelona, Spain
- Iran Mendes, Federal University of Pará, Belém, Brazil
- Frédéric Métin, University of Burgundy, Dijon, France
- Marc Moyon, University of Limoges, Limoges, France
- Kostas Nikolantonakis, University of Western Macedonia, Greece
- Antonio M. Oller-Marcén, Centro Universitario de la Defensa de Zaragoza, Spain
- Maurice O'Reilly, Dublin City University, Ireland
- Johanna Pejlare, Chalmers University of Technology and University of Gothenburg, Sweden
- David Pengelley, New Mexico State University & Oregon State University, USA
- Luis Puig, Universitat de València Estudi General, Spain
- Peter Ransom, The Mathematical Association, UK
- Leo Rogers, Independent Researcher, Oxford, UK
- Sebastian Schorcht, Justus-Liebig-Universität, Giessen, Germany
- Man-Keung Siu, University of Hong Kong, Hong Kong SAR, China
- Bjørn Smestad, Oslo Metropolitan University, Oslo, & Volda University College, Volda, Norway
- Yi-Wen Su, University of Taipei, Taiwan
- Constantinos Tzanakis, University of Crete, Rethymnon, Greece
- Caterina Vicentini, Liceo "Buonarroti" Monfalcone (GO), Italy
- Ysette Weiss, Johannes Gutenberg-University Mainz, Germany
- Greisy Winicki-Landman, California State Polytechnic University, USA.

12. The Local Organizing Committee (LOC)
- Maria Giuseppina Adesso
- Roberto Capone
- Maria Rosaria Del Sorbo
- Oriana Fiore
- Fulvia Furinghetti
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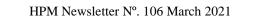
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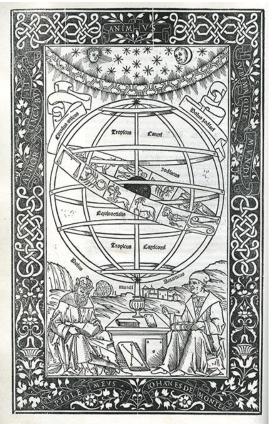
## *Primary historical sources in translation and teaching: MAA Convergence*
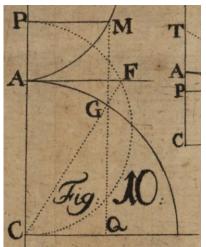
Since 2004, MAA *Convergence* has been both an online journal on the history of mathematics and its use in teaching, and an ever-expanding collection of online resources to help its readers teach mathematics using its history. Primary historical texts, their translation and use in teaching are a naturally recurring theme in *Convergence*'s offerings. We highlight here some of our newest articles related to this theme and other resources for use in your classroom.

Our ongoing "A Series of Mini-projects from TRansforming Instruction in Undergraduate Mathematics via Primary Historical Sources" now includes 18 mini-Primary Source Projects (PSPs) from the TRIUMPHS team for use in courses ranging from first-year calculus to analysis, number theory to topology, and more. In the latest addition to the series, "Wronskians and Linear Independence: A Theorem Misunderstood by Many–A Mini-Primary Source Project for Students of Differential Equations, Linear Algebra and Others," author Adam E. Parker uses 19th-century efforts to prove the converse of the Function Independence Theorem to show students that struggles and missteps in mathematics are normal. Additionally, Daniel E. Otero has added a third episode to his series of curricular units based on primary source texts for use in teaching and learning trigonometry with his student project based on Ptolemy's computation of the length of gnomon shadows in the *Almagest:* "Ptolemy Finds High Noon in Chords of Circles."

Above: Diagram of armillary sphere in Peuerbach's and Regiomontanus's Latin translation of the *Almagest*. Image courtesy of Mathematical Treasures, Convergence.

In their article "The Four Curves of Alexis Clairaut," the faculty-student research-and-translation team of Taner Kiral, Jonathan Murdock, and Colin B. P. McKinney provides a dual language (French and English) edition of a paper on families of algebraic curves written by a 12-year-old Alexis Clairaut. In addition to comments about what Clairaut's paper might offer today's students, their article includes interactive GeoGebra rendering of Clairaut's diagrams, an overview of the historical and mathematical contexts of Clairaut's paper and technical notes to help a modern reader better understand Clairaut's work.

Above: Diagram from Clairaut's "Quatre Problèmes sur de Nouvelles Courbes." Image courtesy of the Rare Book & Manuscript Library, University of Illinois at Urbana Champaign.

Meanwhile, Dominic Klyve's rumination over the transmission of texts in "Euler's Letters to a German Princess: Translation and Betrayal" tells a tale that can be used in the classroom to underscore the value of critical thinking with students bombarded outside the classroom by multimedia of various quality and promoting various agendas.

And in keeping with *Convergence*'s continuing practice of bringing quality reprints to new audiences of teachers and learners, Frank Swetz d*raws from his translation and commentary on the ninth chapter of The Nine Chapters of the Mathematical Art* in his article "The 'Piling Up of Squares' in Ancient China," originally published in the National Council of Teachers of Mathematics journal *Mathematics Teacher*.

See all of these articles and more at *MAA Convergence:*
http://www.maa.org/press/periodicals/convergence

Interested in contributing? We'd love to hear from you (at convergence@maa.org)! Peruse our index of all the translations of original sources written in languages other than English that have appeared in the journal to identify gaps in the collection. In addition to translations of primary sources, *Convergence* publishes expository articles on the history of topics in the grades 8–16 mathematics curriculum; classroom activities, projects, or modules for using history to teach mathematics; and classroom testimonials after applications of such activities, projects, or modules. Additionally, we welcome submissions related to the following *Convergence* features:

- Mathematical Treasures, a collection of images of historical mathematical texts or objects for use in the classroom.
- "Problems from Another Time," highlighting historical problems.
- "On This Day," a listing of three or four historic mathematical events that happened on any given date.
- "Today's Quotation," a quotation about mathematics from a historical figure selected from a searchable database of quotations.
- "Conference Calendar," an up-to-date guide to conferences and events around the world that feature or include the history of mathematics and its use in teaching.

For more details on *Convergence*'s submission and refereeing process, see our Guidelines for Authors at https://www.maa.org/press/periodicals/convergence/guidelines-for-convergence-authors.

Amy Ackerberg-Hastings,
Independent Scholar, USA
Janet Barnett,
Colorado State University – Pueblo, USA
Editors, *MAA Convergence*

THE DIGITAL CONTENT REPOSITORY / REPOSITÓRIO DE CONTEÚDOS DIGITAIS (Brazil)

[English]

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[Portuguese]

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Educação Matemática – GHEMAT-Brasil (https://www.ghemat-brasil.com).

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Boa visita!

Coordinator / Coordenador:
Iran Abreu Mendes,
UFPA

Have you read these?

Bair, J.; Błaszczyk, P.; Ely, R.; Katz, M. G. & Kuhlemann, K. (2021). Procedures of Leibnizian infinitesimal calculus: an account in three modern frameworks. *British Journal for the History of Mathematics.* Published online: 18 Jan 2021.

Berenguer, J. (2020). Introducing differential calculus in Spain: The fluxion of the product and the quadrature of curves by Tomàs Cerdà. *British Journal for the History of Mathematics.* Published online: 06 Dec 2020.

Biggs, N. (2020). Decoding chancery records from the 1240s. *British Journal for the History of Mathematics.* Published online: 06 Dec 2020.

Brack-Bernsen, L. (2020). Babylonian astronomy: a new understanding of column *Φ*. *Archive for History of Exact Sciences, 74*(6), 605–640.

Brummelen, G. (2021). Before the end of an error: Giovanni Bianchini's original flawed treatise on the conversion of stellar coordinates. *Archive for History of Exact Sciences, 75*(1), 109–124.

Carman, C. C. (2020). Tycho Brahe's *Calculi ad Corrigenda Elementa Orbitae Saturni* and the technical aspects of his planetary model of Saturn. *Archive for History of Exact Sciences, 74*(6), 565–586.

Diniz, M. A. & Bellhouse, D. R. (2020). David Gregory, John Arbuthnot and their roles in the early development of probability in Great Britain. *British Journal for the History of Mathematics.* Published online: 06 Dec 2020.

Dragović, V. & Goryuchkina, I. (2020). Polygons of Petrović and Fine, algebraic ODEs, and contemporary mathematics. *Archive for History of Exact Sciences, 74*(6), 523–564.

Enea, M. R. & Ferraro, G. (2020). Analytic and arithmetic methods in Liouville's identities. *Historia Mathematica, 53*, 48–70.

Iohara, K. & Malbos, P. (2021). Maurice Janet's algorithms on systems of linear partial differential equations. *Archive for History of Exact Sciences, 75*(1), 43–81.

Jong, T. & Hunger, H. (2020). Babylonian observations of a unique planetary configuration. *Archive for History of Exact Sciences, 74*(6), 587–603.

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Lê, F. (2020). "Are the *genre* and the *Geschlecht* one and the same number?" An inquiry into Alfred Clebsch's *Geschlecht*. *Historia Mathematica, 53*, 71–107.

Marx, C. (2021). On the making of Ptolemy's star catalog. *Archive for History of Exact Sciences, 75*(1), 21–42.

Moustapha-Corrêa, B.; Bernardes, A.; Giraldo, V.; Biza, I. & Nardi, E. (2021). Problematizing mathematics and its pedagogy through teacher engagement with history-focused and classroom situation-specific tasks. *The Journal of Mathematical Behavior*, 61. ([here])

Murray, L. L. & Bellhouse, D. R. (2020). W.F. Sheppard's correspondence with Karl Pearson and the development of his tables and moment estimates. *Historia Mathematica, 53*, 108–117.

Rosso, R. (2020). Probability and exams: The work of Antonio Bordoni. *Historia Mathematica, 53*, 33–47.

Sacchetti, A. (2020). Francesco Carlini: Kepler's equation and the asymptotic solution to singular differential equations. *Historia Mathematica, 53*, 1–32.

Miana, P. J. & Bernués, J. (Eds.) (2020). *María Andresa Casamayor. Tyrocinio arithmetico*. Zaragoza: Prensas de la Universidad de Zaragoza.

Critical edition of the first extant scientific book written by a woman published in Spain. *Tyrocinio Arithmetico, instruccion de las quatro reglas llanas* was published in 1738 in Zaragoza under the male name Casandro Mamés de La Marca y Araioa, an anagram of her name, by María Andresa Casamayor de La Coma.

Luis Puig

Hamon, G. Les Cahiers de Rennes en sciences, No. 11: *Rennes 1789, sciences, mathématiques dans la tourmente révolutionnaire*.

[Rennes 1789, the sciences and mathematics during the tumult of the revolution] (36 pp)]

In this pamphlet Gérard Hamon follows the evolution of the teaching of the sciences, and especially mathematics, in Rennes in 1789. Starting from the foundation of the college it traces its development during and until after the revolution.

Available on request from rennesensciences@orange.fr .

Chris Weeks

[Information sent by *M. K. Siu*]

M. K. Siu, The confluence of the Yellow River and the Mediterranean: synthesis of European mathematics and Chinese mathematics during the seventeenth, eighteenth and nineteenth centuries, in *Proceedings of the 2016 ICME Satellite Meeting*, edited by L. Radford, F. Furinghetti, T. Hausberger, IREM de Montpellier, 2016, 581-592.

M. K. Siu, Let them speak; hear them speak ─ old Chinese wisdom on mathematics education, in *Dig Where You Stand* 5: *Proceedings of the Fifth International Conference on the History of Mathematics Education*, *September 19-22, 2017, at Utrecht University, the Netherlands*, edited by K. Bjarnadóttir, F. Furinghetti, J. Krüger, J. Prytz, G. Schubring, H. J. Smid, Utrecht University, Utrecht, 2019, 355-369.

M. K. Siu, Equations in China: two millennia of innovation, transmission and re-transmission, in *Proceedings of the Eighth European Summer on History and Epistemology in Mathematics Education,* edited by E. Barbin, U. T. Jankvist, T. H. Kjeldsen, B. Smestad, C Tzanakis, Oslo Metropolitan University, Oslo, 2019, pp. 777-791.

M. K. Siu, Forty-five years of HPM activities: a semi-personal reflection on what I saw, what I heard and what I learn, *Journal for History of Mathematics*, Vol. 33, No. 5 (October 2020), 261-275.

[Papers in Portuguese sent by *Iran Abreu Mendes*]

REMATEC **(vol. 16) – 2021**

http://www.rematec.net.br/index.php/rematec

Almeida, M. C. (2021). Neurociência, História da Matemática e Música: Conexões Interdisciplinares. *Rematec, 16*, 1–15.

Pinto, H. (2021). A criação do ensino superior de matemática na cidade do Porto (Portugal), uma história ligada ao vinho, ao comércio e à marinha. *Rematec, 16*, 16–42.

Almeida, M. C. & Matos, J. M. (2021). A avaliação da experiência de Matemática Moderna nos liceus portugueses. *Rematec, 16*, 43–58.

Lopes, T. B.; Jucá, R. S. & Sá, P. F. (2021). Revisita ao desenvolvimento dos números decimais: Dos Árabes, Egípcios e Babilônios à Simon Stevin. *Rematec, 16*, 59–72.

Mendes, I. A. & Noronha, G. A. (2021). Saberes Elementares Aritméticos em Revistas Pedagógicas do Pará (1890 – 1904). *Rematec, 16*, 73–93.

"DIG WHERE YOU STAND" 6

Proceedings of the Sixth International Conference on the History of Mathematics Education.

Évelyne Barbin, Kristin Bjarnadottir, Fulvia Furinghetti, Alexander Karp, Guillaume Moussard, Johan Prytz, Gert Schubring (Eds.). Münster: WTM-Verlag 2020. Book available in printed form and as an E-Book.

https://www.wtm-verlag.de/e-barbin-k-bjarnadottir-f-furinghetti-a-karp-g-moussard-j-prytz-g-schubring-eds-dig-where-you-stand-6/

This book is the result of the last International Conference on the History of Mathematics Education (ICHME) where researchers in the history of mathematics teaching and learning meet bi-annually, presenting and discussing their recent research. This conference ICHME6 took place at CIRM, Marseille, France, from September 16 to 20, 2019. The book contains 28 chapters grouped in four parts concerning teaching of particular mathematical domains, teaching in cultural and national contexts, pedagogical movements and reforms, and methods of teaching.

The 8 chapters of the first part bring together chapters on the history of teaching specific fields of school mathematics beginning with algebra, calculus, geometry and ending with probability and graphic calculus:

• Algebra in Swedish mathematics curricula (1930–2000) by Johan Prytz (Sweden)
• Toward a rigorous teaching of calculus in France in secondary education (1887-1904) by Hervé Renaud (France)
• Logarithms through their history in mathematics education by Sam Riley (Canada)
• Shaping analytic geometry as a secondary school subject. A comparative study by Maria Cristina Oliveira (Brasil) and José Manuel Matos (Brasil, Portugal)
• Descriptive geometry in middle school mathematics teaching in Japan (1905-1946) by Kei Kataoka (Japan)
• Royaumont's aftermath in Iceland – Motion geometry, transformations and groups (1968-1973) by Kristín Bjarnadóttir (Iceland)
• Presentation of the first probability textbook in the newly established Greek state by Varvara Toura and Konstantinos Nikolantonakis (Greece)
• The teaching of graphical calculus in engineering schools (1860-1970) by Dominique Tournès (France).
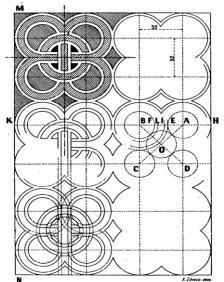
Cours abrégé de géométrie of Carlo Bourlet (1906)

The second part concerns the major subject that is the history of mathematics teaching in specific countries or geographical areas, discussing key periods and moments of change. Studies in this branch are strongly related to the history of the country and its cultural, social and political dimensions. The 7 chapters are arranged by regions of the World, from Eastern Europe to the United States via Africa:

• Highest mathematics: how mathematics was taught to future Russian tsars by Alexander Karp (USA)
• The history of Tatar mathematics education by Ildar Safuanov (Russia)
• Mathematical studies in the 18th century, in the work of François René de Chateaubriand by Jean-Paul Truc (France)
• Mathematics in the Bulletin de l'enseignement de l'AOF (French West Africa. Education Bulletins) (1913-1958) by Carène Guillet (France)
• Textbooks using mathematics in the margins of current mathematics: manuals for teaching inheritance in Morocco by Ezzaim Laabid (Morocco)
• Sulaymân al-Harâ'irî (1824-1877): his attempts to reconcile the Islamic civilization with modern science and mathematics education by Mahdi Abdeljaouad (Tunisia) and Pierre Ageron (France)
• Edgar J. Edmunds (1851-1877): a cross-cultural case study of an African American mathematics teacher who studied at the École polytechnique by Sian Zelbo (USA).

The third part concerns research on the history of reforms, the conditions for change, the conceptions that underwrite them and their transmission and dissemination in a cross-cultural perspective. Here the reader will find particularly emblematic periods in the history of mathematics teaching, like the modern mathematics movement, and the history of ideas in international organisations on mathematics education in the 19th and 20th centuries:

• Scientific novelties implemented into teaching mathematics in secondary schools on the Polish territories in the 19th century. The case of descriptive geometry by Karolina Karpinska (Poland)
• From experimental to theoretical geometry in new pedagogical movements at the turn of the 19th and 20th centuries (1872-1906) by Évelyne Barbin (France)
• Intuitive and experimental geometry: circulation of international proposals by Circe Mary Silva da Silva and Maria Celia Leme da Silva (Brasil)
• Actors in the change of ICMI: Heinrich Behnke and Hans Freudenthal by Fulvia Furinghetti, Livia Giacardi and Marta Menghini (Italy)
• Metamorphosis of geometrical teaching in France (1950-1969) by René Guitart (France)
• Back to the future – a journey from current education reforms to reformations in the past by Ysette Weiss (Germany).
In the fourth and last part of the book on methods of teaching, the history of teaching practices in mathematics constitute an important focus of research. Over the centuries, many new attempts have been made to make mathematics

learning more appealing and effective; laboratory teaching and variants of active methods have been studied for various countries

• The development of forms for studying mathematics by Gert Schubring (Brasil, Germany)

• Friedrich Froebel's conception of crystallography and the mathematical education at the 19th century kindergartens by Michael Friedman (Germany)

• The pedagogical aim of recreational mathematics' mechanical puzzles at the end of the 19th century in France by Lisa Rougetet (France)

• Giving a Conférence at the École polytechnique at the end of the 19th century by Yannick Vincent (France)

• Walking through the history of geometry teaching by Cevian and orthic triangles and quadrilaterals by Maria Adesso, Roberto Capone, Oriana Fiore and Francesco Tortoriello (Italy)

• Georges Cuisenaire's numbers in color. A teaching aid that survived the 1950s by Dirk De Bock (Belgium)
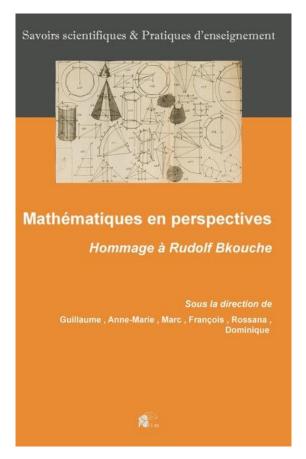
• On the history of mathematics trails by Joerg Zender (Germany).

Évelyne Barbin

Mathématiques en perspectives: Hommage à Rudolf Bkouche.

Mathématiques en perspectives: Hommage à Rudolf Bkouche, Guillaume Jouve, Anne-Marie Marmier, Marc Moyon, François Recher, Rossana Tazzioli, Dominique Tournès (dir.), Limoges: Presses universitaires de Limoges, 2020.

The unity of the «Mathematics into perspectives" presented in this book is very real and reflects the immense culture of Rudolf Bkouche (1934-2016), a mathematician and mathematical historian from Lille. The authors of this book, specialists in mathematics, in mathematics education or in the history of mathematics (from antiquity to the 20th century) or epistemology, come from diverse backgrounds: academics, secondary school teachers in France and Belgium, or teacher trainers in the well-known French IREM (research institutes on mathematics education).

The chapters can be read independently. "Mathematics in Perspectives" thus lifts the veil on the multiplicity of Rudolf Bkouche's points of view, on his pleasure in crossing the different glances on mathematics, its teaching and its epistemology. From the various studies and other pedagogical experiences, it emerges the expression of Rudolf's scientific contributions and thinking for the pleasure of his own colleagues and the generations to come.

Marc Moyon

HPM BOOK REVIEWS

Please send references to
gfi@unimelb.edu.au

British Journal for the History of Mathematics 2020

Tony Crilly (2020). Pythagoras' legacy. *British Journal for the History of Mathematics, 35*(3), 246-247. doi:10.1080/26375451.2020.1765504 https://doi.org/10.1080/26375451.2020.1765504

Joseph W. Dauben (2020). Heavenly numbers. Astronomy and authority in early imperial China. *British Journal for the History of Mathematics, 35*(3), 247-251. doi:10.1080/26375451.2020.1780837 https://doi.org/10.1080/26375451.2020.1780837
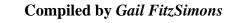
Annie McQuoid (2020). Leonhard Euler's Letters to a German Princess: A milestone in the history of physics textbooks and more. *British Journal for the History of Mathematics, 35*(3), 251-253. doi:10.1080/26375451.2020.1797342 https://doi.org/10.1080/26375451.2020.1797342

Kathleen M Clark (2020). Women who count: Honoring African American women mathematicians. *British Journal for the History of Mathematics, 35*(3), 253-255. doi:10.1080/26375451.2020.1778282 https://www.tandfonline.com/doi/full/10.1080/26375451.2020.1778282

Gavin Hitchcock (2020). New light on George Boole. *British Journal for the History of Mathematics, 36(1), 51-53.* doi:10.1080/26375451.2020.1819740 https://doi.org/10.1080/26375451.2020.1819740

Gert Schubring (2020). Dirichlet. A mathematical biography. *British Journal for the History of Mathematics, 36(1), 55-58.* doi:10.1080/26375451.2020.1823606 https://doi.org/10.1080/26375451.2020.182360

Compiled by *Gail FitzSimons*

Announcements of Events

14TH INTERNATIONAL CONGRESS ON MATHEMATICAL EDUCATION (ICME-14)

New dates: July 11–18, 2021
Shanghai, China

https://www.icme14.org/static/en/index.html

For more details on the complete scientific programme of ICME-14 and its structure and time-schedule, as well as on practical details, the registration process, the venue and social events, visit the official ICME-14 website https://www.icme14.org.

A major part of the scientific program of the ICMEs consists of Topic Study Groups (TSG). These are mini conferences designed to gather a group of the Congress participants who are interested in a particular area of Mathematics Education. During ICME-14, there will be 62 TSGs in total.

New dates of
The 14th International Congress on Mathematical Education
July 11th to 18th, 2021
New venue of
The 14th International Congress on Mathematical Education
Putuo Campus
East China Normal University
3663 Zhongshan Road North, Shanghai, China
Announced on March 31st, 2020

Topic Study Groups related to HPM field:

TSG 27: The role of the history of mathematics in mathematics education

TSG 55: History of teaching and learning mathematics
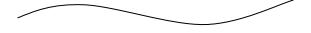
ICHME 7
Seventh International Conference on the History of Mathematics Education

Dear friends of the history of mathematics education,

The **ICHME7** (Seventh International Conference on the History of Mathematics Education) will be **postponed** from 09/20 - 09/24/2021 to **09/19 - 09/23/2022**. The conference venue remains Mainz in Germany.

The ICHME conferences have so far been characterised by a lively personal exchange not only during but also between and after the conference talks, during excursions and shared meals. We would like to keep this characteristic feature of the conference and have therefore refrained from an online conference this year. The decision was made by the Organising Committee in consultation with the local organisers on the basis of a survey.

Gert Schubring

Forthcoming BSHM Meetings

The British Society for the
History of Mathematics
http://www.bshm.ac.uk/events

1. Marriages, Couples, and the Making of Mathematical Careers

29 – 30 April, 2021
Online, possibly with local hubs

http://www.mcs.st-andrews.ac.uk/bshm-cshpm/index.shtml

This workshop proposes to explore the role of marriage and other domestic partnerships in the lived practice and constructed memory of mathematics.

Confirmed speakers include:

Brigitte Stenhouse, PhD candidate, Open University, UK Co-organizer: On Mary and William Somerville

David Dunning, Postdoc, Oxford, UK Co-organizer: On George and Mary Everest Boole

Ursula Martin, Professor, Oxford, UK: On computing pioneers

Reinhard Siegmund-Schultze, University of Agder, Norway: On Hilda Geiringer and Richard Von Mises

Jenne O'Brien, Ph.D. Candidate, Princeton, USA: On the roles of Elise Riemann and Emilie Weber in the making of Riemann's collected works

Donald Opitz, De Paul University, USA, and Brigitte van Tiggelen, Mémosciences, Belgium: Collaborative couples in the sciences

2. History of Decision Mathematics

15 May, 2021
London, UK

The 2021 event will be the sixth of these conferences, and will look at the history of decision mathematics. The day is likely to include six speakers on various aspects of decision mathematics. This is the meeting postponed from May 2020.

3. People, Places, Practices: Joint BSHM-CSHPM/SCHPM conference

New dates: 12–14 July 2021
University of St. Andrews, UK

http://www.mcs.st-andrews.ac.uk/bshm-cshpm/index.shtml

People, Places, Practices, is the 5-yearly joint conference of the British Society for the History of Mathematics and Canadian Society for History and Philosophy of Mathematics/La Société Canadienne d'Histoire et de Philosophie des Mathématiques, in collaboration with

HOM-SIGMAA, the History of Mathematics Special Interest Group of the MAA.

The conference is hosted by the School of Mathematics and Statistics, St Andrews University, the home of the MacTutor History of Mathematics Archive.

An Education Strand within the conference will run on dates to be confirmed. This will provide practical talks and workshops for those teaching the 15+ age group. Professor Évelyne Barbin, author of *Let History into the Mathematics Classroom* will talk about the French experience, where history of mathematics has recently been made a required part of the secondary mathematics curriculum.

Confirmed invited speakers include Karen Parshall, Colm Mulcahy, Évelyne Barbin, Edmund Robertson, Valeria Giardino, Brendan Larvor, Robin Wilson, Serafina Cuomo.

The organising committee are: Maria Zack (CSHPM), Dirk Schlimm (CSHPM), Amy Shell-Gellasch (HOMsigmaa), Mark McCartney (BSHM), Isobel Falconer (BSHM)

The education subcommittee are: Chris Pritchard (BSHM & Scottish Mathematical Council), Amy Shell-Gellasch (HOMsigmaa), Danny Otero (HOMsigmaa), Snezana Lawrence (BSHM), Isobel Falconer (BSHM).

For further details of the conference and venue, see
http://www.mcs.st-andrews.ac.uk/bshm-cshpm/index.shtml

4. History of Mathematics and Flight

New date: 11 September 2021
Manchester Airport, UK

A day of talks about the history of mathematics and flight. Flight will be broadly conceived to cover the flight of man-made objects, animals, and even fugitives; flight formation, navigation and control.

The day will include an optional tour of the Concorde flight deck.

5. Non-Western Mathematics

20 October, 2021
London, UK or Online

http://www.mcs.st-andrews.ac.uk/bshm-cshpm/index.shtml

Confirmed speakers and topics:

- Anuj Misra (Copenhagen): Sanskrit mathematics
- Manuel Medrano (St Andrews): Khipu and Andean mathematics
- Karine Chemla (Paris-Diderot) Gresham Lecturer: Mathematics in China

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Musto, Garrod	Kingswood International Schools, Bath, UK
Nikolantonakis, Kostas	Department of Primary Education, University of Western Macedonia, Greece
Oller-Marcén, Antonio M.	Centro Universitario de la Defensa de Zaragoza, Spain
OReilly, Maurice	Institute of Education, Dublin City University, Ireland
Otero, Danny	Xavier University, Cincinnati, Ohio, USA
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Pengelley, David	New Mexico State University & Oregon State University, USA
Pinto, Hélder	Piaget Institute, V. N. Gaia and CIDMA – University of Aveiro, Aveiro, Portugal
Prytz, Johan	Department of Education, Uppsala University, Sweden

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A note from the Editors

The Newsletter of HPM is primarily a tool for passing along information about forthcoming events, recent activities and publications, and current work and research in the broad field of history and pedagogy of mathematics. The Newsletter also publishes brief articles which they think may be of interest. Contributions from readers are welcome on the understanding that they may be shortened and edited to suit the compass of this publication.