

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

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This and earlier issues of the Newsletter can be downloaded from our website:

https://hpm.sites.uu.nl/

NOTE FROM THE CHAIR

Dear colleagues,

This is my first note as chair of the HPM group for the 2024-2028 period. As such, I think that it must begin with a thank you. I am very grateful for having received your trust, and I will try to keep the good work that has been done in the past years, and since the birth of the group in 1976.

At the end of this newsletter, you will find the information about the Executive Board for this fouryear period. I introduce here their names: Évelyne Barbin, Janet Barnett, Renaud Chorlay, Michael Fried, Snezana Lawrence, and Luis Puig. I have tried to combine some "old" and some "new" names. Thank you all for accepting my invitation, and thanks also to the former members of this board.

As usual, the summer has been quite busy. There have been several events of interest for our group. In fact, many of them have been promoted, organized or coordinated by members of the HPM community. You can find on the pages of this newsletter the reports that they have kindly provided.

First, three activities were held during ICME-15 last July. As you may know, ICME organizers decided to remove one of the Topic Study Groups dealing with the history of mathematics education from this event. Luckily Topic Study Group 5.4 "The role of the history of mathematics in mathematics education" (Abdellah el Idrissi, and Renaud Chorlay) remained and, furthermore, two discussion groups were organized: "Epistemology, history and sociology in mathematics teachers' education: interactions and implementations" (Évelyne Barbin, David Guillemete, and Ysette Weiss), and "History of Mathematics Education: accomplishments and open questions" (Alexander Karp). It is quite possible that the unfortunate decision to remove the group about the history of mathematics education will be reconsidered in the future. In any case, we will remain vigilant, and we will work to get it back.

Shortly before ICME-15, and as a satellite event, the 11th meeting of the HPM group was held on the Campus of the University New South Wales. It was hosted by Jim Pettigrew and Donald Shearman, and you can find a short report in September's ICMI newsletter at https://www.mathunion.org/icmi/icmi-newsletter-september-2024

In addition to all these ICME-15 related events, two more conferences took place during summer. One is already well-established, while the other is a newcomer. The eighth offering of the International Conference on the History of Mathematics Education was held in Warsaw (Polish Academy of Sciences) in September. The first Summer School in the History of Mathematics Education was held in Lisbon (Universidade NOVA) in July. Both events were very successful and have bright futures ahead.

This surely proves that we are a lively community and that our fields of research are active and interesting. This is also made clear, as usual, in the light of the "Have you read these?" section. However, I think that we must seek to gain more visibility and recognition from the point of view of the whole mathematics education community. While Gert Schubring's deserved Freudenthal medal might us think that this is already the case, actions like removing one study group from ICME raise doubts.

Also, I think that it is time to give this group more solid foundations, and a stronger structure. My first steps as chair will be in that direction. I will surely need your collaboration but, hopefully, this will not only help with my latter observations, but also might contribute to our survival as a group in the long term. Stay tuned.

Antonio M. Oller Marcén

MAA CONVERGENCE

Convergence... on the move!

The MAA's refereed online journal for the use of the history of mathematics to teach mathematics welcomes submissions of classroom-ready resources from around the globe. The types of articles published by *Convergence* include:

- Classroom activities, projects, or modules for using history to teach mathematics.
- Testimonials reporting on the application of historical activities, projects, or modules, including but not limited to those listed in our Classroom Resources Index.
- Translations of primary sources suitable for classroom use, accompanied by commentary explaining the work and its context and discussing how knowledge of the mathematical ideas in the translation can be used to teach the same ideas to today's students; and
- Expository articles on the history of topics in the grades 8–16 mathematics curriculum that also provide suggestions for how to incorporate the content of the article into classroom teaching.

Please visit our Guidelines for Authors for more details on *Convergence*'s submission and refereeing process and send your submission to <u>convergence@maa.org</u>.



First published in 2004, Convergence is the MAA's online journal, where history, mathematics, and teaching meet. It offers a wealth of resources to help instructors enrich their students' learning experience by teaching mathematics using its dynamic history.

Questions and submissions can be directed to Editors, Amy K. Ackerberg-Hastings and Daniel Otero at convergence@maa.org.

A snippet from MAA's new website.

Convergence is in the process of moving to a new location within the MAA. All of the journal's articles and features are currently temporarily accessible from old.maa.org/press/periodicals/convergence, which readers can also access by visiting maa.org/publication/convergence/. As a general rule of thumb, any *Convergence* URL can be found on the temporary website by replacing the prefix "www" with "old". For example, the Index to Mathematical Treasures is available at

old.maa.org/press/periodicals/convergence/index-to-mathematical-treasures. The MAA plans to keep all of *Convergence*'s temporary URLs live until July 2025.

When the MAA and Taylor & Francis (T&F) renewed their agreement to publish the suite of MAA journals in June 2024, both entities agreed to add *Convergence* to the portfolio. Thus, sometime in 2025, *Convergence*'s permanent status will be that of a subscription journal, available to MAA members and readers whose institutions subscribe to the appropriate T&F journal package. New submissions will be directed to T&F's ScholarOne submission portal, and new articles will be formatted and published within T&F templates. In addition, all of the existing legacy content that *Convergence* has amassed over 21 years of existence—articles, series, and Mathematical Treasures—will be converted to PDF format and uploaded into our new home at T&F.

Why is this happening? As the MAA prepared to launch a new website in May 2024, it determined that the previous website was expensive and unwieldy as well as operating on an outdated platform. Accordingly, the new website has been reduced in size. We realize that it is not ideal for *Convergence* to become a subscription journal, since it has been available through open access for readers worldwide since its founding. However, editors will be able to select collections of articles to offer freely to all for limited periods of time, in the same way that MAA has made available "Virtual Special Issues" across all of its journals for the past few years. Authors will also be able to choose to publish open access according to T&F's system of charges.



Mayan stele in Copán, Honduras. Picture by Cynthia Huffman, 2011.

As noted above, *Convergence* is continuing to publish new content throughout this transition. For example, Ximena Catepillán translated into Spanish the 2013 article by Cynthia Huffman and John C. D. Diamantopoulos, "Geometría Maya en la Sala de Clases." The four winning papers from HOM SIGMAA's 2024 Student Paper Contest have also been posted. As well, "A Compact Introduction to a Generalized Extreme Value Theorem: A Mini-Primary Source Project for Topology Students," by Nicholas A. Scoville, has been added to the TRIUMPHS team's "A Series of Mini-projects from TRansforming Instruction in Undergraduate Mathematics via Primary Historical Sources."

Finally, Michael Molinsky has added six quotations about mathematics and mathematicians to his series of "Quotations in Context":

- "By studying the masters and not their pupils," attributed to Niels Henrik Abel.
- "The moving power of mathematical invention is not reasoning but imagination," attributed to Augustus De Morgan, in reference to William Rowan Hamilton.
- "Thank God that number theory is unsullied by any application," attributed to Leonard Eugene Dickson.
- "Man muss immer generalisieren." "Man muss immer umkehren." ["One must always generalize." "One must always invert."] Both quotations are attributed to Carl Jacobi.
- "Mathematics is like checkers in being suitable for the young, not too difficult, harmless, amusing and without peril to the state," attributed to Plato.
- "The study of geometry is a petty and idle exercise of the mind, if it is applied to no larger system than the starry one. Mathematics should be mixed not only with physics but with ethics, that is mixed mathematics. The fact which interests us most is the life of the naturalist," attributed to Henry David Thoreau.

Convergence appreciates the support HPM has offered the journal since 2004, and we look forward to continuing to serve our readers at our new home within MAA.

Amy Ackerberg-Hastings Independent Scholar (USA)

> Daniel E. Otero Xavier University (USA)

Editors, MAA Convergence

ICME-15 Topic Study Group The role of history of mathematics in mathematics education.

At the ICME-15 conference (Sydney, Australia, July 7-14, 2024; https://icme15.org/), Topic Study Group 5.4 was dedicated to "The role of history of mathematics in mathematics education", with Prof. El Idrissi (Marocco) and Prof. Chorlay (France) as team leaders. The call for papers covered the various facets of the HPM research field:

- 1. Theoretical and/or conceptual frameworks in particular from general mathematics education research for integrating history in mathematics education.
- 2. Connections between mathematics education research and history of mathematics, construed as distinct but mutually enlightening research fields.
- 3. Empirical research in history and epistemology implemented in mathematics education: Classroom experiments and teaching materials, considered from various perspectives; e.g., cognitive, didactical, pedagogical, affective, etc..
- 4. Analyses of the history of mathematics as it appears in curricula, textbooks or online resources.
- 5. The role of original sources in the classroom, and their educational effects.
- 6. The use of digital technologies to support a role for the history of mathematics in the teaching and learning of mathematics.
- 7. History and epistemology as tools for an interdisciplinary approach in the teaching and learning of mathematics and the sciences by unfolding their productive interrelations and
- 8. Mechanisms studied to fruitfully connect cultures and mathematics.

29 papers and 1 poster were accepted, with authors mainly from Asia (People's Republic of China, Japan) and Europe (Germany, Italy, Denmark, Spain, Slovenia, France). The Americas were represented by 2 US participants, and the African continent by one (Prof. El Idrissi). Both the location and the registration costs may have deterred potential participants. Hopefully it will not be as bad for the next ICME conference, to be held in Prague (Czech Republic) in 2028.

The four work sessions were lively and created opportunities for new researchers in the field (in particular a large delegation of young researchers from the PRC) to meet more senior researchers. The four sessions were organized alongside key topics:

- Theoretical reflections and empirical data bearing on the use of historical elements in the design and implementation of classroom activities in the context of lesson studies; with many contributions from the Shanghai HPM studio (Pr. Wang Xiaoqing).
- A focus on classroom interventions (at the secondary or tertiary levels, and in teacher education) aiming at doing more than fostering mathematical knowledge, either by triggering a reflective attitude, or by changing students' image of mathematics and mathematicians.
- A focus on the use of problems from the past in today's classrooms, with a specific slot dedicated to a hands-on "problems workshop".
- Less "applied" questions were discussed, for instance related to the relevant constructs from mathematical education research for the HPM research field, or to recent developments on pre-historic mathematics in Asia.

Beyond the authors, this TSG attracted a significant number of congress participants with primary interests in other fields, which testifies to the curiosity which HPM topics raise in the larger mathematics education community.

This Australian conference also gave us the opportunity to discover a new field of application for noninteger rational numbers:



Renaud Chorlay, INSPE de Paris (Sorbonne Universite) & LDAR (France)

ICME-15 Discussion Group Epistemology, history and sociology in mathematics teachers' education: interactions and implementations.

The HPM group has constantly described and reestablished how epistemological, historical and social dimensions of mathematics contribute to its variations and developments in time and space. At ICME-15, in Sydney, Australia last summer, we organized and implemented the Discussion Group Epistemology, history and sociology in mathematics teachers' education: interactions and implementations. We planned to think about and to work on (1) how these dimensions are interrelated, (2) how teachers' education could be enhanced with a more explicit introduction and reflections of these dimensions and (3) how this eventual development and transformation of teachers' education could play a key role in mathematics education, particularly in the development of teaching activities that welcome and critically reflect cultural, social and political realities.

The premise that we had was that it is risky to present today's mathematics and mathematics education in a truncated manner, as a definitive product, not to be aware of their epistemological, social and historical roots. One of our main concerns was that forgetting history, including the history of education, and that detaching problems from their socio-cultural and historical contexts leads to an image of mathematics and associated with it, mathematics education, that supports a globally observable thinking in simple alternatives "right/wrong" or "good/bad". In an increasingly algorithmic world, however, historical, epistemological and social aspects of mathematics are particularly well suited to dissolving such trivializations. In this sense, we planned to pay attention to the role of mathematics in the education for citizenship and in the reflections on the links between mathematics education and democracy.

The discussion group achieved its goal as many of the attendees (around 30 people from more than 15 countries) were able to express themselves on the subject, to openly and sincerely formulate objectives and problems encountered in relation to their own experience as teachers' educators and researchers. We discuss from several experiences of the participants that shows that the thematic of our discussion group was important today for our colleague. Many specific topics were discussed: critiques of curriculum development in teachers' education in terms of the discussion group topics, introduction of the history of mathematics in teachers' education, bringing social sciences to mathematics teachers' education, gender issues in mathematics teachers' education, cultural dimension of mathematics and ethnomathematics in teachers' education.

The exchange of experiences in the discussion group showed an awareness of the dangers of a shorthand representation of mathematics as a final product and for the great importance of including historical, epistemological and social aspects of the development of mathematics as well as the history of mathematics education in mathematics teacher education. They also showed that concrete examples suitable for teacher education are very welcome. We enthusiastically invite the HPM newsletter readers to consult the ICME-15 forthcoming proceeding for a more detailed account.

Évelyne Barbin Nantes University (France) David Guillemete Université du Quebec à Montréal (Canada) Ysette Weiss Johannes Guttemberg University (Germany)

ICME-15 Discussion Group History of Mathematics Education: accomplishments and open questions.

At the International Congress on Mathematics Education in Sydney (July, 2024) there was a Discussion Group entitled History of Mathematics Education: accomplishments and open questions. It was organized by Arindam Bose, TISS, Mumbai, India; Victor Freiman, Université de Moncton, Canada; Alexander Karp, Teachers College, Columbia University, USA; and Naomichi Makinae, University of Tsukuba, Japan. The Contact Coordinator was Alexander Karp.

The purpose of this group was to discuss what has been recently accomplished in the history of mathematics education and what remains unexplored, including raising new research questions on which future collaborative research efforts can be based. This seemed particularly important because much that is known in the national study of history remains unknown to an international audience, while comparing and contrasting what has happened in different countries is interesting and useful.

Like the other Discussion Groups at ICME, this one had two sessions of 90 minutes each. Among the questions that were proposed to the group for discussion were the following:

- What are the major research achievements in the history of mathematics education in recent years?
- How did mathematics classroom pedagogy evolve with time in different countries and what do we need to research about it?
- What achievements in national histories remain unknown in international history?
- What cross-cutting, i.e. unifying, themes would be useful to explore in the future?
- What sources have been underutilized and could be useful in studying the history of mathematics education?
- What should be done to achieve greater popularity of this scientific field?

The participants heard some brief presentations on recent developments in historical research in a few countries, but the main time was devoted to the participants' thoughts in response to the questions raised. The meetings of the group allowed those present to gain familiarity with the existing achievements and the main directions in which research is being conducted. At the same time, unresolved problems in the development of the field were formulated and some measures to be worked on were outlined. Special attention was paid to the popularization of the history of mathematics education both as a scientific field and as part of the professional education of the future teacher of mathematics.

It is hoped that the work of the Discussion Group not only allowed people interested in the history of mathematics education to meet and exchange ideas but will also lead to some joint projects and publications.

Alexander Karp Columbia University (USA)

8th International Conference on the History of Mathematics Education (ICHME-8). 16–20 September 2024, Warsaw, Poland

From September 16 to 20, 2024, Poland hosted the 8th International Conference on the History of Mathematics Education. ICHME-8 brought together researchers from 20 countries across six continents: Europe, North America, South America, Asia, Africa, and Australia.

The L.&A. Birkenmajer Institute for the History of Science of the Polish Academy of Sciences was the local organizer of the conference. The International Organizing Committee consisted of the following members: Prof. Gert Schubring, who represented both Bielefeld University and the Federal University of Rio de Janeiro, Prof. Kristin Bjarnadóttir from the University of Iceland, Prof. Alexander Karp from Columbia University, Prof. Fulvia Furinghetti from the University of Genoa, Prof. Johann Prytz from Uppsala University, and Dr. Karolina Karpińska from the Institute for the History of Science of the Polish Academy of Sciences.

The conference was held in Warsaw, in the Staszic Palace – the main seat of the Polish Academy of Sciences. It was patronized by the Committee on the History of Science and Technology of the Polish Academy of Sciences, the Commission on the History of Science of the Polish Academy of Arts and Sciences, and the Ministry of Science and Higher Education of the Republic of Poland.

The ICHME-8 opening ceremony was led by Dr. Karolina Karpińska. The welcome speeches were delivered by Prof. Konrad Osajda, Chairman of the Council of Provosts of the Humanities and Social Sciences Division of the Polish Academy of Sciences (the Institute for the History of Science is part of this Division), Prof. Joanna Schiller-Walicka, Deputy Director of the Institute for the History of Science, and Prof. Gert Schubring, a member of the Standing Organizing Committee and one of the founders of the International Conferences on the History of Mathematics Education.



Opening ceremony.

The thematic scope of ICHME-8 included, among others: the development of mathematics education in specific countries, the evolution of mathematics curricula, analysis of the content of mathematics textbooks and other educational resources, presentation of people who have had a significant impact on mathematics education, transmission and reception of new educational ideas in mathematics education, mathematics teacher education, and mathematics education of groups historically underserved in education due to ethnicity or gender. During the conference, 15 long presentations (lasting 40 minutes each) and 20 short presentations (15 min.) were delivered across five thematic sessions. There was a poster session, too. Abstracts of all activities can be found on the conference website: <u>https://ichme8.pl</u>.



Two of the very interesting presentations.

ICHME-8 was a successful event, both scientifically and culturally, providing participants with valuable insights into Polish history, culture, and cuisine. Attendees had the opportunity, among others, to explore Warsaw's Old Town, follow in the footsteps of Fryderyk Chopin, visit the Chopin Museum, and enjoy his music during a piano recital.

The conference will result in the publication of Proceedings as a thematic issue of the journal "Analecta: Studies and Materials for the History of Science", published by the Institute for the History of Science of the Polish Academy of Sciences.

Karolina Karpińska

Institute for the History of Science of the Polish Academy of Sciences (Poland)

First Summer School in the History of Mathematics Education. (Lisbon, 2024)

In November 2023, the seventh Ibero-American Congress on the History of Mathematics Education (VII CIHEM) took place at the National University of Costa Rica. Several of its attendees recognized then the need to generate a space for dialogue and mutual learning that would provide continuity to the discussions proposed at CIHEM and further enhance the community's activity.

From that moment forward, colleagues from the Universidade NOVA de Lisboa, under the leadership of Alexandra Rodrigues and José Manuel Matos, carried out the administrative and academic procedures in record time and thus led the organization of the First Summer School in the History of Mathematics Education (https://eventos.fct.unl.pt/ev_historia_educacao_matematica). This School took place between July 22 and 26, 2024, at the University facilities, in the Colégio Almada Negreiros building on the Campolide Campus. The participation of researchers from eight countries (one Belgian, six Brazilians, one Colombian, one Costa Rican, three Spanish, one Honduran, one Mexican and seven Portuguese) was an expression of the research and learning community.

The School's program included the presentation of nine sessions, each covering aspects related to the themes, paradigms and methodologies of the field of History of Mathematics Education, or to the thematic interrelations of this field with other disciplines and academic areas. One of the novelties of the School was its organizational structure, which, according to attendees, was a real success. Each session had not only a main presenter, but also two commentators. Additionally, the prior preparation of a text was required of each main presenter, with an oral summary exposition of that paper (not to exceed 20 minutes) presented by its author at the School. After that oral summary, each of the two commentators had a 25-minute period to present their vision and reaction to the text, a copy of which they had in advance. Following these three presentations, there was a 70-minute discussion period during which the author of the paper presented his reaction to the topic. This methodological implementation favored a broad and in-depth discussion of various aspects of the field of research, among which was the concern of characterizing the field as a requirement for its consolidation and its search for epistemic identity. Additionally, this methodology constituted a prompt for the potential improvement of the texts, allowing their publication and dissemination by the end of this year.

The evaluation of the School carried out in situ led the attendees to start the planning of the Second Summer School on the History of Mathematics Education; the expectation is that it will take place in July 2026 in a city in Spain yet toto be designated. Additionally, plans are in place to hold the next CIHEM in 2025, at Acapulco (Mexico) under the organizational leadership of the Autonomous University of Guerrero.

Edgar Alberto Guacaneme Suárez

Universidad Pedagógica Nacional (Bogotá, Colombia) *Mária Cristina Almeida* Unidade de Investigação, Educação e Desenvolvimento (Lisboa, Portugal)

Have you read these?

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HPM Book Reviews

Compiled by Gail FitzSimons

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Table of contents

Note from the Chair	1
MAA Convergence	3
ICME-15. Topic Study Group.	6
ICME-15. Discussion Group.	8
ICME-15. Discussion Group.	9
ICHME-8	10
Summer School in the History of	10
Mathematics Education (Lisbon).	12
Have you read these?	13
HPM Book Reviews	16
HPM Administrative Structure	17
HPM Newsletter Distributors	19

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