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

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

These and other news of the HPM group are also available on the website

http://grouphpm.wordpress.com/

(the online and on time version of this newsletter).

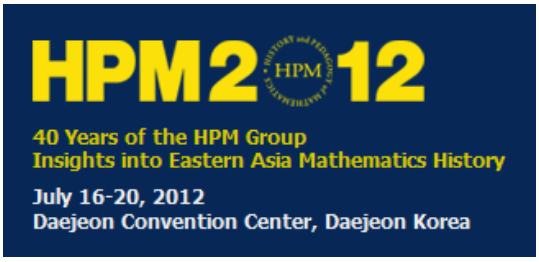
HPM 2012 – The HPM Satellite Meeting of ICME

We were there

The HPM Group celebrated its 40th anniversary with HPM 2012 – the 8th quadrennial Satellite Meeting of ICME. It took place in Daejeon, Korea from 16 - 20 July, 2012, where more than 100 participants gathered for an interesting week with 7 plenary lectures, 60 oral presentations, 7 workshops, 2 panel discussions, a poster session, several exhibitions, and a special focus on Asian HPM and insights into Eastern Asia Mathematics History.

The seven plenary lectures concerned the seven themes of the meeting. The first one concerned history and epistemology implemented in mathematics education and was given by Tsang-Yi Lin from Taiwan. He gave three examples of projects, on ancient Greek geometry, on Brigg's tables of Logarithm and on Cramer's Rule. He concluded on the necessity for teachers to acquire knowledge on history. The second lecture, given by Tinne Hoff Kjeldsen from Denmark, was interested by the theoretical framework for integrating history of mathematics in mathematics education. It dealt with the difficult question of the results of history *for* and *about* the learning of mathematics. For this purpose, she analyzed two examples: Bernoulli's catenary and Egyptian mathematics. The third lecture, given by Janette Barnett from USA, considered the use of original sources in the classroom and their educational effects. She described her own experiences with using papers of Boole and Cayley. These three lectures indicated that the purpose and ideas of HPM now has entered a new mature period.

Three other plenary lectures were interesting for seeing history of mathematics as an interdisciplinary and cultural tool for the teaching and learning of mathematics. Dominique Tournès from France gave a very complete panorama of mathematics for 19th century engineers, and especially on their methods and instruments, which can be used in classrooms. Michel-Pajus from France proposed a historical voyage into the literary-mathematical Universe. Her very living voyage had five stops: a Greek theatre, the world of Romans, a castle in Middle Ages, Parisian salons of the 17th and 18th centuries and the machinist world of 19th century. The last lecture of the meeting was devoted to mathematics from Eastern Asia, with the theory of equations in the history of Chosun mathematics presented by Sung Sa Hong from Korea.



For many years now, history of mathematics education has been a theme of International meetings of HPM. The number of oral presentations given in Daejeon on this theme shows the increasing interest among teachers and researchers. The plenary lecture of this theme concerned the social structures in mathematics education, more precisely the research on mathematics education with theories and methods from sociology of education. Johan Prytz, from Sweden, began to give motives for studying the history of mathematics education and argued for the use of a sociological perspective for this endeavor.

The oral presentations, workshops, and the poster session taken together showed the richness of on-going HPM related activities and research. From examples of how to teach history of mathematics to teaching mathematics through historical sources over a "journey to a proof", issues about "trends on mathematics in novels", "the ladder and the box problem", "historical problems and mathematical knowledge for teachers" and "research on the Muk Sa Jib San Beob" we got a glimpse of the diversity of HPM activities and the multi-faceted perspectives through which History and Pedagogy of Mathematics is perceived and treated around the world in research, classrooms, art, culture, literature.

It is impossible to summarize and do justice to all the presentations in this short Newsletter contribution; for that we refer to the program and the papers that were submitted, all of which are available at the web site: http://www.hpm2012.org/?mid=announce_05. Instead we will make a few comments about the two panel sessions. Their themes were addressed towards practices: the first panel dealt with the problem of justification: Why do we require a "history of mathematics" course for mathematics teacher candidates? The second panel dealt with how we can get insights into effects of history in mathematics education through empirical research.

The intentions of the first panel session were twofold: to share experiences with ways in which history of mathematics is part of elementary and/or secondary mathematics teacher candidates' education, and to provide a synthesis of group discussions during the panel session – this second part is going to be post-panel work based on records of the group discussions which were produced during the

session. The presentations by the five panelists showed two things: 1) The status of history of mathematics in the curriculum in their different countries varies a lot from being explicit to being implicit at different levels, and 2) reflections about why history of mathematics should be part of teacher training and how that reflects back on the content and teaching of such a course for teacher candidates do not seem to be clearly developed. However, the two questions that were raised by the panel of why history of mathematics should be part of mathematics teacher training programs and (in case of a positive outcome of the why question) what it should look like, are key questions to be dealt with in the HPM-community.

The second panel discussed the question of empirical research on history in mathematics education through four lenses: 1) Lesson studies and the use of technology, 2) Original sources and recruitment, transition, retention, 3) Integrating history and teacher training, and 4) Mathematics education research frameworks and theoretical constructs in HPM. Several of these lenses were also addressed in some of the plenary lectures and the panelists managed to draw on these presentations and in doing so, they provided a sort of a common ground that initiated a very lively discussion in the audience. One of the suggestions for measuring the effects of history in mathematics education has come out of the New Mexico State University & Colorado State University - Pueblo programs of using primary sources for the teaching of mathematics. Their results show that maybe the use of primary sources can do more than function as a tool for teaching and learning of mathematics. They suggest addressing the specific aspect on student success consisting of recruitment, transition and retention – topics that educators, curriculum designers, and policy makers care about and pay attention to. Hereby linking to a group of people the HPM community needs to address, if we want to promote the explicit inclusion of history of mathematics in mathematics education curricula.

We would like to mention also that the meeting was very well organized, in a very agreeable and friendly atmosphere. We thank Sunwook Hwang, his colleagues, and students for all they did for the success of HPM 2012.

Evelyne Barbin,
IREM and Laboratory LMJL, University of Nantes, evelyne.barbin@wanadoo.fr

Tinne Hoff Kjeldsen,
IMFUFA, NSM, Roskilde University, Denmark, thk@ruc.dk

HPM Asian Session of HPM 2012

On the first day evening of HPM 2012, we had "Preparation Session for Asia HPM."

Chaired by Sung Sa Hong (Korea), there were three speeches given by Chang-Koo Lee (Korea), Mitsuo Morimoto (Japan), and Anjing Qu (China).

During the dinner after this special session, three countries agreed on the collaboration through Asia HPM.

I believe Asia HPM will play a very important role in helping Asian colleagues work together internationally and open their vision to research in Mathematics History.

Sunwook Hwang

Reflections of a new participant to HPM

What is a new-comer to HPM? In my case, I had met two inspirational figures in the HPM family, Costas Tzanakis and Fulvia Furingetti, at the ICTM conferences in Samos (1998), Crete (2002) and Istanbul (2006). Yet it was not until ICME 11 (Monterrey, 2008) that my meeting Costas and Fulvia came to fruition – there I met Jan van Maanen and Snezana Lawrence also. It took some more years and experiences (ESU-6 Vienna, 2010, CERME 7 Rzeszów, 2011 and BSHM in Greenwich and Dublin) before I was ready for the full immersion in HPM itself at ICME 12 in Seoul and HPM 2012 in Daejeon. The process of changing lens from that of a mathematician and 'arriving' at HPM is indeed a dépaysement; an internal adjustment is required to become comfortable with the external 'paysage'.

It was at CERME 7 when I first presented my own work and enjoyed interaction with Mustafa Alpaslan, Kristín Bjarnadóttir, Kathy Clark, Uffe Janqvist, Tinne Kjeldsen and Peter Ransom, amongst others. It was good to meet all of these established HPM friends again in Daejeon; on the other hand, I regretted that Costas, Fulvia, Jan and Snezana could not be there. There were others I had met at ESU-6, some of whom came to Daejeon. I would like to mention Evelyne Barbin, Sunwook Hwang, and Manfred Kronfellner in their respective chairing roles of HPM and of the organizing committees for Daejeon and Vienna. These thirteen, along with several others whose company I enjoyed in Greenwich, Vienna, Rzeszów, and Dublin were the ones who inspired me to consider coming to the HPM conference in Daejeon – and I was not disappointed!

Of course it is the job of the scientific programme committee of any conference to give the conference a coherent shape and to ensure faithfulness to the chosen form. The structure afforded by the seven themes achieved this in the case of HPM 2012. However, the themes contributed much more than coherence, they underpinned the rich variety of endeavour that is the essence of HPM in the breadth and depth of the work carried out by researchers in a great many countries. Attention was paid, to good effect, to theoretical frameworks, on the one hand, and to the use of history (including original sources) in teaching mathematics, on the other. I appreciated how I might draw from most of the 27 presentations I attended to enhance my own professional work in teaching not only the history of mathematics (HoM), but also mathematics itself. The importance of the role of history in motivating seminal questions relating mathematics to science, technology and the arts was emphasised, as was the key position of mathematics in the cultures of Europe, Asia and the Americas. A variety of topics in the history of mathematics education (HoME) was explored. It seems that an emphasis on this area of research is relatively new; I suspect it will become more and more important as we try to understand deeply trajectories of curricular reform. Of the seven themes, it was the last one, namely mathematics from Eastern Asia, with which I had most difficulty engaging; I hasten to add that this was due to my own lack of familiarity

with the area, rather than the quality of the presentations!

The conference embodied the rich interaction between the H, the P and the M of HPM. In the discussion, concern was expressed about the perceived peripheral position of HPM within the broader corpus of research in mathematics education. To address this concern, it may be important to be more explicit in employing established mathematics education research frameworks in HPM research. On the other hand, HoM plays its own distinctive role in mathematics education – this may need to be articulated more clearly outside the HPM community. There appeared to be diverse views on what were the appropriate grounds to persuade 'others' of the importance of HoM and HPM research.

The entire experience of HPM 2012 in Daejeon was extremely enriching: the presentations, the discussions, the interactions at the venue and later 'into the evening', the excursion (to historic Gongju) and the overall organization. For all of these, I am very grateful to all those who prepared so carefully for this excellent conference. I am confident I will draw on the experience of Daejeon for a long time to come.

Maurice OReilly,
CASTeL, Dublin, Ireland

Work in progress

We encourage young researchers in fields related to *HPM* to send us a brief description of their work in progress or a brief description of their dissertation.

ICME 2012

SEOUL, KOREA, JULY 8TH TO 15TH

REPORT
DG 5 – "Uses of History of Mathematics in School (pupils aged 6 - 13)"

The premise of Discussion Group 5 at ICME 12 was that research on history of mathematics in education tends to have older pupils and students in mind, and that there is a lack of both research and resources on how to include a historical perspective when teaching younger pupils. Thus, we proposed a discussion group focusing on pupils aged 6-13. The organizers of the group were "co-chairs" Bjørn Smestad (Norway) and Funda Gonulates (USA/Turkey), with "team members" Narges Assarzadegan (Iran), Kathy Clark (USA), and Konstantinos Nikolantonakis (Greece). Of these, Kathy, Narges, and Bjørn made it to the conference and led the discussions in Seoul.

There were three key questions provided out in the invitation to the discussion group:

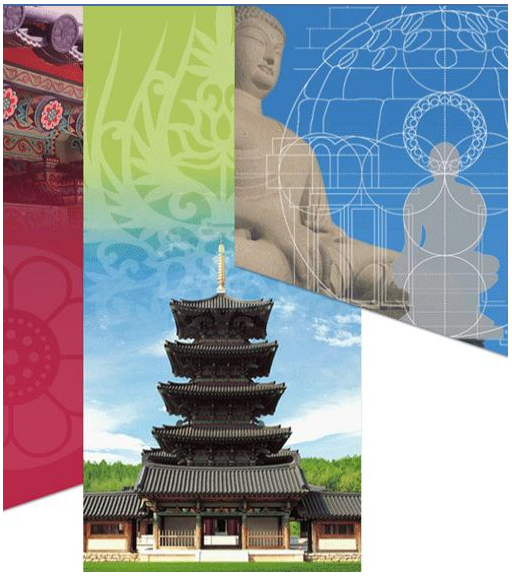
1. Which ideas from HPM can be used with children (aged 6-13) in such a way that produces good results (e.g. improved student engagement, positively impacted student learning)?
2. What would be criteria for finding, developing and selecting materials to be used with children (aged 6-13)?
3. How does the HPM community in particular (and mathematics education community more broadly) assure that high-quality material that cover a variety of topic are produced and shared?

Discussion groups were allotted two 90-minute sessions at the conference. Question 1 was discussed in the first session and questions 2 and 3 were discussed in the second session.

In the first session, after everybody introduced themselves, there was a short introduction mentioning different ideas from the literature about how to include history of mathematics in teaching. Thereafter, Narges Assarzadegan gave a short talk on how she has been working with her students in Iran on the topic. Kathy Clark subdivided question 1 into further sub-questions:

- What ***are*** the ideas for which HPM contributes meaningfully to the mathematical experience of pupils aged 6-13?
- What are the forms of ***good results*** we wish to happen?
- ***How do we know*** when good results occur?
- What are some of the ***obstacles*** that teachers using HPM with pupils of this age may encounter – and what are ways to address or minimize the obstacles?

These questions were discussed in groups, and then the group discussions were summarized for the whole group. A wealth of ideas were discussed in the groups: incorporating historical instruments, finding good problems from history to engage children of this age range, using concrete materials to visualize mathematics, working with words instead of symbols, exploring cross-curricular themes, for instance historical measuring units, using source material from the middle ages, studying materials from the cultures of children's parents and grandparents, and studying positive/negative numbers through history, to mention a few. More generally, it was discussed that although "storytelling" was in our introduction described as just one of many ways of working with history of mathematics to kids, storytelling is indeed particularly important at this age level and should not be disparaged. Teachers who are able to fascinate their pupils with great (and meaningful) stories from the history of mathematics have a wonderful gift.



The good results we wish to happen at this age level mostly has to do with the attitudes of the children: we want them to see mathematics as a fascinating cultural and human activity and make them connect to it in new ways. We will probably never be able to prove beyond doubt that using history of mathematics with children do have positive effects, as history of mathematics will always be just one of several elements a teacher uses simultaneously to engage his students. For the teacher, however, such proofs are not necessary – just seeing the pupils engaged is good enough.

Of course, there are obstacles – both in terms of resources and in teachers' opinion that history of mathematics will take time from mathematics. Moreover, as work on history of mathematics is not mandated in curricula in most countries, there is the ever-present need to justify it to colleagues who are

not interested. This can also be lonely work. Some of these issues can partly be remedied by working on what we discussed in session 2, however.

For the second session, discussing questions 2 and 3, Bjørn Smestad had an introduction giving some good examples of use of history of mathematics (see link below), and Kathy Clark showed some examples from online resources. Then, after a summary of the discussion in part 2, there was more group work, which was then shared.

On which criteria should be used, a whole range of issues were mentioned, but not every resource need to fit every criterion. The resource should:

- Include significant mathematics (and be curriculum-related)
- Include activity/task/problem/something for pupils to "do"
- Fire-up the imagination; inspire pupils to do mathematics
- Tell a story
- Have multiple representations (pictures, text, sound, video, interactivity)
- Show mathematics as a human endeavor (e.g., have a cultural aspect)
- Be doable in a "reasonable amount of time"
- Generate discussion, debate among the pupils
- Be authoritative and accurate

The groups mentioned that there are lots of materials on the internet, and at first you feel lost as it is difficult to see what is of good quality. After a while, you start being able to determine what "makes sense", but still you need to sort through a lot of bad stuff while looking for the gems. (But to get even there, you will probably need experience in using the materials – and where do you get that?) Thus, there is a need for a "clearing house" for keeping materials in one location. This was made more concrete later in the discussion: what we need is a "Kantor project" (named after Moritz Kantor), mimicking the "Klein Project" in providing high-quality resources to teachers, for instance with comments both from historians of mathematics and from teachers who have used the resources with pupils (including information on how it was used and the perceived outcomes). In addition, the need for History of Mathematics courses and better resources at libraries, were mentioned.

For the organizers, this was the first attempt at organizing a discussion group at such a conference. Part of the difficulty of planning it was that there was no way of knowing if there would be five or fifty participants. As it turned out, there were about 25 people from around the world participating, with a good mix of well-known faces in the HPM community and newcomers, which led to good discussions where everybody took part. In that respect, we view the discussion group as a successful experience, and hope that the discussions here will inspire further work on teaching with history of mathematics for young pupils.

See also:

Bjørn Smestad: Examples of "Good" Use of History of Mathematics in School. http://hioa.academia.edu/Bj%C3%B8rnSmestad/Papers/1769606/Examples_of_Good_Use_of_History_of_Mathematics_in_School

Bjørn Smestad,
based partly on the notes of **Kathy Clark**

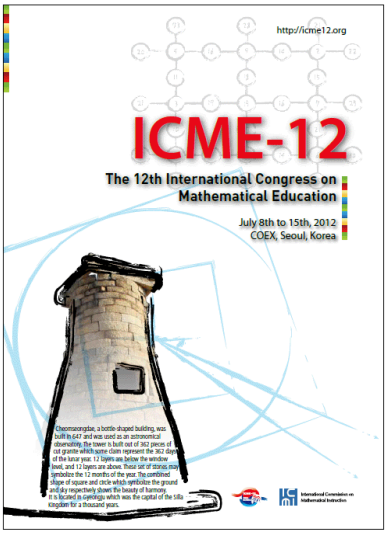
REPORT
TSG 20 – "The Role of History of Mathematics in Mathematics Education"

At the ICME 2012 Conference, *history of mathematics* (HM) *in maths education* was specifically discussed in several contexts: one of the 37 *Topic Study Groups* (chaired by W.S. Horng and R. Chorlay); one discussion group on "Uses of History of Mathematics in School (Pupils aged 6-13)" (organized by B. Smestad, Kathy Clark, and Narges Assarzadegan); one regular lecture on "History, Application, and Philosophy of Mathematics in Mathematics Education: Accessing and Assessing Student's Overview & Judgment" (by U. Jankvist); and one general presentation of The HPM international study group, among the organizations affiliated with the ICMI. A parallel TSG dealt with *the history of mathematics teaching and learning* (chaired by K. Bjarnadóttir and F. Furinghetti).

Eleven talks and fourteen posters were presented in the context of TSG 20, with participants from (nearly) all continents; unfortunately, the African continent was not represented. The TSG was a great success if success is to be measured by attendance; due to the size of the room, many had to sit on the floor, or stay in the lobby. We are sorry our attempts to remedy this situation failed.

Being of a multi-faceted nature, the topic was addressed from a great variety of viewpoints, which testifies to the richness of our field. Our goal here is not to summarize the talks (which are still available on-line at http://www.icme12.org/) but to stress this variety of viewpoints and research perspectives.

Research in the history of mathematics was represented by A. Cauty's talk on Aztec calendars, providing the rest of the community with fresh material for future, more teaching-oriented work. At the other end of the spectrum, several innovative teaching or training experiments were presented and discussed: a course for undergrad students, with a focus on the role of mathematics in European culture (J. Wanko); an undergraduate course on propositional logic and the meaning of "if-then" statements, emphasizing student work on original sources (J. Lodder); a course designed for newly qualified teachers, with an emphasis on the role of HM as a means to foster mathematical content knowledge (S. Lawrence, presented by P. Ransom); a course on the history of mathematics for pre-service teachers in Norway, with a focus on the interactions between historical content knowledge, image of mathematics, and attitude toward the inclusion of HM in teaching (B. Smestad).



Finding the right tools (be they conceptual, or quantitative) to describe, analyze and assess teaching practices is another endeavour that calls for further research. These questions are by no means specific to the HPM community, and it is well-worth investigating the extent to

which shared tools are relevant in an HPM context. Along this line of research, M. Alpaslan presented his on-going doctoral work on the assessment of a pre-service teacher-training course in HM in Turkey, with a view to improving its design in a context of institutional reform. U. Jankvist presented a joint work (with R. Mosvold, J. Fauskanger, and A. Jakobsen) on the MKT framework (Mathematical Knowledge for Teaching), and argued for its usefulness both as an analytical tool and as a means of communication with the math-ed community at large.

Four case-studies were presented, which used specific historical texts to address didactical/epistemological research questions. The role of visualization in proofs was studied on the base of Archimedes' "mechanical proof" of the theorem on the volume of the sphere (M. del Carmen Bonilla); CABRI 3D was used as a visualization tool. S. Xuhua argued that several justifications for algorithms in the multiplicative theory of fractions that can be found in the Chinese classic *The Nine Chapters* could improve students' understanding of the standard rules, and help fight well-known systematic errors. T. Kjeldsen reported on an experiment conducted at high-school level, in which students were asked to make sense and compare two historical texts bearing on the notion of function (Euler, Dirichlet); among other effects, this unusual task was shown to help make "meta discursive rules" more explicit. Finally, A. Michel-Pajus presented a collection of algorithmic texts – some well-known, some less well-known – and studied them from an epistemological and comparative perspective; the algorithms were studied both in terms of expression (algorithmic *texts*, in a semiotic and instrumental context), and justification.

It should be stressed that in the ICME context, the TSG on HM in mathematics education attracts many newcomers to the field of HPM, thus challenging us to make our "common culture" and our quality requirements more explicit. For instance, the fact that we lay the emphasis on the use of *original* sources may have come as a surprise to some; even without considering use in the classroom, the fact that original sources *are* available (availability being highly dependent on language) is not always so well known. When original sources are considered, working with them does require some know-how. We hope this TSG was instrumental in raising awareness on these aspects; we were pleased to see that many participants, including newcomers, could attend the HPM meeting in Daejeon.

The chairpersons would very much like to thank all those who helped organize this TSG, in particular the members of the "team": Hyewon Chang, Kathy Clark, Abdellah El Idrissi, and Manfred Kronfellner; and, Evelyne Barbin, who acted as liaison with the IPC.

Renaud Chorlay
IUFM de Paris (Uni. Paris Sorbonne) &
IREM de Paris (Uni. Paris Diderot)
Renaud.chorlay@paris.iufm.fr

REPORT
TSG 35 – "The History of the Teaching and Learning of Mathematics"

Lost and Found at ICME-12

Usually the program of ICME conferences is so rich that at the end one has the impression to have missed many events and persons, though being very tired from the busy days. This happened to me also at ICME 12 in Seoul, as it happened in the previous ICMEs I attended. Confining ourselves to the parts of the Program relating to History and Pedagogy of Mathematics in the pre-proceedings we may single out the following activities related to this subject:

• Two Topic Study Groups: The TSG 20 on *The role of history of mathematics in mathematics education*, and the TSG 35 on *The history of the teaching and learning of mathematics*

• Two Regular Lectures:

RL5-9: Marta Menghini, *From practical geometry to the laboratory method: the search for an alternative to Euclid in the history of teaching geometry*

RL4-10: Uffe Thomas Jankvist, *History, application, and philosophy of mathematics in mathematics education: Accessing and assessing students' overview & judgment*

• One Discussion Group (DG 5) on *Uses of history of mathematics in school (pupils aged 6 - 13*) carried out by Bjørn Smestad and Kathleen Clark

• One Workshop & Sharing Group WSG-37 carried out by Peter Ransom: *Cross-curricular stem work with 11-18 year old students using hand-held technology*

• 11 Posters related to the TSG 20; 3 Posters related to the TSG 35

• Two meetings of the Affiliated Organizations HPM (International Group for the Relations between the History and Pedagogy of Mathematics) chaired by Evelyne Barbin.

From: http://www.icme12.org/photo/photo_Day1/index.html

I attended all these activities, except the workshop of Peter Ransom, which was overlapping with my presentation in the meeting of HPM. However, the workshop attendees stated that Peter was brilliant and shared many ideas, as he usually does.

My overall impression is that, as it was in the spirit of the original founders, ICME-12 provided the occasion to interact with different streams of research and school practice. In particular, it was a good occasion to approach the local cultures and many new colleagues from Eastern countries. Even more, this happened at the HPM Satellite meeting in Daejeon. Unfortunately it was not possible for me to attend the meeting in Daejeon, but reading the proceedings I learnt a lot about the research and the practice in the classroom about history and mathematics education in Korea and in the near countries.

At ICME-12 my main task was to chair with the co-chair Kristín Bjarnadóttir the Topic Study Group 35: The History of the Teaching and Learning of Mathematics.

The Aims of the TSG 35 were illustrated in the announcement of ICME-12 as follows.

History of mathematics teaching and learning is relatively new as a subject of international attention and research, but it is developing actively and dynamically. It became visible for the first time at ICME 10 in 2004 at Copenhagen, as the TSG29. The success and energy of these activities led to the launching of the first international journal devoted to this field of study, the International Journal for the History of Mathematics Education, which has been published since 2006. History of mathematics education then became a subject in various international meetings, for instance at the ESU-5 in Prague in 2007, ESU-6 in Vienna in 2010, and at the CERME meetings. During the TSG38 at ICME-11 in Monterrey, research into this subject proved its productivity again, with papers presented on the history of the reform movements, on the analysis of classical textbooks, and on historical practice (inside and outside institutions). Recently, specialized international research symposia took place in Iceland and in Portugal.

On the occasion of ICME-10, a first international bibliography of research in the field was prepared.

The bibliography is now retrievable at the following address:

http://www.icme-organisers.dk/tsg29/BiblTSG.pdf

This bibliography outlined streams in research: transmission and socio-cultural reform movements; aspects of teaching practice (textbooks, methods, teacher professionalization); cultural, social and political functions of mathematics instruction; and comparative studies.

Possible themes to be treated are history of:

- changes of curricula in the various countries
- changes of mathematics education as a professional independent discipline
- the cultural and social role of mathematics
- policies in teacher education
- changes and roles of teachers' associations
- the situation of journals on mathematics education
- the role of textbooks in the teaching and learning of mathematics
- general trends in the organizing of the lesson
- the overall impact of digital technologies in the learning and teaching of mathematics
- treatment of particular topics (geometry, algebra, etc.)
- interdisciplinarity and contexts
- reforms movements
- methods.

The activities of the TSG 35 were prepared along the last two years by the co-chairs with the precious help of the Team Members: Amy K. Ackerberg-Hastings (USA), Alexander Karp (USA), Snezana Lawrence (UK), and Young Ok Kim (South Korea). The Liaison IPC Member was Evelyne Barbin

The TSG 35 had one and a half hour timeslots at its disposal.

This was the Final Program:

Session I July 10 Tue, 10:30-12:00 (chair Kristín Bjarnadóttir)

10:30-10:35 *Opening*

10:35-11:00 *Teaching mathematics with objects: The case of protractors*

Amy Ackerberg-Hastings, UMUC & NMAH, United States, aackerbe@verizon.net

11:00-11:25 *Scholarly treatises or school textbooks? Mathematical didactics in traditional China and Vietnam*

Alexei Volkov, National Tsing Hua University, Taiwan, alexei.volkov@gmail.com

11:25-11:50 *Notebooks as a teaching methodology: A glance through the practice of professor Cuesta (1907-1989)*

Maria Teresa Gonzalez, University of Salamanca, Spain, maite@usal.es

11:50-12:00 *Discussion and Closing*

Session II, July 11 Wed, 10:30-12:00 (chair Amy Ackerberg-Hastings)

10:30-10:35 *Opening*

10:35-11:00 *Development, Problems and thoughts of New China (PRC)'s mathematics education*

Qinqiong Zhang, Wenzhou University, China, zhang922@yahoo.com

Kongxiu Kuang, Southwest University, China, kongxiu2006@126.com

Yimin Xie, Jinan University, China, 411569704@qq.com

Naiqing Song, Southwest University, China, songnq@swu.edu.cn

11:00-11:25 *Russian mathematics teachers: Beginnings*

Alexander Karp, Teachers College, United States, apk16@columbia.edu

11:25-11:50 *The implementation of the 'New Math' and its consequences in Iceland. Comparison to its neighbouring countries*

Kristín Bjarnadóttir, University of Iceland, Iceland, krisbj@hi.is

11:50-12:00 *Discussion and Closing*

Session III, July 13 Fri, 15:00-16:30 (chair Alexander Karp)

15:00-15:05 *Opening*

15:05-15:30 *Early history of school mathematics in North America 1607-1861*

McKenzie (Ken) Clements, Nerida Ellerton, Illinois State University, United States, macleme@ilstu.edu, ellerton@ilstu.edu

15:30-15:40 *The changing fortunes – development of mathematics education in the Balkan societies in the 19th century* (Distributed paper)

Snezana Lawrence, Bath Spa University, United Kingdom, snezana@mathsisgoodforyou.com

15:40-15:55 Presentation of the forthcoming *Handbook on the history of mathematics education*

Alexander Karp, Teachers College, United States, apk16@columbia.edu

Gert Schubring, University of Bielefeld, Germany, gert.schubring@uni-bielefeld.de

15:55-16:20 *Learning of mathematics in nineteenth century South India*

Senthil Babu, French Institute of Pondicherry, India, senjay@gmail.com

16:20-16:30 *Discussion and Closing*

Session IV, July 14 Sat, 10:30-12:00 (chair Fulvia Furinghetti)

10:30-10:35 *Opening*

10:35-11:00 *Missionaries and mathematics education*

Gregg DeYoung, The American University in Cairo, Egypt, gdeyoung@aucegypt.edu

11:00-11:25 *Some aspects of scientific exchanges in mathematics between USA and Brazil*

Lucieli Trivizoli, Universidade Estadual de Maringa, Brazil, lmtrivizoli@uem.br

11:25-11:50 *Common fractions in L. F. Magnitskii's Arithmetic (1703): Interplay of tradition and didactical innovations*

Viktor Freiman, Universite de Moncton, Canada, viktor.freiman@umoncton.ca

Alexei Volkov, National Tsing Hua University, Taiwan, alexei.volkov@gmail.com

11:50-12:00 *Discussion and Closing*

Fulvia Furinghetti
Dipartimento di Matematica,
Università di Genova. Italy

Thanks to Bjørn Smestad

Bjørn was a member of the HPM Newsletter team for many years, but he has decided to resign for professional reasons.

As President of HPM from 2008 to 2012 and in the name of the AdB of HPM, I want to thank Bjørn very much for his fine work on the HPM newsletter, a work he always did with efficiency and kindness. It is a pleasure for everyone to have Bjørn as a colleague, and we hope that we will have him in the HPM community for a long time to come.

Apology to Fulvia Furinghetti

There was an error in the Report of HPM 2008-2012 contained in the previous HPM newsletter. Indeed, the Chair of *the Topic Study Group 23*: *The role of history of mathematics in mathematics education* in ICME 11, Monterrey, Mexico, 6-13 July 2008 was Fulvia Furinghetti (Italy).

We offer all our apologies to Fulvia Furinghetti.

Evelyne Barbin,
Chair of HPM 2008-2012

SCIENCE & EDUCATION

Special Issue
History and Philosophy of Mathematics in Mathematics Education

Call for Papers

Recent years have seen increasing interest in the role of the history and philosophy of mathematics in the teaching of mathematics at all levels. Although the history and philosophy of mathematics can be thought of as separate domains, they are closely linked to one another, as they are also to more general issues of history, philosophy, and culture.

For this reason, a focused treatment of history and philosophy of *mathematics* can also enlighten science educators as well as mathematics educators, and, indeed, it is important for those involved in science education to understand how mathematics and its history relates to the teaching of science, and conversely how the teaching and learning of mathematics engages with science.

We therefore invite mathematicians, historians, philosophers, and others who are doing research in the history and philosophy of mathematics and their relation to mathematics education to contribute to this

special issue of *Science & Education.* Both theoretical and empirical studies are welcome.

Examples of topics include:

– The role of history and philosophy of mathematics in teacher training
– Theoretical and/or conceptual frameworks for integrating history and/or philosophy into mathematics education.
– Classroom experiments or teaching materials that implement history or philosophy of mathematics.
– Use of original sources in the classroom and their impact on learning mathematics.
– The historical relationship of mathematics to science and technology, and its philosophical and educational implications.
– Philosophical lessons from ethnomathematics, and ways these can contribute to mathematics education.

Deadline for Submissions:
December 1st 2012

Submissions to:
www.editorialmanager.com/sced
Choose MATHEMATICS as mss type.

Notification of intention to submit and subject matter is appreciated as it assists coordination and planning of the issue.

Guest Editors, questions and inquiries should be directed to:

Victor J. Katz
Professor of Mathematics, Emeritus
University of the District of Columbia
Washington, DC, USA
vkatz@udc.edu

Uffe Thomas Jankvist
Associate Professor of Mathematics Education
Roskilde University
Roskilde, DENMARK
utj@ruc.dk

Michael N. Fried
Associate Professor
Graduate Program for Science and Technology Education
Ben-Gurion University
Beersheva, ISRAEL
mfried@bgu.ac.il

Stuart Rowlands
Lecturer in Mathematics
University of Plymouth
Plymouth, ENGLAND
stuart.rowlands@plymouth.ac.uk

PRIMUS

Announcement of Special Issue The Use of History of Mathematics to Enhance Undergraduate Mathematics Instruction

Call for Papers

The journal PRIMUS announces a special issue on the use of history of mathematics to enhance the instruction of undergraduate mathematics. Kathleen Clark (Florida State University) and John Thoo (Yuba College) will guest edit the special issue.

The view that history of mathematics enhances the teaching and learning of mathematics is not new, yet publications that provide more than anecdotal descriptions of using history in teaching mathematics remain difficult to find. In the spirit of the main themes of the *International Study Group on*

the Relations between the History and Pedagogy of Mathematics (HPM Group), this special issue of PRIMUS seeks to publish both theoretical and empirical studies that significantly add to the literature, providing a collection of research in a single volume as a pedagogical resource.

Manuscript submissions may include one or more of the main themes of the HPM Group (modified with respect to the PRIMUS readership):

(1) theoretical and/or conceptual frameworks for integrating history in mathematics education;

(2) history and epistemology as tools for an interdisciplinary approach in the teaching and learning of mathematics and the sciences;

(3) results of actual classroom experiments in the implementation of history in the teaching of mathematics, both from the cognitive and affective points of view, at the undergraduate level, including pre-service mathematics teacher education;

(4) results from teaching history of mathematics courses for mathematics, mathematics education, or philosophy majors;

(5) ways of integrating original sources in the undergraduate classroom, and their educational effects, preferably with conclusions based on classroom experiments;

(6) design and/or assessment of teaching and learning materials on the history of mathematics;

(7) the exploration of possible analogies and parallelism between the historical development and students' cognitive development of mathematical ideas;

(8) surveys on the existing uses of history in curriculum, textbooks, and/or classrooms at the undergraduate level.

Although papers dealing with any aspect of incorporating a historical dimension in undergraduate mathematics education are welcome, the editors particularly encourage papers that address one or more of the themes above.

Submissions will be accepted until **March 31, 2013**. Papers for this special issue should be approximately 10 to 12 pages in length, although there is some flexibility. Supplementary materials, such as appendices and color illustrations, may be published in the online version.

We also extend a call for referees for the special issue, especially those who have some experience with or significant interest in the themes provided.

For more information, please contact:

Special Issue Guest Editors:

Kathleen Clark, kclark@fsu.edu (primary contact)

John Thoo, jthoo@yccd.edu

PRIMUS: Problems, Resources, Issues in Mathematics Undergraduate Studies, is a refereed journal published by Taylor and Francis. See http://www.tandf.co.uk/journals/titles/10511970.asp for more information.

PRIMUS Editor-in-Chief

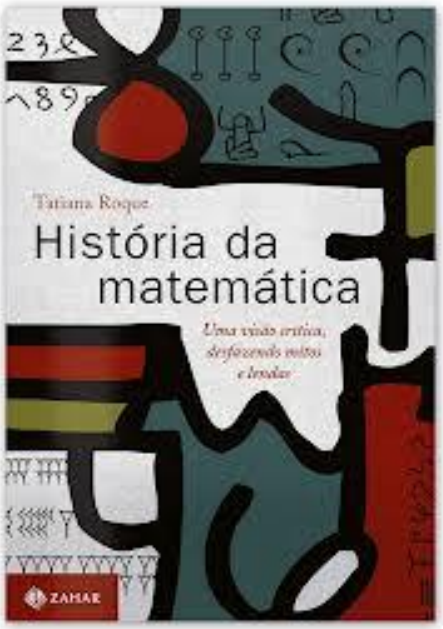
Jo Ellis-Monaghan,

jellis-monaghan@smcvt.edu

Have you read these?

História da matemática - Uma visão crítica, desfazendo mitos e lendas (Tatiana Roque)

Rio de Janeiro: Editora Zahar, 2012.
ISBN 978-85-378-0888-7



This book, in Portuguese, presents a fresh and innovative approach to present the history of mathematics for university lectures, based on recent progress in the methodology of research into the history of mathematics and on subsequent new results and re-assessments.

Gert Schubring

Plimpton 322: The Ancient Roots of Modern Mathematics

Plimpton 322: The Ancient Roots of Modern Mathematics is a half-hour documentary film designed to enthuse university and high school students, especially minority students, to pursue mathematical studies. With New York City as backdrop, the film takes viewers on a tour of our mathematical debt to ancient cultures in the Middle East, Asia and Africa. We witness their ideas still playing crucial roles in our society and 21st-century technology. At the center of the film is a 4,000-year-old cuneiform tablet known as Plimpton 322, which was excavated in Iraq around 1920 and now has its home in New York.

The film is freely available for viewing at http://faculty.baruch.cuny.edu/lkirby/.

Laurence Kirby

Announcements of events

5th International Conference of the European Society of History of Science

November 1-3, 2012
Athens, Greece

The *5th International Conference of the European Society of History of Science* is organized in Athens, 1-3 November 2012, by the Institute of Neohellenic Research of the National Hellenic Research Foundation (Dr. E. Nicolaidis) and the Faculty of Education of the National and Kapodistrian University of Athens (Prof. C. Skordoulis). The theme of the conference is "Scientific cosmopolitanism and local cultures: religions, ideologies, societies".

The list of accepted symposia:
(http://5eshs.hpdst.gr/symposia)

1. Ancient Astronomy and its Later Reception
2. Around Henri Poincaré's Centenary: physics, mathematics and philosophy.
3. Byzantine and post-Byzantine alchemy: principles, influences and effects
4. Cartesian Physics and its reception: between local and universal
5. Cultural Identity and Trans-Nationality in the History of Science
6. Engineers, Circulation of Knowledge, and the Construction of Imperial and Post-Imperial Spaces (18th-20th century)
7. Exact sciences in Habsburg Monarchy in 18th century (on 300th anniversary of Boscovich's birthday)
8. From cameralism and natural philosophy to applied biology: agriculture and science in the 19th-20th centuries
9. Gender and the cosmopolitan character of science
10. Global phenomena and local specificities: conduits between scientifically minded elites and holders of artisanal knowledge between the East and the West.
11. Historical Narratives of Cold War Science
12. History and Historical Epistemology Of Science. Conceptual Streams and Mathematical Physical Objects in the Emergency Of Newton's Science
13. History and Philosophy of Science in EU Secondary Curricula? New Proposals Wanted
14. History of Slavic Science – Cultural Interferences, Historical Perspectives and Personal Contributions
15. Humanities, mathematics and technics at Renaissance courts
16. Mathematical Courses in engineering education in the seventeenth and eighteenth century in the Iberian Peninsula
17. Mechanism, embodiment and life: iatromechanism and chemistry in debate in early modern natural philosophy
18. Physical sciences between Europe and the USA before WWII
19. Prefaces as correspondences in the context of Ancient Greek, Arabic and Latin mathematics texts

20. Science and Scandal: Scientific Controversy in the Public Space
21. Scientific archives, unpublished manuscripts in private or public corpuses: historiographical and methodological approaches.
22. Scientific Cosmopolitanism
23. Scientific Expeditions: Local Practices and Cosmopolitan Discourses
24. The Exact Sciences in the Eastern Mediterranean in the Modern and Contemporary Ages
25. The next science of humankind. Myths and histories of the Neurosciences
26. The Origins of Experimental Philosophy: Experimental Procedures and Empirical Methods in Early Modern Europe
27. The reception of the `synthetic evolutionary theory' in Europe: from Great Britain to Germany and Russia
28. The scientific cosmopolitanism as traced by astronomical instruments
29. The scientific culture of medieval Jews: facts and questions
30. The Tools of Research and the Craft of History: On the Interaction between Historians, Their Tools, and the Creators of Those Tools
31. Transnational Economic Science after WWII
32. Women in the Laboratory from the early modern times to the 20th century

epiSTEME 5: Fifth International Conference to review research on Science,Technology and Mathematics Education

January 7-11, 2013
Mumbai, India

(Information from http://conf.hbcse.tifr.res.in/index.php/episteme5/5/announcement/view/1)

The Conference, epiSTEME-5, is the fifth in a series of biennial conferences aimed at reviewing research conducted world-wide in science, technology and mathematics education. It is being organised by the Homi Bhabha Centre for Science Education, a National Centre of the Tata Institute of Fundamental Research, Mumbai, India.

Science, technology and mathematics education (STME) have, in recent decades, emerged as lively new research areas. This research, inspired by issues of learning and teaching, has clear uniting themes in the cognitive, pedagogical, historical, philosophical and socio-cultural aspects of the sciences. The epiSTEME conferences occupy a unique position among conferences and bring together researchers in these foundational areas as well as from the domains of science, design and technology and mathematics education. Conference epiSTEME-5 continues this tradition of interdisciplinary exchange.

The name epiSTEME connotes, at one level, a systematic study of knowledge, while as an acronym it suggests a meta-view of science, technology and mathematics

education. The previous epiSTEME conferences, episteme-1 in 2004, episteme-2 in 2007, episteme-3 in 2009 and episteme-4 in 2011, have catalyzed collaborative programmes among researchers and educational practitioners in India and abroad. Within India, they have helped to initiate and foster linkages between theory, empirical research and the activities of grassroot organizations.

This time, we are also co-hosting the 20th International Conference on Conceptual Structures (ICCS), from January 10-12, 2013. The special theme for this year will be "Conceptual Structures for Education Research". We plan to organize one day of common sessions to facilitate exchange of ideas addressing the two research communities during the epiSTEME 5.

Structure of the conference

Four broad strands of research that impact STME will form the core of epiSTEME-5. Themes have been identified under each strand to reflect active research topics and areas of interest. Leading scholars will be invited to give overviews of some of the themes within each strand. Paper and poster sessions will complement the review talks. Pre- and post-conference workshops are being planned, the details of which will be announced later on the conference website. The strands and proposed themes are:

Strand 1. Historical, philosophical and socio-cultural studies of STM implications for education

- History and Philosophy of STM
- Socio-cultural and gender issues in STM
- Science and Technology Studies
- Public understanding of and participation in STM

Strand 2. Cognitive and affective studies of STME

- Visuo-spatial thinking
- Knowledge representation and Conceptual Structures
- Language and learning
- Problem solving, learning and reasoning
- Model based reasoning

Strand 3. Curriculum and pedagogical studies in STM

- Assessment and evaluation
- Classroom interaction and discourse
- Affective aspects of learning
- Teacher professional development
- Educational initiatives and innovations

Strand 4: Information and Communication Technologies in STME

- Open Education Resources
- Online and asynchronous learning
- Visualization of models and data
- Open and Citizen science initiatives

Invited Review Speakers (confirmed)

- Chun-Yen CHANG, NTNU, Taiwan
- Sugra Chunawala, Homi Bhabha Centre for Science Education, TIFR, India
- Sibel Erduran, Bristol University, UK
- Mansoor Niaz, Universidad de Oriente, Venezuela
- Vinod Raina, co founder Eklavya, and Bharat Gyan Vigyan Samiti
- Michael Reiss, Institute of Education, University of London, UK
- Mark Sanders, Virginia Tech, USA

- Geoffrey Saxe, University of California, USA
- Yoshinori Shimizu, University of Tsukuba, Japan
- Dana Zeidler, University of South Florida, USA

Please revisit the conference website for updated confirmed list of invited review speakers and further updates.

Call for Papers

Papers are invited on the strands and themes listed above. The themes suggested are not exhaustive. (If you are in doubt, do write to the convener for clarification.)

Submissions can be made online in the form of full papers of 6-8 pages in length (maximum of 8 pages including references). Details and a template for submission may be downloaded from the conference webpage.

All submissions go through a double-blind review process. Accepted papers are published in the Conference Proceedings which would be distributed during the conference and can also be downloaded from the conference website. Review talks along with the discussions will be published in a series of volumes called The epiSTEME Reviews after the conference.

To enable a blind review process, authors' names, contact details and title of the paper must be provided separately, and must not be included in the papers. There are two modes of presentation at the Conference: Oral and Poster. The academic committee will assign accepted submissions to one of the two modes of presentation. Authors may indicate their preference for the mode of presentation at the time of submission.

Registration

Conference registration will start in September 2012.

Meanwhile please create an online registration so that you will receive updates of the conference information from time to time.

Conference registration fee

Participants from Institutions within the subcontinent (including India, Bangladesh, Bhutan, Pakistan, Nepal, Sri Lanka and the Maldives)

Regular: INR 5000

Student: INR 2500

Participants from Institutions outside the subcontinent

Regular: USD 500

Student: USD 250

Important Dates

- Deadline for Submission of full paper: May 14, 2012
- Notification of acceptance: July 14, 2012
- Submission of revised final paper: September 15, 2012
- Registration: September 1 - November 15, 2012
- Dates of conference: January 7-11, 2013

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- Aniket Sule

Contact

episteme5@hbcse.tifr.res.in

Please check updates from the conference home page: http://episteme5.hbcse.tifr.res.in/

Third International Conference of the History of Mathematics Education (3ICHME)

September 25-28, 2013
Uppsala, Sweden

1st Announcement

Organizer: Department of Education, Uppsala University

UPPSALA UNIVERSITET

We are calling for papers for this third conference continuing the successful works initiated in Iceland (June 2009) and continued in Portugal (October 2011). Abstracts of proposed contributions (length: about one page) should be submitted by **March 31, 2013**. The decision about acceptance will be communicated by **May 15, 2013**. Submission of abstracts, and later on papers, is done via the conference website:

http://www.blasenhus.uu.se/3ICHME

The conference

History of mathematics education, since it became first visible internationally at ICME 10 in 2004 in Copenhagen as the TSG 29, is meanwhile a well-established research area. The first international journal devoted to this field of study, the International Journal for the History of Mathematics Education, is published since 2006. History of mathematics education became a subject in various international meetings, for instance at the

ESU-5 (Prague, 2007) and ESU-6 (Vienna, 2010), at the CERME meetings, and at ICME 11 (Monterrey, 2008, TSG 38), ICME 12 (Seoul, 2012, TSG 35) and HPM2012 (Daejong, 2012)

The first specialized research conference, entitled "On-going Research in the History of Mathematics Education", held in Garðabær near Reykjavík (the capital of Iceland) in 2009, turned meanwhile to a series of such specialized conferences. We are now organizing the third international conference, this time in Uppsala, Sweden. Uppsala University has longstanding traditions in studies of the history of education and more recently also the history of mathematics and mathematics education.

The themes treated in the former conferences were in particular (see also the Proceedings): Geometry teaching, Algebra teaching, Teaching of calculus, Interdisciplinarity and contexts, The modern mathematics movements, Curriculum history, Development of mathematics education in specific countries, Practices of teaching, Mathematics textbooks and Transmission and reception of ideas.

We are projecting to publish peer reviewed proceedings.

Organizing committee:

- Kristín Bjarnadóttir
- Fulvia Furinghetti
- Johan Prytz
- Gert Schubring

Further information about the conference, accommodation and Uppsala is or will be available on the conference website.

Registration and conference fee

Before **June 15**, **2013**, the fee is 160 Euros, after that the fee is 190 Euros. Last day of registration and payment is **August 28, 2013**. Registration is done via the conference website.

References

Paedagogica Historica, Special Issue: History of Teaching and Learning Mathematics, ed. by Gert Schubring, 2006, *XLII*: IV&V. [Proceedings of TSG 29 at ICME 10]

Bjarnadóttir, Kristín; Furinghetti, Fulvia & Schubring, Gert (Eds.) (2009). "Dig where you stand". Proceedings of the conference on On-going research in the History of Mathematics Education. Reykjavik: University of Iceland – School of Education.

Bjarnadóttir, Kristín; Furinghetti, Fulvia; Matos, José & Schubring, Gert (Eds.) (2012). "Dig where you stand" 2. Proceedings of the conference on the History of Mathematics Education. Lisbon, Universidade Nova. (Forthcoming)

Information sent by

Johan Prytz

Distributors:

If you wish to be a distributor in a new or unstaffed area please contact the editor.

Area	Name and address	Email address
Argentina	Juan E. Nápoles Valdés, Lamadrid 549, (3400) Corrientes, ARGENTINA	napoles4369@gmail.com
Australia	Gail FitzSimons, 68 Bradleys Lane, Warrandyte, Victoria 3113, AUSTRALIA	gfi@unimelb.edu.au
Austria	Manfred Kronfellner, Institute of Discrete Mathematics and Geometry, Vienna University of Technology, Wiedner Haupstr. 8-10, A-1040 Wien, AUSTRIA	m.kronfellner@tuwien.ac.at
Belgium and The Netherlands	Jan van Maanen, Freudenthal Institute for Science and Mathematics Education, Universiteit Utrecht, Princetonplein 5, Postbus 85170, 3508 AD Utrecht	J.A.vanMaanen@uu.nl
Canada	Thomas Archibald, Mathematics Department, Acadia University, Wolfville, NS B0P1X0, CANADA	Tom.Archibald@acadiau.ca
China	Ma Li, Linkoping University, ITN, SE - 601 74 Norrkoping, SWEDEN	ma_li@mac.com
Eastern Europe		
France	Evelyne Barbin, Centre François Viète, Faculté des sciences et des techniques, 2 Chemin de la Houssinière, BP 92208, 44322 Nantes cedex, FRANCE	evelyne.barbin@wanadoo.fr
Germany	Gert Schubring, Inst. f. Didaktik der Math., Universitaet Bielefeld, Postfach 100 131, D-33501, Bielefeld, GERMANY	gert.schubring@uni-bielefeld.de
Iran	Mohammad Bagheri, P.O.Box 13145-1785, Tehran, IRAN	sut5@sina.sharif.edu
Israel	Ted Eisenberg, Mathematics Department, Ben Gurion University of the Negev, Beer-Sheva 84105, ISRAEL	eisen@math.bgu.ac.il eisenbt@barak-online.net
Italy	Marta Menghini, Dipartimento di Matematica (Universita` La Sapienza), Piazzale A. Moro 5, 00185 Roma ITALY	marta.menghini@uniroma1.it
Japan	Osamu Kota, 3-8-3 Kajiwara, Kamakura Kanagawa-ken, 247-0063 JAPAN	kota@asa.email.ne.jp
Malaysia	Mohamed Mohini, Department of Science and Mathematical Education, Universiti Teknologi Malaysia, 81310 Johor, MALAYSIA	mohini@fp.utm.my
Mexico	Alejandro R. Garciadiego, Caravaggio 24, Col. Nonoalco Mixcoac Del. Benito Juárez 03700 México, D. F. México	gardan@servidor.unam.mx
Morocco	Abdellah El Idrissi, E.N.S. B.P: 2400 Marrakech, C.P: 40 000, MOROCCO	a_elidrissi@hotmail.com
New Zealand	Bill Barton, Mathematics Education Unit, Dept of Mathematics and Statistics University of Auckland, Private Bag 92-019, Auckland, NEW ZEALAND	b.barton@auckland.ac.nz
Other East Asia	Gloria Benigno, Department of Education, Culture and Sports, Region X, Division of Misamis Occidental, Oroquieta City, PHILLIPINES	glorya4444@yahoo.com
Peru	María del Carmen Bonilla, Calle Reni 272, San Borja, Lima 41. Lima, Peru.	mc_bonilla@hotmail.com
Russia	Vasilii Mikhailovich Busev	vbusev@yandex.ru
Scandinavia	Sten Kaijser, Department of Mathematics, P.O. Box 480, SE- 751 06 Uppsala, SWEDEN	sten@math.uu.se
South America	Marcos Vieira Teixeira, Departamento de Matemática, IGCE – UNESP, Postal 178 13 500 - 230 Rio Claro, SP BRAZIL	marti@rc.unesp.br
South Asia	Prof. R. C. Gupta, Ganita Bharati Academy, R-20, Ras Bahar Colony, Jhansi-284003, U.P. INDIA	
South East Europe	Nikos Kastanis, Department of Mathematics, Aristotle University of Thessaloniki, Thessaloniki 54006, GREECE	nioka@auth.gr
Southern Africa	Paulus Gerdes, Mozambican Ethnomaths Research Centre, C.P. 915, Maputo, MOZAMBIQUE	paulus.gerdes@gmail.com

Spain and Portugal	Carlos Correia de Sá, Departamento de Matemática Pura; Faculdade de Ciências da Universidade do Porto; Rua do Campo Alegre, 687 P - 4169 - 007 Porto, PORTUGAL	csa@fc.up.pt
Taiwan	Wann-sheng Horng, Math dept NTNU, 88 Sec.4, Tingchou Rd., Taipei, TAIWAN	horng@math.ntnu.edu.tw
Turkey	Mustafa Alpaslan, ODTU Egitim Fakultesi EF-A37 06800 Cankaya/Ankara TURKEY	amustafa@metu.edu.tr
United Kingdom	Snezana Lawrence, Bath Spa University, Bath, UK	snezana@mathsisgoodforyou.com
United States of America	David L. Roberts, Prince George 's Community College, Largo, Maryland, USA	robertsdl@aol.com

HPM Advisory Board:

Name	Address
Barbin, Evelyne	Universite de Nantes, IREM-Centre Francois Viete, France
Booker, George	Griffith University, Brisbane, Australia
Chorlay, Renaud	IREM, Université Paris 7, 175-179 rue Chevalleret, 75013 Paris, France
Clark, Kathy	Florida State University, Tallahassee, Florida 32306 – 4459, USA
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El Idrissi, Abdellah	Ecole Normale Supıieure, BP 2400, ENS, Marrakech, CP. 40000 Maroc
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FitzSimons, Gail	68 Bradleys Lane, Warrandyte, Victoria 3113, Australia
Furinghetti, Fulvia	Dipartimento di Matematica dell'Universita di Genova, Genova, Italy
Horng, Wann-Sheng	Department of Mathematics, National Taiwan Normal University, Taiwan
Hwang, Sunwook	Department of Mathematics, Soongsil University, Seoul, Korea
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Jahnke, Niels	Fachbereich Mathematik, Universität Duisburg-Essen, Germany
Jankvist, Uffe	Department of Science, Roskilde University, P.O. Box 260, DK-4000 Roskilde, Denmark
Kaisjer, Sten	Department of Mathematics, University of Uppsala, Uppsala Sweden
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Pengelley, David	Department of Mathematical Sciences, New Mexico State University, Las Cruces, USA
Puig, Luis	Departamento de Didáctica de las Matemáticas, Universitat de València Estudi General, Spain
Radford, Luis	École des sciences de l'éducation, Université Laurentienne, Sudbury, Ontario, Canada
Roque, Tatiana	Universidade Federal do Rio de Janeiro, Brazil
Schubring, Gert	IDM, Universitat Bielefeld, Postfach 100 131, D-33501 Bielefeld, Germany
Siu, Man-Keung	Department of Mathematics, University of Hong Kong, Hong Kong SAR, China
Smestad, Bjørn	Faculty of Education, Oslo University College, Norway
Stein, Robert	California State University, San Bernardino, USA
Tzanakis, Constantinos	Department of Education, University of Crete, Rethymnon 74100, Greece
van Maanen, Jan	Freudenthal Institute, Utrecht University, The Netherlands
Weeks, Chris	Downeycroft, Virginstow Beaworthy, UK
Winicki-Landman, Greisy	Department of Mathematics and Statistics, California State Polytechnic University, USA

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Please pass on news of the existence of this newsletter to any interested parties.

This and previous newsletters can be downloaded from our website:

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

These and other news of the HPM group are also available on the website

http://grouphpm.wordpress.com/

(the online and on time version of this newsletter).

Items for the Newsletter should be sent to the editors, preferably by email (see addresses below).

The Newsletter appears three times a year with the following deadlines for next year.

No.	Deadline for material	Sent to distributors
82	**12 February 2013**	**1 March 2013**
83	12 June 2013	1 July 2013
84	12 October 2013	1 November 2013

The Newsletter is the communication of the 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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Editors:

Snezana Lawrence, snezana@mathsisgoodforyou.com

Helder Pinto, hbmpinto1981@gmail.com

Kathy Clark, kclark@fsu.edu

Luis Puig, luis.puig@uv.es

A note from the Editors

The Newsletter of HPM is primarily a tool for passing on 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.