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ICMI News 16 : February 2011

- Extra-muros -



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ICMI News 16 : February 2011

A Bimonthly Email Newsletter from the ICMI-International Commission on Mathematical Instruction

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- ▶ 1. Editorial : 2013 is The Year of Mathematics of Planet Earth

Our planet suffers from excessive use of its natural resources, from desertification, from pollution of the earth and the oceans. The above causes hunger and affects public health, life expectancy, and bio-diversity. Climate change, whether man made or not, is already causing extreme events and disasters. Man made systems, like transportations flows, health systems, or financial organization, are becoming more and more complex and sometimes run out of control. These phenomena have raised public awareness and influence the agenda of governments, of international bodies, and of science policy leaders. It is clear that addressing the above issues should start with scientific research and advanced technological development. Every high-school student understands that the solutions require study and research in the exact sciences like chemistry, physics and geology, in the life sciences like epidemiology, genetics and zoology, and in engineering. It is not clear whether every high-school student is aware that beyond all of it there is mathematics. The high-school teachers need to demonstrate that there is mathematical modeling and algorithms behind water resource management and hydrological forecasting ; behind energy generation, preservation and allocation ; behind weather prediction, fluid dynamics, forecasting extreme events (tsunamis, hurricanes, earthquakes) and risk management ; behind analyzing complex systems (like transportation and finance) ; behind understanding epidemic spread and virus infections ; and behind ecological conservation. Curriculum planning should take this into consideration, and policy makers should be strongly aware of it. The mathematics behind our responses includes a wide spectrum of mathematical fields, from complex analysis to numerical analysis to stochastics, statistics, probability, ergodic theory, game theory, catastrophe theory, projective geometry, algebra, and scientific computing. Therefore the International Mathematical Union declared the year 2013 as The Year of Mathematics of Planet Earth (MPE). In terms of education systems this means presenting posters and models in schools, special issues of mathematical magazines, interactive web activities, and teachers conferences on the theme. In terms of mathematics education national societies 2013 should be a time of presenting to the public and creating platforms for financing mathematical programmes. In terms of ICMI, it can mean special round tables at our conferences, curriculum development via study groups, interdisciplinary conferences jointly organized with other mathematical and science and science education societies and other organizations. We need to remain aware that effective Mathematics and Mathematics Education are necessary in order to protect our planet, our lives, and our futures.

Mina Teicher, Vice-President of ICMI, teicher@macs.biu.ac.il

- ▶ 2. UNESCO : The challenges of mathematics education in basic education

"Les défis de l'enseignement des mathématiques dans l'éducation de base"

In 2009, as ICMI president, Michèle Artigue was asked to take part in a meeting of experts organized by UNESCO in Paris about science and mathematics education policies, and then on the basis of the conclusions of this meeting to prepare a document on the challenges of mathematics education in basic education to be published and disseminated by UNESCO together with a parallel document addressing the challenges of scientific education. This second document was written by Charles Ryan, University of Winchester UK. The two documents have just been concluded but are not yet available for distribution. In line with the declaration from the World Conference in Science held in Budapest in 1999, they consider that anyone should have access to a scientific education of quality, and also that such an education has a decisive contribution to offer to the realization of the Millennium Goals adopted by the UN in 2000. Mathematics education is here considered an essential component of scientific education at large, and the connections to be established between education in mathematics and in science are emphasized in the two documents which share a common introduction and structure.

The two documents were presented in a seminar held in Paris, January 19, at the UNESCO headquarters and presided by Georges Haddad, the director of the Education Research & Foresight Team of UNESCO, and a former director of the Division of Higher Education. A number of UNESCO staff and other interested public were present. UNESCO presented these documents as a response to the world need of scientists able of imagining futures of which we can now just have a glimpse, but also of our need to understand the challenges of health, environment, energy, development so that all the people are able to understand these challenges and that the debate is not reserved to specialists. UNESCO considers it important to have a scientific education of quality for all, and this includes mathematics education and technological education.

The mathematics document presents first the agreed vision on the significance of a mathematics education of quality, emphasizing that it should be faithful to mathematics, both in its content and practices, raise students' interest towards the discipline and develop students' confidence in their mathematical capacities. It should thus enable students to understand that mathematics is part of a long history combined with the history of humanity ; that mathematics is not a fixed corpus of knowledge but, on the contrary, a living and expanding science, whose development nourishes that of other scientific fields and is nourished by them in return.

The current published version of the document is in French. An English translation has been prepared by the ICMI Executive Committee and should be soon published by UNESCO which also takes in charge the preparation of a Spanish version. An Italian translation is being prepared under the responsibility of the Italian Mathematical Union and will be published by it. UNESCO is open to translation in any other language, and the different versions will be made accessible on the ICMI website. ICMI sincerely hopes that the publication of this document and its dissemination will productively support reflection and action among all those who can contribute to reaching the goal of quality mathematics education for all.

We will post a note in this newsletter when the documents are available in print or on the web.

Jaime Carvalho e Silva, Secretary-General of ICMI, jaimecs@mat.uc.pt

► 3. New permanent Office of IMU/ICMI/CDC

February 1, 2011 was a great day for IMU and ICMI and CDC. After a lengthy but very productive process, we are all going to have a permanent office and will not need any more to carry all the papers and documents all over the world from the office of one President or Secretary General to the next one. IMU General Assembly decided to accept the offer of the Weierstrass Institute (WIAS) in Berlin and now we have a brand new headquarters with permanent staff

working on it : 5 positions have been opened and are being filled.

In the Official Opening Ceremony of the Permanent IMU Secretariat were present Dr. Georg Schütte, State Secretary of the German Federal Ministry of Education and Research, a representative of Prof. Dr. E. Jürgen Zöllner, Berlin Senator for Education, Science and Research, Prof. Dr. Ingrid Daubechies, President of the International Mathematical Union (IMU) , Prof. Dr. Christian Bär, President of the German Mathematical Society (DMV), Prof. Dr. Jürgen Sprekels, Director of WIAS and Prof. Dr. Martin Grötschel, IMU Secretary, Vice President of the Zuse Institute Berlin. This was a very significant ceremony for the IMU activities, as well as its two main committees ICMI and CDC.

You can see some of the news about the opening ceremony here :

- ▶ <http://www.tagesspiegel.de/wissen/hauptstadt-der-mathematik/3788532.html>
- ▶ <http://www.tagesspiegel.de/wissen/warten-auf-den-wow-moment/3791920.html>

We will inform everybody of the new way of contacting ICMI and how all matters will be handled in this new structure, as soon as the new procedures are implemented.

Jaime Carvalho e Silva, Secretary-General of ICMI, jaimecs@mat.uc.pt

▶ 4. Meeting of the ICMI Executive Committee

The 2010-2012 Executive Committee of ICMI is going to have its second meeting in Beijing later this month. All ICMI activities will be reviewed, from ICMI Studies to cooperation with UNESCO, from the process of choosing the site for ICME-13 (2016) to the current status of the organization of ICME-12, from the discussion of the metrics "imposed" in a lot of countries to math journals to the definition of guidelines for ICMI Studies, from the demand of new Affiliate organizations to the the status of the ICMI regional conferences or the launching of new projects. A summary of the conclusions will be published in another newsletter.

Jaime Carvalho e Silva, Secretary-General of ICMI, jaimecs@mat.uc.pt

▶ 5. Alicia Villar (Uruguay)

It is with great sadness that we announce the death of Prof. Dra. Alicia Villar from Uruguay that was, from 1999 to 2003, vice-president of IACME-CIAEM, the Interamerican Committee on Mathematics Education, an organization affiliated to ICMI. She died on February 4, 2011. She was the founder and first President of SEMUR-Sociedad de Educación Matemática Uruguaya. The president of SEMUR, Prof. Etta Rodríguez, "recalls the good moments in which Alicia did so much for Mathematics Education in our country". Luis Balbueña, Secretary General of the Iberoamerican Federation of Societies of Mathematics Education, says that Alicia was a woman that put vehemence in all she was doing. Alicia Villar Icasuriaga had a PhD in Methodology and Didactics of Mathematics and was preparing teachers of Mathematics at the Instituto de Profesores "Artigas" (IPA), Montevideo, Uruguay. Beyond the vice-presidency of IACME-CIAEM she had an intensive international activity. She was the organizer of the Xth meeting of IACME that took place in 1999 in Maldonado (Uruguay), she was a vice-president of the International Committee that organizes the meetings "Didática da Matemática do Cone Sul" including countries from the south cone of South America ; she was the main organizer of the first such meeting that took place in Montevideo at the Instituto de Professores "Artigas", on the 24th and 25th of April of 1992. She was a member of the team that organized TSG 18 : Problem solving in mathematics education in ICME-10. She was a member of the International Program Committee of the 11th International Conference of The Mathematics Education into the 21st Century Project

that is going to take place in September 11-17, 2011 in Rhodes University, Grahamstown, South Africa. Maria Salett Biembengut (Brasil), a former president of IACME-CIAEM wrote that "My dear Alicia dedicated part of her professional life to Mathematics Education. She was always present in international events and was an intrepid advocate of IACEM-CIEM. We will feel sorrow for her."

Some of her works include : 'Solving mathematical and logical problems with Lewis Carroll', *Números*, No. 34, 39-45 (1998). 'Using Uruguayan architecture to teach geometry', *Aust. Math. Teach.* 53, No. 2, 24-26 (1997). 'Mathematics and the World Soccer Championship. Didactical Module', First International Congress of Ethnomathematics (ICEM), Granada, Spain, 1998. ' "An original walk"(through the city of Montevideo)', First International Congress of Ethnomathematics (ICEM), Granada, Spain, 1998.

Jaime Carvalho e Silva, Secretary-General of ICMI, jaimecs@mat.uc.pt (we thank Maria Salett Biembengut for her help in writing this small note)

▶ 6. First announcement of HPM 2012

HPM 2012 History and Pedagogy of Mathematics The HPM Satellite Meeting of ICME-12 16-20 July 2012, Daejeon (Korea)

- ▶ 1. Aim and focus The HPM 2012 is the eighth quadrennial meeting of the International Study Group on the Relations between the History and Pedagogy of Mathematics (the HPM Group), affiliated to ICMI. It is a satellite meeting of the corresponding ICME (International Congress on Mathematical Education) and is scheduled close to ICME. These quadrennial meetings are a major activity of HPM, to bring those together who are interested in the relation between the history of mathematics and mathematics education such as :

- ▶ * Researchers in mathematics education, and its relation to the history of mathematics ;
- ▶ * Mathematics teachers at all levels who are eager to get insights on how the history of mathematics may be integrated into teaching and 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 ;
- ▶ * All those with an interest in the history of mathematics and pedagogy.

- ▶ 2. Main themes The HPM 2012 is a place where mathematicians, educators, historians, researchers and students can make presentations and participate in discussions. The programme and activities are structured around the following main seven themes :

- ▶ 1. Theoretical and/or conceptual frameworks for integrating history in mathematics education ;
- ▶ 2. History and epistemology implemented in mathematics education : classroom experiments & 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 educational implications ;
- ▶ 5. Cultures and mathematics ;
- ▶ 6. Topics in the history of mathematics education ;
- ▶ 7. Mathematics from Eastern Asia.

- ▶ 3. Activities during HPM 2012 During HPM 2012 there will be

- ▶ * one-hour plenary lectures on each of the seven main themes

- ▶ * two one-hour panel discussions
 - ▶ * parallel sessions of 25-minute oral presentations, followed by 5-minute discussions
 - ▶ * poster exhibitions with discussion sessions
 - ▶ * exhibitions of books and other didactical material
- ▶ 4. Invited speakers
- ▶ * Tinne Hoff Kjeldsen (Denmark) : "Uses of history for the learning of and about mathematics : towards a theoretical framework for integrating history of mathematics in mathematics education."
 - ▶ * Tsang-Yi Lin (Taiwan) : "Using History of Mathematics in High School Classroom : Some Experiments in Taiwan."
 - ▶ * Janet Barnett (USA) : "Bottled at the Source : The Design and Implementation of Classroom Projects for Learning Mathematics via Primary Historical Sources."
 - ▶ * Dominique Tournès (France) : "Mathematics of the 19th century engineers : methods and instruments."
 - ▶ * Ubiratan d'Ambrosio (Brazil) : "Mind and Hand : the complexity and diversity of mathematics in different cultural environments."
 - ▶ * Johan Prytz (Sweden) : "Social structures in mathematics education. Researching the history of mathematics education with theories and methods from sociology of education."
 - ▶ * Sung Sa Hong (Korea) : "Theory of Equations in the history of Chosun Mathematics."
- ▶ 5. Time and place HPM 2012 will be held from Monday 16 July to Friday 20 July 2012 in Daejeon, Korea. Sessions will be held on Monday, Tuesday, Thursday and Friday with a cultural tour on Wednesday. ICME-12 will be held from Monday 9 July to Sunday 15 July 2012 in Seoul, Korea. Its scientific program includes oral presentations and activities on the history and pedagogy on mathematics and on the history of mathematical teaching. It is planned that these activities will take place in the end of this meeting and that a special price for inscriptions will be granted to those who will participate to both ICME-12 and HPM 2012.
- ▶ 6. Official Languages The official languages are English and Korean. More specifically :
- ▶ All plenary talks and panel discussions will be in English with simultaneous translation if possible.
 - ▶ Oral presentations will be given in either English, or Korean. For presentations in Korean a second set of transparencies should be, utilizing either two projectors and screens, or two power point computers.
- ▶ 7. Submission of proposals
- ▶ ABSTRACTS
 - ▶ 30 June 2011 : deadline for submitting Abstracts of proposals for all types of activities.
 - ▶ 31 August 2011 : notification of acceptance or not of the submitted proposals.
- ▶ 9. The web site Making known the HPM 2012 in various countries is a major task to be realized by the SPC. To this end, a web site is available at <http://www.hpm2012.org>. This is going to be a very efficient tool to make known the HPM 2012 worldwide, allowing online registration etc.
- ▶ 10. Proceedings Publishing the Proceedings of HPM 2012 is also a major task, and will be available in the meeting. Each submitted full text for an oral presentation or a workshop will be reviewed by members of the SPC at the usual international standards. More details on the size of the texts, the format guidelines will be announced in due course from the HPM 2012 and HPM websites, respectively ;
- ▶ <http://www.hpm2012.org>
 - ▶ <http://www.clab.edc.uoc.gr/hpm/>.

FULL TEXTS

- ▶ 30 November 2011 : deadline for submitting full texts for all types of activities.
 - ▶ 31 January 2012 : Notification of acceptance or not of the submitted texts.

 - ▶ 11. Registration fee Early registration (before 5 February 2012) : 180\$ (students 90\$) Late registration (From 6 February until 31 May 2012) : 230\$ (students 130\$) Registration after 31 may 2012, or on the spot : 270\$ (students 160\$)

 - ▶ 12. Contact For further information, please contact :
 - ▶ Evelyne Barbin, evelyne.barbin@wanadoo.fr
 - ▶ Sunwook Hwang, shwang@ssu.ac.kr
 - ▶ Sangki Choi, schoi@konkuk.ac.kr
 - ▶ Constantinos Tzanakis, tzanakis@edc.uoc.gr
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- ▶ 7. Changes to the HPM newsletter

There are a few important changes to the HPM Newsletter now. Chris Weeks is stepping down as co-editor after working on the newsletter since 2004. With his knowledge of the field and the group, he has been essential to the newsletter for more than six years. He is being replaced by no less than three new co-editors, which is a clear suggestion of his value to the HPM community. The new newsletter co-editors are Kathy Clark, Snezana Lawrence and Helder Pinto, whom will be presented more fully in time. The other important change is that we are publishing the newsletter online as a supplement to the paper version. The version online is available on the website <http://grouphpm.wordpress.com/>.

There will be new articles online every month, and these articles will go into the issues that will be published three times a year as before. The online version offers opportunities for publishing content more quickly and to have feedback on articles - as well as making it even simpler for new people to find the HPM group. Any suggestions and input is welcome. There is available, right now, the following items :

- ▶ Novembertagung 2010 : A conference for History of Mathematics Ph.D. students ;
- ▶ Special issue of Mathematics in School ;
- ▶ First announcement HPM 2012 ;
- ▶ Announcement Second International Conference on the History of Mathematics Education ;
- ▶ BSHM Bulletin Volume 25 Number 3 (2010) ;
- ▶ More on the Kenneth O. May prize ;
- ▶ Have you read these ?

All recent newsletters are at

- ▶ <http://www.clab.edc.uoc.gr/HPM/NewsLetters.htm>

Please send contributions to the HPM Newsletter 76 to Bjørn Smestad (Bjorn.Smestad@lui.hio.no) before February 12th, 2011. Both articles, notices, book reviews and announcements of events are very welcome, as well as information for the "Have you read these ?" and "Have you been there ?" sections.

We hope that the newsletter and its version online are useful !

Helder Pinto, hbmpinto1981@gmail.com

▶ 8. Calendar of Events of Interest to the ICMI Community

4th International Conference on Science and Mathematics Education in Developing Countries, Phnom Penh, Cambodia, 23-25 February 2011

▶ <http://www.cambmathsociety.org/conf/HOME.html>

Conference on Research in Undergraduate Mathematics Education, February 24, - February 27, 2011, Portland, Oregon, USA

▶ <http://sigmaa.maa.org/rume/crume2011/Home.html>

History of European Universities. Challenges and transformations, Lisbon, Portugal, April 18-20, 2011

▶ <http://centenario.ul.pt/conferencias/history-of-european-universities>

XIII CIAEM - Inter-American Conference on Mathematics Education Recife, Brasil, June 26-30, 2011.

▶ <http://www.ciaem-iacme.org/>

ICTMT10 - 10th International Conference on Technology in Mathematics Teaching University of Portsmouth, July 5-8, 2011

▶ <http://www.ictmt10.org/>

PME 35 - CONFERENCE OF THE INTERNATIONAL GROUP FOR THE PSYCHOLOGY OF MATHEMATICS EDUCATION Ankara, Turkey, July 10-15, 2011

▶ <http://www.arber.com.tr/pme35.org/>

ICTMA 15 : 15th International Conference on the Teaching of Mathematical Modelling and Applications Melbourne, Australia, July 14-19, 2011

▶ <http://www.ictma15.edu.au/>

FAMA - Family Math for adult learners international conference : "Family and communities in and out of the classroom : ways to improve mathematics' achievement", Barcelona, Spain, July 23, 2011

▶ http://www.mathforlive.net/fama_Conference.php

CIEAEM 63 : "Facilitating access and participation - Mathematical practices inside and outside the classroom" / "Faciliter l'accès et la participation - Les pratiques mathématiques à l'intérieur et à l'extérieur de la classe", University of Barcelona, Spain, July 24 - July 29, 2011

▶ <http://www.cieaem.net/>

SEMT 11 - SYMPOSIUM ON ELEMENTARY MATHS TEACHING Prague, Czech Republic, August 21-26, 2011

▶ <http://kmdm.pedf.cuni.cz/Default.aspx?PorZobr=7&PolozkaID=-1&ClanekID=267>

16e Ecole d'été de didactique des mathématiques - Association pour la Recherche en Didactique des Mathématiques, Carcassonne (Aude), France, August 21-28, 2011

▶ <http://www.ardm.eu/contenu/2011-carcassonne>

The Mathematics Education into the 21st Century Project 11th International Conference, Turning Dreams into Reality : Transformations and Paradigm Shifts in Mathematics Education, Rhodes University, Grahamstown, South Africa,

September 11-17, 2011

- ▶ <http://math.unipa.it/%7Egrim/21project.htm>

ECER 2011 - European Conference on Educational Research, Berlin, September 13-16, 2011

- ▶ <http://www.eera-ecer.eu/ecer/ecer-2011-berlin/>

ICMI Study 21 Conference São Paulo, Brazil, September 16-20, 2011 <http://www.icmi-21.com/>

ATCM 2011 - 16th Asian Technology Conference of Mathematics, 'Integration of Technology into Mathematics Education-past, present and future', Abant İzzet Baysal University, Bolu, Turkey, September 19-23, 2011

- ▶ <http://atcm2011.org/>

Volcanic DELTA 2011, Eighth Southern Hemisphere Conference on the Teaching and Learning of Undergraduate Mathematics and Statistics, Rotorua, NZ, November 27 - December 2, 2011 <http://www.delta2011.co.nz/delta2011/>

Seventh International Conference on Science, Mathematics & Technology Education : Transformations through Science, Mathematics and Technology Education - Towards an Innovative and Sustainable Society, Muscat, Oman, February 12-15, 2012 d.fisher@smec.curtin.edu.au

EMF 2012 - Espace Mathématique Francophone, Genève, 3-7 Février 2012

- ▶ <http://www.emf2012.unige.ch/>

ICME-12 - Twelfth International Congress on Mathematical Education Seoul, Korea, July 8-15, 2012

- ▶ <http://www.icme12.org/>

HPM 2012 History and Pedagogy of Mathematics The HPM Satellite Meeting of ICME-12 Daejeon (Korea), July 16-20, 2012

- ▶ <http://www.hpm2012.org>

EARCOME6 - The Sixth East Asia Regional Conference on Mathematics Education, Thailand, March, 2013

- ▶ 9. ICMI-Study conference proceedings "Gender and mathematics education"

A few copies of the ICMI-Study book conference proceedings "Gender and mathematics education" are available for free for interested readers. This conference was held in Hoor, Sweden in October 1993. The book is divided into plenary addresses, research papers, panel presentations and working group reports. The collection presents voices from more than 18 countries. Reference : Grevholm, B. & Hanna, G. (1995). Gender and mathematics education, an ICMI Study in Stiftsgården Åkersberg, Höör, Sweden 1993. Lund : Lund University Press. Please send an email to Barbro.Grevholm@uia.no if you want a copy. You can find a review of this volume here :

<http://www.awm-math.org/bookreviews/NovDec96.html>

- ▶ 10. SUBSCRIBING TO ICMI News

There are two ways of subscribing to ICMI News :

1. Click on <http://www.mathunion.org/index.php?id=674> with a Web browser and go to the "Subscribe" button to subscribe to ICMI News online.

2. Send an e-mail to icmi-news-request@mathunion.org with the Subject-line : Subject : subscribe

In both cases you will get an e-mail to confirm your subscription so that misuse will be minimized. ICMI will not use the list of ICMI News addresses for any purpose other than sending ICMI News, and will not make it available to others.

Previous issues can be seen at : <http://www.mathunion.org/pipermail/icmi-news>

ICMI-News mailing list ICMI-News@mathunion.org

▶ <http://www.mathunion.org/mailman/listinfo/icmi-news>