

INTRODUCTION

Rudolf Straesser and Barbara Jaworski

The organisation of the CERME 5 Congress

The 5th Congress of ERME, the European Society for Research in Mathematics Education, CERME5 was held in Larnaka, Cyprus, 22-26 February 2007. A YERME day (for young researchers in ERME), preceded the congress on the 21st and 22nd of February.

The directing body of the European Society for Research in Mathematics Education which organises CERME is the ERME Board. The members of the board are:

Barbara Jaworski (Norway) - President
Ole Bjorqvist (Finland) - Vice President
Konrad Krainer (Austria) - Liaison with YERME
Jean-Baptiste Lagrange (France) - Website Manager
Graham Harvard Littler (UK) - Treasurer
Maria Alessandra Marriotti (Italy) - Secretary
Pearla Nesher (Israel)
Heinz Steinbring (Germany)
Ewa Swoboda (Poland)

The conference was planned by an International Programme Committee consisting of

Rudolf Straesser (Germany) - Chair
Teresa Assude (France)
Juan Godino (Spain)
Pearla Nesher (Israel)
Demetra Pitta-Pantazi (Cyprus)
Tim Rowland (UK)
Lurdes Serrazina (Portugal)
Jeppe Skott (Denmark)
Nada Stehlikova (Czech Republic)
Ewa Swoboda (Poland)
Rosetta Zan (Italy)

The conference was organised by the Department of Education of the University of Cyprus and the local organising committee consisted of:

George Philippou (University of Cyprus) - Chair
Demetra Pitta-Pantazi (University of Cyprus) - Congress Secretariat
Constantinos Christou (University of Cyprus)
Athanasios Gagatsis (University of Cyprus)
Nikolas Mousoulides (University of Cyprus)
Despina Potari (University of Patras)

The Organising Agency was Dreamscape Travel with Managing Director Mr Petros Stratis.

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CERME conferences are designed for researchers in mathematics education from all European countries and beyond. They aim to provide a forum for *Communication, Cooperation and Collaboration* (The three Cs) among researchers in mathematics education throughout Europe. They do this chiefly through providing opportunity for participants to work together for a period of 12 hours in their choice of *Thematic Working Group* provided within the conference. Details of Working Groups follow below. In addition the conference includes plenary sessions, poster presentations and the General Meeting of ERME.

At CERME5 there were four plenary talks. The plenary talks were given by Frank K. Lester with the title, *Balancing interest in fundamental understanding with considerations of usefulness in mathematics education research*; Nad'a Stehlíková with the title, *What constitutes good practice in teaching mathematics, a personal perspective*; Kenneth Ruthven with the title, *Teachers, technologies and the structures of schooling* and Michèle Artigue with the title, *Digital technologies: A window on theoretical issues in mathematics education*.

CERME5 Working Groups

The working groups at CERME5 are shown below. Each group had an international team coordinating the group as shown:

Group 1	<u>Bernard Parzys (France)</u>
<p style="text-align: center;"><i>The role of metaphors and images in the learning and understanding of mathematics</i></p> <p style="text-align: center;">This includes embodied cognition</p>	<p><i>Co-organisers:</i> Gert Kadunz (Austria) Elisabetta Robotti (Italy) Leo Rogers (United Kingdom)</p>
Group 2	<u>Markku Hannula (Finland)</u>
<p style="text-align: center;"><i>Affect and mathematical thinking</i></p> <p style="text-align: center;">This includes the role of beliefs, emotions, and other affective factors</p>	<p><i>Co-organisers:</i> Wolfgang Schöglmann (Austria) Peter Op't Eynde (Belgium) Tine Wedege (Sweden)</p>
Group 3	<u>Milan Hejny (Czech Republic)</u>
<p style="text-align: center;"><i>Building structures in mathematical knowledge</i></p> <p style="text-align: center;">This includes the way pupils construct mathematical concepts and schemes and develop thinking strategies</p>	<p><i>Co-organisers:</i> Graham H. Littler (United Kingdom) Ladislav Kvasz (Slovak Republic) Dvora Perez (Israel)</p>

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<p style="text-align: center;">Group 4</p> <p style="text-align: center;">Argumentation and proof</p> <p>This includes epistemological and historical studies, learning issues and classroom situations</p>	<p><u>Maria Marriotti (Italy)</u></p> <p><i>Co-organisers:</i> Viviane Durand-Guerrier (France) Kirsti Hemmi (Sweden)</p>
<p style="text-align: center;">Group 5</p> <p style="text-align: center;"><i>Stochastic thinking</i></p> <p>This includes epistemological and educational issues, pupils' cognitive processes and difficulties, and curriculum issues</p>	<p><u>Rolf Biehler (Germany)</u></p> <p><i>Co-organisers:</i> Maria Meletiou-Mavrotheris (Cyprus) Maria-Gabriella Ottaviani (Italy) Dave Pratt (United Kingdom)</p>
<p style="text-align: center;">Group 6</p> <p style="text-align: center;"><i>Algebraic thinking</i></p> <p>This includes epistemological and educational issues, pupils' cognitive processes and difficulties, and curriculum issues</p>	<p><u>Luis Puig (Spain)</u></p> <p><i>Co-organisers:</i> Janet Ainley (United Kingdom) Abraham Arcavi (Israel) Giorgio T. Bagni (Italy)</p>
<p style="text-align: center;">Group 7</p> <p style="text-align: center;"><i>Geometrical thinking</i></p> <p>This includes epistemological and educational issues, pupils' cognitive processes and difficulties, and curriculum issues</p>	<p><u>Alain Kuzniak (France)</u></p> <p><i>Co-organisers:</i> Athanasios Gagatsis (Cyprus) Matthias Ludwig (Germany) Carlo Marchini (Italy)</p>
<p style="text-align: center;">Group 8</p> <p style="text-align: center;"><i>Mathematics and language</i></p> <p>This includes semiotics and communication in classrooms, social processes in learning and teaching mathematics</p>	<p><u>Candia Morgan (United Kingdom)</u></p> <p><i>Co-organisers:</i> Nadia Douek (France) Pier Luigi Ferrari (Italy) Götz Krummheuer (Germany)</p>
<p style="text-align: center;">Group 9</p> <p style="text-align: center;"><i>Tools and technologies in mathematical</i></p>	<p><u>Chronis Kynigos (Greece)</u></p> <p><i>Co-organisers:</i> Michela Maschietto (Italy)</p>

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<p><i>didactics</i></p> <p>This includes teaching and learning environments</p>	<p>Caroline Bardini (France) Baerbel Barzel (Germany)</p>
<p>Group 10</p> <p><i>Mathematics education in multicultural settings</i></p> <p>This includes students' diverse backgrounds and identities, social and cultural processes involved, political issues in the educational and school policies.</p>	<p><u>Margarida Cesar (Portugal)</u></p> <p><i>Co-organisers:</i> Guida deAbreu (United Kingdom) Nuria Gorgorio (Spain)</p>
<p>Group 11</p> <p><i>Different theoretical perspectives / approaches in research in mathematics education</i></p> <p>This includes ways of linking theory and practice and paradigms of research in ME.</p>	<p><u>Marianna Bosch (Spain)</u></p> <p><i>Co-organisers:</i> Ferdinando Arzarello (Italy) Agnès Lenfant (France) Suzanne Prediger (Germany)</p>
<p>Group 12</p> <p><i>From a study of teaching practices to issues in teacher education.</i></p> <p>This includes teachers' beliefs and the role of the teacher in the classroom, as well as strategies for teacher education and links between: theory and practice, research and teaching and teacher education, collaborative research.</p>	<p><u>Josè Carrillo (Spain)</u></p> <p><i>Co-organisers:</i> Liz Bills (United Kingdom) Leonor Santos (Portugal) Alain Marchive (France)</p>
<p>Group 13</p> <p><i>Applications and modelling</i></p> <p>This includes theoretical and empirical-based reflections on: the modelling process and necessary competencies, adequate applications and modelling examples, epistemological and curricular aspects, beliefs and attitudes, assessment and the role of</p>	<p><u>Gabriele Kaiser (Germany)</u></p> <p><i>Co-organisers:</i> Javier García (Spain) Bharath Sriraman (USA) Morten Blomhoj (Denmark)</p>

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technology.	
Group 14	<u>Joanna Mamona Downs (Greece)</u>
<i>Advanced mathematical thinking</i>	<i>Co-organisers:</i> Djordje Kadijevic (Serbia) Maria Meehan (Ireland) Roza Leikin (Israel)
This includes conceptual attainment, proof techniques, problem-solving, processes of abstraction, at the upper secondary and tertiary educational level.	
Group 15	<u>Birgit Pepin (United Kingdom)</u>
<i>Comparative Studies in Mathematics Education</i>	<i>Co-organisers:</i> Eva Jablonka (Germany) Richard Cabassut (France)
This includes questions surrounding mathematics teaching and learning in the classroom, learners' and teachers' experiences and identities, and policy issues in different cultures and/or countries. Methodologies and epistemologies used when carrying out such studies.	

It was the responsibility of group coordinators to receive papers from interested participants, organise a review process for the papers received, construct a programme of work based around the accepted papers and lead the group sessions at the congress.

As a result of the group work, the coordinators produced a summary of the work of the group which is linked to the set of papers accepted for publication. The summary and the accepted papers for each group are included in these proceedings. The summaries show the diversity of work that took place in the groups.

It was agreed by the Programme Committee that all accepted papers would be "presented" at the congress by being placed on the congress website for reading in advance. Thus, there would be no oral presentations of papers at the congress. This decision, which followed a similar agreement at previous CERMEs, was designed to enable groups to really work together, rather than spending the majority of time listening to papers. Group coordinators were encouraged to facilitate inclusion of all participants in group activity and dialogue. The language of CERME is English: groups were encouraged to provide language support to enable everyone to participate.

Feedback on the academic programme of the congress showed overwhelmingly that participants appreciated a style of conference where they were encouraged to be full participants in their group and to have the

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opportunity to work in a sustained way over a serious time period with others interested in their own field of research.

All papers printed in these proceedings went through a two stage review process. First they were reviewed for acceptance for presentation on the conference website and inclusion in the conference programme. Papers were then revised according to first review recommendations and group leaders re-reviewed the revised papers for inclusion in the scientific proceedings. Within the 10 page limitation on paper length, the published papers represent a high scientific quality as judged by the leaders of each group.

Thus we see the ERME conferences both generating discussion among groups of European researchers situated in different scientific approaches and educational traditions, and offering a more permanent written contribution relating to the work of the congress. For a relatively new field such as mathematics education, we see the necessity of developing a shared body of knowledge and of delimiting the main trends of research that can lead towards a real progress in the teaching and learning of mathematics. The papers in these proceedings, organized according to the group themes, begin to chart key areas of knowledge within our discipline. Group summaries give pointers towards central concepts, issues and questions. This can be seen as essential to sowing the seeds of a European community for research in mathematics education.

Time-table of the CERME5 Congress

	Thursday 22
13:00 - 15:00	CERME 5: Registration and Welcome Reception,
15:00-15:30	Opening Ceremony
15:30 - 17:00	PLENARY 1: Frank Lester
17:00 - 17:30	Coffee Break
17:30 - 19:00	Working Group Session (1)
20:00 - 21:00	Dinner

	Friday 23
09:00-09:15	Announcements
09:15 - 10:45	PLENARY 2: Nad'a Stehlikova
10:45 - 11:15	Coffee Break
11:15 - 13:00	Group Session (2)
13:00 - 15:00	Lunch
15:00 - 16:45	Group Session (3)

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16:45 - 17:15	Coffee Break
17:15 - 18:45	PLENARY 3: Kenneth Ruthven
19:00 – 20:00	ERME Issues – Open Forum
20:00 - 21:00	Dinner

	Saturday 24
9:00 - 10:45	Group Session (4)
10:45 - 11:15	Coffee Break
11:15 - 13:00	Group Session (5)
13:00 - 15:00	Lunch
15:00 - 19:00	Free afternoon / Optional Excursion
20:00 - 23:00	Gala Dinner

	Sunday 25
09:00 - 10:45	Group Session (6)
10:45 - 11:15	Coffee Break
11:15 - 13:00	ERME General Assembly
13:00 - 15:00	Lunch
15:00 - 16:45	Posters
16:45 - 17:15	Coffee Break
17:15 - 19:00	Group Session (7)
20:00 - 21:00	Dinner

	Monday 26
09:00 - 10:00	Group Reporting and Discussion (1)
10:00 - 10:45	Group Reporting and Discussion (2)
10:45 - 11:15	Coffee Break
11:15 - 12:45	PLENARY 4: Michèle Artique
12:45 – 13:15	Closing Ceremony
13:15 - 15:00	Farewell Lunch