

**5TH EUROPEAN SUMMER UNIVERSITY
ON THE HISTORY AND EPISTEMOLOGY IN MATHEMATICS EDUCATION
(ESU-5)**

19-24 July 2007

Charles University in Prague, Faculty of Education, Prague, Czech Republic

<http://www.pedf.cuni.cz/kmdm/esu5>

SECOND ANNOUNCEMENT

This is going to be the 5th meeting of this kind. The initiative of organizing a *Summer University* (SU) on the *History and Epistemology in Mathematics Education* belongs to the French Mathematics Education community, in the early 1980's. From those meetings emerged the organization of a SU on a European scale, as the *European Summer University* (ESU) *on the History and Epistemology in Mathematics Education*. Some more information on the previous ESU is given in the Appendix below.

1. Aim and focus of the ESU

The ESU mainly aims

- to provide a forum for presenting research in mathematics education and innovative teaching methods based on a historical, epistemological and cultural approach to mathematics and their teaching;
- to give the opportunity to mathematics teachers, educators and researchers to share their teaching ideas and classroom experience;
- in this way, to motivate further collaboration in this perspective among members of the mathematics education community in Europe and beyond.

The ESU's focus is not only to stress the **use** of history and epistemology in the teaching and learning of mathematics, in the sense of a technical tool for instruction, but also to reveal the following aspects of mathematics:

- Mathematics should be conceived as a living science, a science with a long history, a vivid present and an as yet unforeseen future;
- This conception of mathematics should be, not only the core of the teaching of mathematics, but also the image of mathematics spread to the outside world.

In this connection, emphasis put on historical and epistemological issues of mathematics may lead to a better understanding of mathematics itself and to a deeper awareness of the fact that mathematics is not only a system of well-organized finalized and polished mental products, but also a human activity, in which the processes that lead to these products are equally important with the products themselves.

In particular, integration of historical and epistemological issues of mathematics in mathematics education may help to realize that:

- Mathematics is the result of contributions from many different cultures;
- The philosophy of mathematics has evolved through the centuries;
- The teaching of mathematics has developed through the ages;
- Mathematics has been in constant dialogue with other sciences, arts and technics;
- Mathematics has been a constant force of scientific, technical, artistic and social development and in this way, to improve the learning of mathematics and stimulate students' interest to it;

This helps to improve mathematics education at all levels, at the same time, however, realizing that although mathematics is central to our modern society and a mathematically literate citizenry is essential

to a country's vitality, it is not the sole subject worth studying. It is the harmony of mathematics with other intellectual and cultural pursuits that makes the subject interesting, meaningful and worthwhile. In this wider context history and epistemology of mathematics have a yet more important role to play in providing a fuller education of the community.

This is most important especially today that many countries are concerned about the level of mathematics their students learn and about their decreasing interest in mathematics at a time when the need for both technical skills and a fuller education is rising.

2. Main themes of the ESU-5

The ESU is neither a collection of intensive courses, nor a conference for researchers, but something in between. More specifically, it is a place where beginners, more experienced researchers and teachers from all levels of education present their teaching experience to the benefit of the participants and get a constructive feedback from them. The programme and activities of the ESU are structured around some *main themes*, which, for the ESU-5 are the following (for the themes of the previous ESU, see the Appendix):

1. History and Epistemology as tools for an interdisciplinary approach in the teaching and learning of Mathematics and the Sciences
2. Introducing a historical dimension in the teaching and learning of Mathematics
3. History and Epistemology in Mathematics teachers' education
4. Cultures and Mathematics
5. History of Mathematics Education in Europe
6. Mathematics in Central Europe

3. Activities during the ESU

The ESU includes a few *plenary lectures* and *panels*. However, a major part of the ESU consists of *workshops*. The scientific program of the ESU will be structured along its *main themes*.

- *Plenary lectures* and *workshops* should refer to these main themes.
- In the *panels* the participants will work together, well before the ESU, so that there is a real discussion among them and/or with the panel coordinator during the panel session.
- *Workshops* consist in studying a specific subject and having a follow-up discussion. The role of the workshop organizer is to prepare, present and distribute the historical/epistemological or pedagogical/didactical material, which motivates and orients the exchange of ideas and the discussion among the participants. Participants read and work on the basis of this material (e.g. original historical texts, didactical material, students' worksheets etc). This means that there are many workshops in parallel, which will vary in duration (2 hours for workshops based on didactical – pedagogical material; 3 hours for workshops based on historical and/or epistemological material). It would be very good and stimulating if there were workshops, which elaborate on the general ideas presented in the plenary lectures.
- In addition, there will be parallel sessions with *oral presentations* for participants, who want to speak about their own experience, or research. This is an activity in the spirit of a conventional research conference.
- Finally, it is expected that *poster sessions* and *exhibitions* of books and other didactical material will also be present in this ESU.

4. Target population

The major part of the participants is expected to be (elementary or secondary) schoolteachers, who may wish to gain new ideas on how they can integrate the history of mathematics into their teaching.

However, there will be also university teachers and students, interested in the history and epistemology of mathematics and their integration into mathematics education, as well as, historians of mathematics, who may give lectures and workshops to inform others about recent developments in their domain, and mathematicians with an interest in the relation between mathematics, its history and epistemology, and its role at present and in the past.

5. Time and place

Time: Thursday 19 - Tuesday 24, July 2007

Place: *Univerzita Karlova v Praze, Pedagogická fakulta, Katedra matematiky a didaktiky matematiky* (Charles University in Prague, Faculty of Education), Czech Republic.

The location of the conference site is right in the centre of Prague near Vaclavské náměstí.

Address: *M.D. Rettigové street, number 4, Praha 1.*

Nearest underground station: *Národní třída or Můstek.*

About Prague

Prague, the Capital of the Czech Republic, proud of its long tradition of higher education dating from the Middle Ages, is ranked as one of the most attractive cities in Europe. It can offer not only the most unique medieval urban settings but also a rich choice of cultural events and of social enjoyment.

Charles University in Prague, Faculty of Education

Charles University is the oldest university in the Czech Lands and in Central Europe. It was founded in 1348 by Charles IV, King of Bohemia and Emperor of the Holy Roman Empire.

Charles University's Faculty of Education was officially opened on November 15, 1946. Currently it is one of the University's seventeen faculties. Its mission is to prepare teachers for all types and levels of schools and to prepare specialists and scientists in the area of pedagogy, educational psychology and didactics. Though the preparation of teachers is also provided at another five faculties, the Faculty of Education holds a unique position in that it fully focuses on the issues of education.

Depending on the type of study, the Faculty of Education awards Bachelor, Master and Doctor diplomas and degrees. In the area of international co-operation, the Faculty of Education focuses its effort on the exchange of scientific knowledge and practical experience, on joint research projects and studies and on international meetings of teachers and students.

6. Submission of proposals

The deadline for proposals for oral presentations and workshops has expired since 15 May 2006 and notification of acceptance had been sent in early June 2006.

However, proposals for 10-minutes short oral presentations, or poster presentations (with an abstract of no more than 200 words to be included in the proceedings) can still be submitted until **February 28, 2007**. Please submit the title and a short abstract (including full name, affiliation and e-mail & postal addresses to:

Evelyne BARBIN, Chair of the ESU-5

e-mail: evelyne.barbin@wanadoo.fr

Postal address: Centre François Viète, Faculté des sciences et des techniques, 2 rue de la Houssinière, BP 92208, 44322 Nantes Cedex, France

The members of the *Scientific Program Committee* (SPC) have reviewed the submitted abstracts for oral presentations and workshops. At this stage, acceptance of a proposal means that the proposed activity will be included in the ESU-5 Scientific Programme (see section 11 below). However, this does not imply that a full text based on this activity will automatically be included in the ESU-5 Proceedings, which are going to be published after the ESU. Full texts will be further reviewed by members of the SPC at the usual international standards. For more details, see *Proceedings*.

7. Programme

Plenary Sessions

Theme 1.

Plenary Lecture: Leo Corry, University of Tel Aviv (Israel): *Axiomatics between Hilbert and R.L. Moore: Two Views on Mathematical Research and their Consequences on Education*

Theme 2.

Plenary Lecture: Luis Puig, University of Valencia (Spain): *Researching the history of algebraic ideas from an educational point of view*

Panel: *Mathematics of yesterday and teaching of to day.*

Evelyne Barbin (France) coordinator, Abraham Arcavi (Israel), Luis Radford (Canada), Fritz Schweiger (Austria)

Theme 3.

Plenary Lecture: Fritz Schweiger, University of Salzburg (Austria): *The implicit grammar of mathematical symbolism*

Theme 4.

Plenary Lecture: Ulrich Rebstock, University of Freiburg (Germany): *Mathematics in the service of the Islamic community*

Theme 5.

Plenary Lecture: Hélène Gispert, University of Orsay (France) & Gert Schubring, University of Bielefeld, (Germany): *The history of Mathematics Education and its contexts in 20th century France and Germany*

Panel: *The emergence of mathematics as a major teaching subject in secondary schools*

Gert Schubring (Germany) coordinator, Hélène Gispert (France), Livia Giacardi (Italy), Nikos Kastanis (Greece)

Theme 6.

Plenary Lecture: Magdalena Hyksova, Czech Technical University in Prague (Czech Republic): *Contribution of Czech mathematics to the theory of probability*

Provisional Time Schedule

	Thursday 19/7	Friday 20/7	Saturday 21/7	Sunday 22/7	Monday 23/7	Tuesday 24/7
9:00-10:00	PL	PL	PL	PL	PL	PL
10:00-10:30	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK
10:30-11:00	WS-2	WS-2	P	P	WS-2	WS-3
11:00-11:30						
11:30-12:00						
12:00-12:30			OP	Excursion / Free day		
12:30-14:30	BREAK	BREAK	BREAK		BREAK	BREAK
14:30-15:30	WS-3	WS-3	WS-3		WS-3	WS-3 continued
15:30-16:30						
16:30-17:00	BREAK	BREAK	BREAK		BREAK	
17:00-18:00	WS-3 continued	WS-3 continued	WS-3 continued		WS-3 continued	
18:00-19:30	OP	OP			OP	

Caption: Plenary lectures: PL ; Panel: P; 30min Oral presentations: OP; 2-hour workshops: WS-2; 3-hour workshops: WS-3

Remark: It is expected that there will be at most 6 sessions of OP and/or WS running in parallel.

8. Official Languages

The official languages of ESU-5 are three: English, Czech and French.

More specifically:

- All *plenary talks* and *panel discussions* will be in *English*.
- *Oral presentations* can be delivered in any of the three official languages. However, for presentations in either Czech, or French, presenters will be asked to use **two sets of transparencies**; one set in the language they are going to give their presentation and **one set in English**.
- It is preferable to organize *Workshops* in English, but a number of workshops could also be in Czech, or French. Nevertheless, workshops organizers who intend to organize their workshop in Czech or French are encouraged to prepare copies in English of the material to be distributed to the participants (e.g. transparencies, worksheets etc). This will certainly increase participation, as well as, facilitate communication among participants.

9. Proceedings

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

The Proceedings will be published **after** ESU-5, so that authors are given the opportunity to enrich their text as a result of the feedback they will gain during this European Summer University.

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

More details on the deadline for submitting full texts, their size, the format guidelines and the expected date by which the proceedings will be available and sent to all registered participants, will be announced in due course from the ESU-5 and HPM websites

<http://www.pedf.cuni.cz/kmdm/esu5> <http://www.clab.edc.uoc.gr/hpm/> respectively.

10. Registration

Participants should **register online**, via the ESU 5 website, by filling in the *Registration Form*

Registration fee & important deadlines:

- **Early registration** by **February 28, 2007**, registration fee **90 EUR / 50 EUR** (for students and Czech school teachers)
- **Late registration** by **May 31, 2007**, registration fee **120 EUR / 70 EUR** (for students and Czech school teachers)
- Participants wishing to register **after May 31, 2007**, should pay on the spot **150 EUR / 100 EUR** (for students and Czech school teachers)
- For **accommodation in student residences**, apply via the registration form by **March 31, 2007**.
- For **waived registration fee**, apply via the registration form by **January 15, 2007**.
- **Online registration will be closed on May 31, 2007**. Participants wishing to register later, should contact nada.stehlikova@pedf.cuni.cz

Payment: Payment must be made in advance by bank transfer. Full details are provided in the *Registration Form*.

The registration fee includes: The ESU 5 proceedings plus postage, the welcome reception cocktail, coffee breaks, the conference bag which includes the ESU 5 programme and certification of attendance, free access to all activities of the ESU 5.

Remark: We did every effort to keep the registration fee low, by restricting the budget of the ESU-5 as much as possible. In addition, **low cost accommodation is available at the university residences**.

Prospective participants are encouraged to apply for accommodation there (see the *Registration Form*), given that reservation is made on a first come - first served basis.

Participants needing further financial support should apply by January 15, 2007, in order to have their registration fee waived (for details see the corresponding item in the *Registration Form*).

Applicants will receive a definite answer on this **by 31 January 2007**.

Any further financial support for participants should come from participant's own country.

11. Accommodation

The conference organisers will only provide accommodation in university residences. The participants who wish to stay in a hotel are kindly requested to make their own arrangements. Hotels can be booked, e.g., via a website <http://www.my-prague-hotels.com/> or <http://www.guideprague.com/>

The following hotels have affordable prices and/or are conveniently located near to the university:

- AXA Hotel (<http://www.hotelaxa.com>),
- Hotel 16 U Svaté Kateřiny (www.hotel16.cz),
- Novoměstský hotel (<http://www.guideprague.com/novomestsky/index.php>),
- Dalimil hotel (<http://www.hotel-dalimil.info>)

A limited number of places are available in **university residences**. Rooms can be booked via the registration form and will be allocated on a first-come-first served basis.

The prices may vary a little according to the exchange rate. Breakfast is included. The prices are for one person per one night.

HOSTIVAŘ, Weilova 2, Prague 10 cca 35 minutes by public transport from the conference location	Participant	Accompanying person
1 single room	15 €	19 €
1 bed in 1 double room	10 €	16 €
Kolej Petráská, Petráská 3, Prague 1 cca 20 minutes by public transport from the conference location	Participant	Accompanying person
1 single room	18 €	25 €
1 bed in 1 double room	15 €	21 €

12. The (international) Scientific Programme Committee (SPC)

Evelyn Barbin, University of Nantes (France), chair

Nada Stehlikova, Charles University in Prague (Czech Republic), co-chair

Constantinos Tzanakis, University of Crete (Greece), co-chair

Abraham Arcavi, Weizmann Institute of Science (Israel)

Michel Balieu, CREM (Nivelles), Université Libre de Bruxelles, (Belgium)

Martina Becvarova, Czech Technical University of Prague (Czech Republic)

Otto B. Bekken, Agder University College, Kristiansand (Norway)

Carlos Coreia de Sa, University of Porto (Portugal)

Ubiratan d' Ambrosio, Campinas University, Sao Paulo, (Brazil)

Abdellah El Idrissi Ecole, Normale Supérieure, Marrakech (Morocco)

Gail FitzSimons, Monash University, Victoria (Australia)

Eduard Fuchs, Masaryk University of Brno (Czech Republic)

Fulvia Furinghetti, University of Genoa (Italy)

Magdalena Hyksova, Czech Technical University of Prague (Czech Republic)

Sten Kaisjer, University of Uppsala (Sweden)

Victor Katz, University of the District of Columbia, Washington, DC (USA)

Manfred Kronfellner, Vienna University of Technology (Austria)
Ladislav Kvasz, Comenius University, Bratislava (Slovakia)
Ewa Lakoma, Military University of Technology, Warsaw (Poland)
Antoni Malet, University Pompeu Fabra, Barcelona (Spain)
Eva Milkova, University of Hradec Kralove (Czech Republic)
Luis Radford, Université Laurentienne Sudbury, Ontario (Canada)
Leo Rogers, University of Roehampton (UK)
Gert Schubring, University of Bielefeld (Germany)
Man-Keung, Siu University of Hong Kong (China)
Jan van Maanen, University of Groningen (The Netherlands)

The Local Organizing Committee (LOC)

Nada Stehlikova, Charles University in Prague (chair)
Martina Becvarova, Czech Technical University of Prague
Antonin Jancarik, Charles University in Prague,
Darina Jirotkova, Charles University in Prague,
Jana Kratochvilova, Charles University in Prague,
Karel Kubin, webmaster
Marie Kubinova, Charles University in Prague,
Pavel Sisma, Masaryk University of Brno
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13. More information – contact

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APPENDIX: Some information on the

European Summer Universities on the History and Epistemology in Mathematics Education

Brief history and statistics of the previous ESU

The initiative of organizing a *Summer Univeristy* (SU) on the *History and Epistemology in Mathematics Education* belongs to the French Mathematics Education community IREM in the early 1980's. It was the French IREMs (*Institut de Recherche sur l' Enseignement des Mathématiques*) that

organized the first interdisciplinary SU on the History of Mathematics in 1984 in Le Mans, France. It was followed by other SU in France (1986 in Toulouse, 1988 in La Rochelle, and 1990 in Lille). The next one was organized in 1993 on a European scale, and was called the 1st *European Summer University (ESU) on the History and Epistemology in Mathematics Education*, (a name coined since then), but many participants in it and in the subsequent ESU came outside Europe.

The previous ESU took place in July,

- 1993, Montpellier, France
- 1996, Braga, Portugal (conjointly with the *HPM* Satellite meeting of ICME 8)
- 1999, Louvain-la-Neuve & Leuven, Belgium
- 2004, Uppsala, Sweden (conjointly with the *HPM* Satellite meeting of ICME 10)

ESU	Duration	No of participants	Number of talks, workshops etc
1 st Montpellier France	19-23/7/1993, 5 working days	254 from 29 countries (17 European)	5PL, 2PN, 48WS, 37T
2 nd Braga, Portugal	24-30/7/1996, 5 working days+a morning session	548 from 33 countries (14 European)	1PL, 28IL, 4PN, 33WS, 71T
3 rd Louvain-la-Neuve /Leuven, Belgium	15-21/7/1999, 6 working days	159 from 22 countries (16 European)	6PL, 2PN, 37WS, 35T
4 th Uppsala, Sweden	12-17/7/2004, 4 working days+ two half morning sessions	120 from 32 countries (15 European)	6PL, 2PN, 9WS, 59T

PL=Plenary lecture

PN= Panel discussion

WS=Workshop

T= Talk/ oral presentation

IL=Introductory Lecture

Remarks:

(a) In the 2nd ESU there was only one *plenary lecture*, but many *introductory lectures*, which run in parallel and which were addressed to schoolteachers, providing an introduction to the topics elaborated in the workshops.

(b) The 2nd and 4th ESU have been organized conjointly with the *HPM* Satellite Meeting of the corresponding ICME (ICME 8 and ICME 10, respectively)

(c) In most ESU, more than half of the participants were local people: Portuguese in the 2nd ESU (310); French in the 1st ESU (134). In the 3rd ESU about 40% were Belgians (64). Thus, in general, there was a strong participation from local people, mainly primary and secondary schoolteachers.

(d) In general, a key element of the program was the great number of workshops, which gave the opportunity to presenters to explain their ideas, teaching practice, share their experience with participants and distribute relevant material. The workshops were of variable duration usually, from 1 to 3 hours.

(e) Non-local participants came from many countries, either European, or from other continents, although with a few exceptions, only a small number from each country (usually less than 5, or 6).

Themes of the previous ESU

The activities and the program of each ESU were structured around some *main themes*, which were the following:

1st ESU Montpellier, France, 19-23/7/1993

- The historical construction of mathematical knowledge
- Introducing a historical perspective into the teaching of mathematics
- The relationship between mathematics education and culture
- Epistemology and its relationship to didactics and pedagogy

- History of mathematics in initial teacher training and in-service courses
- Mediterranean mathematics
- Ethnomathematics

2nd ESU Braga, Portugal, 24-30/7/1996

Main themes:

- Mathematical cultures all over the world
- Mathematics as a science
- Mathematics, arts and technics

Special topics:

- History of mathematics education
- Epistemological obstacles
- Views on Mathematics
- Mathematics for all
- Mathematical proof in history

3rd ESU Louvain-la-Neuve /Leuven, Belgium, 15-21/7/1999

There were not any main themes specified a priori. However, themes proposed in due course included Mathematical journals in Europe and their use in education

- The historical construction of mathematical knowledge
- The relation between mathematics and science in history; its in education
- Relations between mathematics and music up to Euler's era; their use in education
- History of mathematics education
- Mathematicians in the Low Countries
- About the 19th century geometry: the Belgian theorems; what may be the insights for the education?

4th ESU Uppsala, Sweeden 12-17/7/2004

- The history of mathematics
- Integrating the history of mathematics into the teaching of mathematics
- The role of the history of mathematics in teacher's training
- The common history of mathematics, science and technology
- Mathematics and different cultures
- The philosophy of mathematics

Proceedings

An important aspect of the ESU has been the publication of its Proceedings. In the 2nd and 4th ESU the Proceedings became available in advance and were distributed to the participants on the spot.

1st ESU: Actes de la première Université d' Été Européenne sur l' Histoire et Épistémologie dans l' Éducation Mathématique, F. Lalande, F. Jaboeuf, and Y. Nouazé (editors), IREM de Montpellier, Université Montpellier II, Montpellier, France, 1995 (598 pages in one volume).

2nd ESU: Proceedings of the 2nd European Summer University on the History and Epistemology in Mathematics Education and the ICME 8 Satellite Meeting of HPM, M.J. Lagarto, A. Viera & E. Veloso (eds), Portuguese Association of the Teachers of Mathematics & Department of Mathematics, University of Minho, Braga, Portugal, 1996 (813 pages in two volumes).

3rd ESU: Proceedings of the 3rd European Summer University on the History and Epistemology in Mathematics Education, P. Radelet-de-Grave & C. Brichard (editors), Université Catholique de Louvain, Leuven and Louvain-la-Neuve, Belgium, 2001 (944 pages in two volumes).

4th ESU: Proceedings of the HPM 2004: History and Pedagogy of Mathematics ICME 10 Satellite Meeting and 4th European Summer University on the History and Epistemology in Mathematics Education, F. Furinghetti, S. Kaijer & A. Vretblad (editors), Uppsala University, Uppsala, Sweden, 2004

(482 pages in one volume); revised edition Proceedings *HPM 2004 & ESU 4*, F. Furinghetti, S. Kaijser & C. Tzanakis (editors), University of Crete, Greece, 2006, ISBN 960-88712-8-X (678 pages in one volume).