

ICMI

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The International Commission on Mathematical Instruction

ICMI

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The International Commission on Mathematical Instruction

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Legend: IMU stands for *The International Mathematical Union*.

ICME-8: Second Announcement

The Second Announcement of ICME-8, to be held in Sevilla, Spain, 14-21 July 1996, appeared in the autumn of 1995. In addition to being distributed by ordinary post to a great many recipients in all parts of the world, the Second Announcement is also available in electronic form. For further information on the Second Announcement, or on ICME-8 in general, please contact <icme8@obelix.cica.es> or consult the Mosaic pages on ICME-8. The URL is <http://icme8.us.es/ICME8.html> You may also reach the Local Organisation by writing to

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ICME-9 in 2000 in Japan

The Executive Committee of ICMI has the great pleasure to announce its recent decision to accept Japan's bid to host The Ninth International Congress on Mathematical Education, ICME-9, in the year 2000. The Congress will take place in Chiba, near Tokyo. The Executive Committee is very happy that Japan has offered to undertake this important and demanding task and wishes to thank the Japanese Invitation Committee for ICME-9, and the involved organisations and individuals, for this initiative and for the impressive preparation of the bid. The Executive Committee is convinced that ICME-9 will be a great success both from a scientific, a social, and a cultural point of view. The Committee is looking forward to collaborating with our Japanese colleagues on this challenging task.

The IREM Network : Mission, work, functioning

Régine Douady and Michel Henry

1. Mission

The Research Institutes on Mathematical Education (IREM, *Institut de Recherche sur l'Enseignement Mathématique*) were created in France, starting in 1969 with the following mission:

- * to carry out research on mathematical education
- * to take part in the pre- and in-service training of teachers
- * to write, develop and disseminate documents for teachers and teacher trainers

There are 26 IREMs in France, including one in Antilles-Guyane.

An IREM has two original features:

- * *Teachers of all levels*, including university, secondary school, technical school, and elementary school work together.
- * *They work in a network*. This allows information to circulate constantly between them. To enhance the development and circulation of their work, national commissions called *Inter-IREM Commissions* (there are now 14 *CII*), and more recently a *Scientific Committee (CS)*, have been set up. Also a journal, *Repères-IREM*, is being published.

The *CII* gather members of various IREMs interested in the same theme or *problématique*.

- * They synthesise studies done by the local groups.
- * Conversely, they send questions to the local groups which extend or expand on the initial themes.
- * Some commissions have their own projects.
- * They ensure the dissemination of their work through publications as well as through meetings and summer schools.

The *CS* assists the Assembly of the Directors of the **IREM** (**ADIREM**) in formulating its scientific policy, in making decisions and in following and assessing the work of the *CII*.

The activity of the IREMs has evolved significantly since their creation. In order to accompany the reform of the mathematics curricula known as "modern mathematics", research and training were at first guided by the dual necessity of *retraining* (bringing further mathematical information to high school and elementary school teachers) and *innovation*. The IREMs turned out to be the places where the serious difficulties to which the reform initiated in 1967 led, were detected and analysed. In that context IREM members from all teaching levels realized that a deep and scientific study of the learning process and the relationship between teaching and learning was urgently needed. In this way the IREMs contributed to the further development of the mathematics curricula in France.

The IREMs are places where teams are formed and meet. The activity of an IREM mainly develops in working groups formed around themes such as the *Didactics of Mathematics*, the *Epistemology and History of Mathematics* or the use of *New Technologies*. The work of these groups leads to the writing of papers or booklets, or provides the material for teacher training courses organised by the IREM. With time, these publications have become an impressive stock pile of multi-faceted work, widely circulated.

In 1984, the ADIREM temporarily created a scientific council in order to assess the work of the IREMs. Its report, published in 1985, is an important document which emphasises the special nature of the research done in the IREMs.

2. Work

2.1 Study and research

The diversity of the work of the 26 IREMs and the 14 Inter-IREM Commissions gives rise to studies which differ strongly in form, content and purpose. These studies lead in particular to

- * Teaching assistance documents containing recommended reports on experiments and thoughts on curricula.

- * Studies or monographs on mathematical topics considered from a teaching point of view.

- * Tools for the classroom - handbooks, software, audiovisual material - and for teacher training.

- * Research on the history and epistemology of mathematics

- * Research in the didactics of mathematics, in liaison with university departments.

This work by professional researchers together with practising teachers is oriented in three directions:

a) *The teaching of mathematics*

The form and content of mathematics teaching are constantly developing, sometimes continuously, sometimes with breaks. The traditional practice of mathematics teaching - definition, proof, application - despite its didactical interest (mathematical rigour and economy of time, at least) often conflicts with the need to give meaning to mathematics and with the expectations of the students. The teaching of geometry is an important case: The autonomy of the students and the use of activities are now frequent. This poses specific and complex didactical problems. These problems are analysed by experimentation in secondary schools.

Such work offers mathematics teachers a rich source of documentation. In this way, since 1986, every new high school curriculum has been accompanied by the publication by the IREM network of so called *Suivis Scientifiques*: Books used by nearly half of all high school teachers.

The resulting studies form the starting point of further research leading to proposals for the adaptation of curricula or teaching methods. Various authorities collect and, directly

or indirectly, make use of them.

b) *Epistemology and History of Mathematics*

The aim of the work in these areas is to determine under which conditions mathematical knowledge was constructed. Such work generates numerous themes for mathematical activities which are very successful with teachers. Epistemology also brings substantial insight into certain difficulties that student have, through studies of the obstacles which occurred in the creation of such and such concept or theory.

The publication of several books and handbooks for teachers testifies to the vitality of this section of the work of the IREMs.

c) *The Didactics of Mathematics*

The study of the processes and phenomena involved in the teaching of mathematics, in the teaching-learning relationship, and in classroom situations have been developing for twenty years or so. These studies could take advantage of the extensive experiments conducted by the IREMs, and of the questions raised by their members or in teacher training. Many PhDs have been carried out in the IREMs.

2.2 *The links between research and training*

Links between research and training are close. Such links do not emerge spontaneously. The practice known as "recycling", based on the idea that teachers could rely on the mere transmission of skills already mastered by experienced teachers, was a failure. It turned out that the questions for which teachers have concern do not have simple answers: the content of training courses has to be developed constantly, whether from mathematical, didactical or epistemological perspectives.

Nowadays, part of the training consists in developing the teachers' conceptions of what it means *to do math, to know math, to teach, or to learn math*. This requires that those undergoing training be actively involved in the training project and in the research associated with it. This does not imply that all training necessarily has to start with research, rather that research is an essential element in the training process.

The IREMs attach great importance to this *training by research*. The position of the IREM working groups enables them to proceed in this dual activity of research and training, each nourishing the other. The link between research and training takes a long time to establish. This is due to the nature of the process and of the work to be done (respect for protocols when an experiment is being carried out, analysis of the results, inquiries...) A little training from time to time does not lead to fundamental and lasting improvement in teaching.

2.3 *Training*

a) *Qualifying initial training*

With variations which take the local situations into account, the IREMs contribute to the formulation of the university curricula for the training of mathematics teachers. In some universities, the IREMs take part in the vocational teaching, approaching the problems which arise in the teaching of mathematics, presenting the basics in didactics, history and

epistemology of mathematics. They organise observation sessions in high schools math classes for university students. They take part in the preparation of the recruitment competitions and in the training of future teachers of mathematics.

b) *In-service training*

In-service training is provided in various ways:

* Through *regional training courses* which may deal with subject matter (refreshing or deepening knowledge of topics such as statistics, probability theory, geometry, in particular space geometry, and so forth), or with the teaching of mathematics and how to manage it (sessions on didactics, history, epistemology, analysis of curricula, multi-disciplinary practice).

Thanks to the IREM network, regional training courses are supported by national arrangements:

* *Meetings* organised by Inter-IREM Commissions. These gather 500-800 people every year in four or five places, each Commission organising a meeting every two or three years. Such meetings usually last three days and provide an opportunity for IREM members and teachers of all levels and locations to work together.

* *Summer schools*. In one or two weeks of intensive work, a theme linked to mathematical education is studied thoroughly and in depth. The participation of university researchers and presentation of the work done in the IREMs provide an opportunity for in-service students to follow the progress of fundamental thinking and to take advantage of synthesising courses. Reports are subsequently published and widely circulated. There are 3 to 6 summer schools every year. The national ones gather 100 to 200 people, the regional ones usually 40 to 50.

The IREM arrangements are directed not only to teachers in secondary schools, but also to the training of elementary school teachers, and sometimes to the young staff in the universities, to mathematics inspectors, and even to administrators of the national educational system.

In all studies or activities referred to, *the mathematical content is the backbone and the generator of significance*. A narrow and regular collaboration with university mathematicians is needed.

3. The writing and circulation of publications

The IREMs make their work available to teachers by producing publications: regional publications, nationally distributed journals and booklets, books issued by the Inter-IREM Commissions, issues of *Repères-IREM*. Among the regional output, let us mention:

* Documents from the training courses organised by the IREMs.

* A periodic Bulletin for connection between the IREMs and the teachers or the institutions of the region.

* Synthesising booklets, resulting from the work of groups, centred on topics on issues in mathematical education. For instance, "a study on proof", or "the teaching of probability theory", or "a collection of activities for secondary school", or "annals of exams with comments", etc. The variety of these publication is huge and the periodic listing of them, every three or four years, takes a whole volume.

Some IREMs publish nationally circulated periodicals, such as *Petit x* and *Grand N* in Grenoble, or *les cahiers de DIDIREM*, *documents pour la formation* and *Mnemosyne* (a journal on the history of mathematics in relation to the classroom) in Paris 7, or *Annales de Didactique des Sciences Cognitives* in Strasbourg. Other journals are published in collaboration with the Association of Mathematics Teachers (APMEP), such as *l'ouvert* in Strasbourg, *Plot* in Orléans and the *EVAPM* collection in Besançon.

The publications of the CII have gradually gained more and more importance. They include new texts and selections of local publications. Their connection Bulletins are turned into books distributed nationally by the IREMs or sold commercially, like *Mathématiques au fil des âges* or *histoire de problèmes* or *histoires d'algorithmes*.

In order to provide the Inter-IREM publications with some homogeneity and a standard of scientific quality, the ADIREM has established certain terms of reference: there has to be an editorial board, the work has to be supervised by a scientific committee, and the deadlines have to be planned. The proceedings of the Inter-IREM meetings fit into this category. Let us mention *L'histoire de la démonstration*, *La Géométrie*, *L'enseignement de la statistique en classe de techniciens supérieurs*.

The journal *Repères-IREM* is distributed to more than 2000 subscribers and the IREMs sale separate issues. The ADIREM has set up a permanent editorial committee of 12 people who carry out a demanding review of every paper. The balance between the themes dealt with, the dimensions and the richness of the papers, and their lists of references, make the collection of *Repères-IREM* an outstanding tool for the pre- or in-service training of teachers as well as for the development of research in mathematics education.

4. Influence of the IREMs and assistance to development

The IREMs produce exhibitions, organise or are involved in mathematical competitions and rallies, take part in creating or developing teaching software, whether graphic or not, publish documents to assist teaching, sometimes with the use of new technology. So, consultation or decision authorities, such as Ministry Departments, the General Inspection, institutional working groups or commissions, have at their disposal lots of thoughts and ideas stemming from numerous sorts of work.

The meetings of the Inter-IREM Commissions, open to teachers of all levels, are places where researchers and trainers may report on their progress and exchange experiences and views. The reports of the meetings offer an opportunity to follow the current development of work on mathematical education.

The national activities of the IREMs enable this network to be present on the international

scene. In this way, the IREMs have established relations with numerous similar institutions in other countries. This cooperation takes various forms, such as joint studies, invitation to courses, lectures in teacher training institutions, construction of curricula, participation in international assessment.

Some IREMs organise or participate in teacher training courses in cooperation with other countries, for instance in Africa. Courses may take place in France or in the partner country. Among international activities, let us mention just a few:

- * Collaboration with institutions in Brazil and in Vietnam. One IREM takes part in the New Standards Project in the U.S.A. and in the International Benchmarking (research aiming at a complete renewal of mathematics education in the U.S.A.);

- * Teacher-training missions in several countries: Russia, Egypt, Morocco, Senegal, Mauritania,...

- * Participation in international studies such as the Third International Mathematics and Science Study, or the ICMI Study on Perspectives for the Teaching of Geometry in the 21st Century.

- * Hosting foreign researchers or observers who come to obtain information about the teaching of mathematics in France.

The IREM network is active in international congresses (ICME, PME, HPM,...) on mathematical education, through special publications and presentation of some of its work, and through active participation in working groups.

The IREMs are known outside the circles of French public education, for instance in vocational training. This is reflected in various ways: through the use of IREM documents, requests for training courses, research contracts and so forth.

These national and international dimensions of the activities of the IREMs are made possible by the *anchoring of the IREMs in the university community*.

5. Functioning

From an institutional point of view, an IREM is a unit in a university, in connection with the department of mathematics of this university. It also maintains relations with the various ministry services which deal with primary, secondary or university education.

The activities of the IREMs are coordinated by the ADIREM (the assembly of the directors of the IREMs) assisted by the CS (the scientific committee). Every IREM is directed by a member of staff in the university to which it is attached. It is governed by a board composed of members of the institute, and representatives of the various institutions with which the IREM cooperates.

Concerning the IREM members, the non-university ones are mathematics teachers of all levels. Colleagues in other disciplines occasionally collaborate as well. A member employed in a school is usually exempted from or compensated for a few hours per week for his/her work in the IREM, with funds provided directly or indirectly by the Ministry

of Education. For the university members, the resources in terms of working time come from university positions created especially for the IREM or put at its disposal.

Administrative or technical positions, in particular librarian ones, have been created in the universities and been made available to the IREMs. As far as funds are concerned, these are distributed each year by the directorate of university teaching in the Ministry of Education according to a proposal made by the ADIREM. Within its university, each IREM is fully responsible for the management of its own budget. This financial autonomy allows for quick decision making. Funds are utilised for activities such as publishing, travels to seminars and national meetings, editorial work, renewing computers, printing facilities etc.

Thanks to its university status, every IREM enjoys great autonomy and works according to its own schemes. In particular, researchers are recruited by their peers for research teams, which is an essential feature. The management and the definition of research aims by the staff themselves (within the necessary administrative regulations) form another basic condition for the development of research.

The status of the IREMs as an internal service in the universities accounts very much for the extent of their achievements, as well as for the progress of knowledge on mathematical education in France. This makes France a reference country in the community of this discipline in many countries.

The organisation chart presented below brings to the fore the complexity of the IREM network and of the links it maintains with various partners.

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Explanation of the abbreviations in the organisation chart:

APMEP: Association des professeurs de mathématiques de l'enseignement public
IUFM: Instituts Universitaires de Formation des Maîtres
MAFPEN: Missions Académiques de Formation Continue
Rectorats: Regional representatives of the national Ministry of Education
SFCIEM: Sous-commission française d'ICMI
SMF: Société Mathématique de France

LE RESEAU des IREM

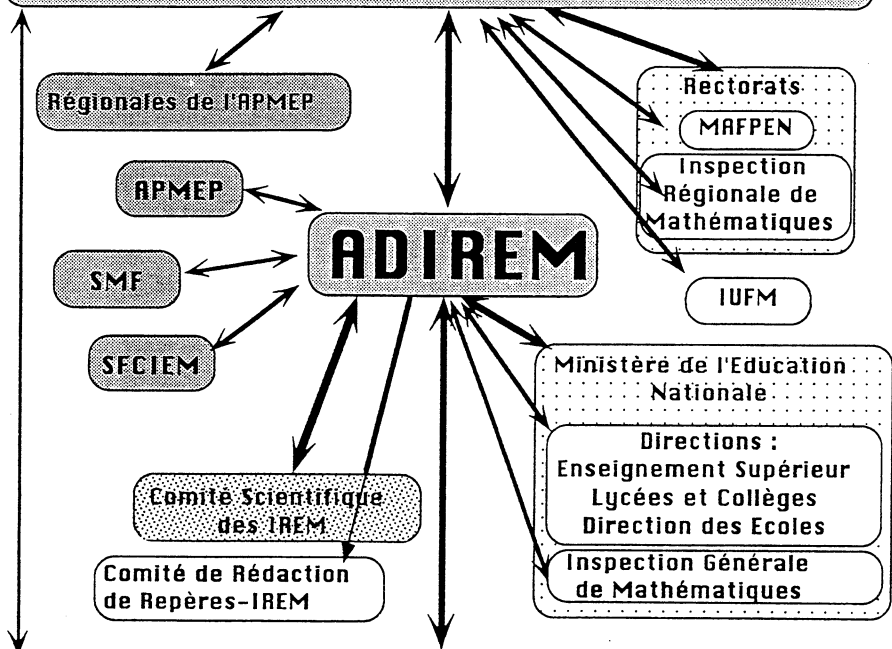
26 IREM : un service universitaire dans chaque académie

NOMBREUSES RELATIONS ENTRE LES IREM ET AVEC LES LABORATOIRES DE MATHÉMATIQUES

ANTILLES-GUYANNE
 BESANÇON
 BORDEAUX
 BREST
 CAEN
 CLERMONT-FERRAND
 DIJON
 GRENOBLE
 LILLE

LIMOGES
 LORRAINE
 LYON
 MARSEILLE
 MONTPELLIER
 NICE
 ORLÉANS
 PARIS NORD

PARIS VII
 PAYS DE LOIRE
 PICARDIE
 POITIERS
 REIMS
 RENNES
 ROUEN
 STRASBOURG
 TOULOUSE



<p>Copirelem Premier cycle Second cycle Lycées Techniques et Lycées Professionnels Universités</p>	<p>Analyse Astronomie Géométrie Statistiques et Probabilités</p>
<p>Épistémologie et Histoire Didactique</p>	<p>Images et Mathématiques Mathématiques et Informatique</p>
<p>Ouvrages scolaires et apprentissages</p>	
<p>14 Commissions Inter-IREM</p>	
<p>NOMBREUSES RELATIONS ENTRE LES COMMISSIONS</p>	

MERGA Donation to the ICMI Solidarity Fund

It is with great pleasure and gratitude that the ICMI Executive Committee is able to announce that the *Mathematics Education Research Group of Australasia (MERGA)* has donated AU\$ 2.000 to the ICMI Solidarity Fund. This Fund was established by ICMI, on the proposal of its President Miguel de Guzmán, in Québec, Canada, at ICME-7 in 1992, in order to help the furthering and improvement of mathematics education, both from practical and academic perspectives, in places where there is a special need for it. The ICMI Executive Committee wishes to thank MERGA, and its President Professor Gilah Leder, La Trobe University, Victoria, Australia, for this generous donation.

Mogens Niss

ICMI related conference proceedings

ICMI Study Conference on Gender and Mathematics Education: Proceedings

In October 1993, the ICMI Study Conference on Gender and Mathematics Education took place in Höör, Sweden. The proceedings of this conference have recently appeared. The coordinates of the proceedings are

Barbro Grevholm & Gila Hanna (eds.):
Gender and Mathematics Education,
an ICMI Study in Stiftsgården Åkersberg, Höör, Sweden 1993
Lund University Press

The book, which is in hard cover, may be obtained at a price of Swedish Kroner (SEK) 206 (approx. US\$ 30), VAT included, plus postage and handling SEK 50, directly from the publisher. Contact

Studentlitteratur AB,
P.O. Box 141
S-221 00 Lund
SWEDEN
telephone: +46 46 31 20 00
fax: +46 46 30 53 38
e-mail: <order@studli.se>

The ultimate outcome of an ICMI Study is a so called ICMI Study Volume which is a scholarly, tightly edited book on the theme of the ICMI Study. This ICMI Study, which is being published by Kluwer Academic Publishers, Dordrecht, The Netherlands, should not be confused with the proceedings mentioned above. The book is expected to appear, as Volume 3 of the New ICMI Study Series, in the very beginning of 1996. It is edited

by Gila Hanna, and its title is *Towards Gender Equity in Mathematics Education - An ICMI Study*. Further information about this book and the way in which individuals may obtain copies through ICMI at a considerably reduced rate will be included in the next issue of this Bulletin.

Proceedings of the ICMI-China Regional Conference, Shanghai, 1994

In Shanghai, an ICMI-China Regional Conference was held in August 1994. The proceedings of this conference have now appeared. It is published by Shanghai Educational Publishing House and may be obtained by writing to the publisher at the following address:

Shanghai Educational Publishing House
123 Yongfy Road
Shanghai 200031
CHINA

Mogens Niss

The British Society for Research into Learning Mathematics

In response to the Bulletin editor's request for information of societies for research in mathematics education, included in the June 1995 (No. 38) issue of this Bulletin, Dr. Brian Hudson, the Membership Secretary of the British Society for Research into Learning Mathematics has kindly supplied the following information concerning that society:

BSRLM is an organisation which acts as a major forum for research in mathematics education in the United Kingdom. It is both an environment for supporting new researchers and also a forum for those more established. It is open to and welcomes membership from anyone involved or ininterested in mathematics education.

The society holds an annual weekend conference in addition to day conferences on two occasions during the year. Members receive copies of the proceedings of these conferences.

The officers of the BSRLM are:

Chair: Steve Leran, Centre for Mathematics Education, South Bank University

Secretary: Rosamund Sutherland, Institute of Education, University of London

Membership Secretary: Brian Hudson, Centre for Mathematics Education, Sheffield Hallam University

Treasurer: Peter Gates, School of Education, University of Nottingham

If you wish to join, please contact Brian Hudson, BSRLM Membership Secretary, at the address below for a registration form.

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IX Inter-American Conference on Mathematics Education - IX IAXCME -

Fidel Oteiza and Patricio Montero

The IX IACME took place between July 31 and August 4, 1995, at the University of Santiago de Chile. The event was sponsored by the host university, the Chilean Society of Mathematics Education, Chile's Ministry of Education, the Andes Foundation, the Organization of American States (OAS), and the National Science Foundation (NSF) of the United States.

The conference attracted 1080 participants, including researchers, teachers, university students, and observers from seventeen countries (87 from Argentina, 58 from Paraguay, 43 from Uruguay, 27 from Brazil and Peru, 12 from Venezuela, 11 from the United States, 9 from Colombia, 7 from Spain, 5 from each of Bolivia and Mexico, 2 from each of Canada and Costa Rica, and one from each of France, Guatemala and the Dominican Republic). The event was honored with the presence of 25 distinguished international specialists in the field of mathematics education, the Inter-American Committee for Mathematics Education, and with prominent researchers from the participating Latin American countries.

The main activities offered during the conference included: 6 plenary lectures, 12 regular lectures, 4 specialist panels, and 124 short presentations. Also included were several discussion group meetings in specific topics, poster presentation, and exhibitions of educational materials, such as books, didactic games, software, etc. Complementary sessions and workshops were available for secondary and elementary school teachers. This established a valuable link between researchers and teachers from the National System of Education.

The Organizing Committee evaluated the event as highly positive thanks to the interest observed in the lectures, panels, short presentations and other activities. The conference made possible the collection of valuable information about approaches and experiences for the improvement of mathematics education at all levels. It also consolidated important exchange ties with the participating international specialists who also evaluated the meeting very positively. For the Organizing Committee and the Chilean Society of Mathematics Education this was a magnificent opportunity to get to know and benefit from each and every person who participated in the conference. This is a good time to recognize and to thank all those who made it possible. All that is left is the challenge of systematizing the contributions and to distribute them along with the results of the accomplished work.

For the Organizing Committee and the Chilean Society of Mathematics Education,

Fidel Oteiza and Patricio Montero

Universidad de Santiago de Chile, Santiago, CHILE

Inter-American Committee on Mathematics Education (1995-1999)

A new Executive Committee of the Inter-American Committee on Mathematics Education was elected for the period 1995-1999 during the IX Inter-American Conference on Mathematics Education. The composition of the committee is:

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Fidel Oteiza

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(Ex-President)

Report on pre-university statistics education in Hungary

T. Nemetz, O. Vancso, G. Wintsche

1. Talking about teaching something within a given system presupposes some information about that system itself. In the case of the Hungarian educational system, this was an easy task till recently, see e.g. Nemetz [2], [3]. Political changes have altered this situation starting from the 80's. Statements like "Schooling in Hungary starts with kindergarten" are not valid anymore: The system of kindergartens has been demolished, practically speaking.

The simple three-age-group classification of pre-university education - namely the lower primary four years for ages 6-10, upper primary for the next four years, and the secondary schools for ages 15-18 - is no longer general, as was predicted e.g. by Howson [1]. The duration of compulsory schooling has been changed (in principle) from 14 to 16 by the new Educational Law in 1992. We shall nevertheless follow the old classification, since this practice has remained typical after all. (Teachers have been trained, and are still being trained, according to the old age-classification. The budgets and the administration of schools are unchanged).

As a tradition, at pre-university level, probability and statistics are dealt with in parallel, within the mathematics curriculum, except for some special secondary schools. It should be pointed out that statistics does not play an important role in the intended curriculum, and even less so in the implemented one. During the last 20 years, for instance, no statistical question was included in the school leaving final examinations.

2. At lower primary level, the "1978 mathematics syllabus" is still commonly practised, although it has been under revision since 1987. The subject matter is classified under five sub-titles, one of them being "combinatorics, probability and statistics". We describe the goals, specified for the four grades:

Grade 1: Arranging things according to different properties. Differentiating the notions <certain>, <probable, but not sure> and <impossible>. Experiencing data collection while becoming more and more familiar with numbers.

Grade 2: Listing and counting all pairs of elements in a given set. Pairing the elements of two sets. Listing possible outcomes of random events. Recording outcomes of random experiments (counting frequencies). Differentiating among degrees of "probable but not sure events".

Grade 3: Searching for possible cases when making observations or carrying out experiments. Classifying outcomes according to their likelihood. Collecting and recording data. Representing such data in tables and graphs. Preparing the introduction of the notion of the arithmetic mean.

Grade 4: Finding all possible combinations by listing them in tables or by using flow-charts. Representing frequency distributions by bar-diagrams. Guessing frequencies before performing random experiments, comparing the guesses with the experimental results. Selecting the most frequent element of a given set of data. Location parameters and their meaning. Calculating the average of integers.

3. The variety of types of schools does not allow us to refer to "grades" in general. Instead we refer to the age of the students. Unfortunately, there is not much to report on: At the age of 12 and 13, no stochastics is included in any of the school types. During the beginning of age 11 curricula discuss some problems concerning producing and interpreting graphs, calculating averages, and grouping collected data. The syllabus calls for recapitulation of statistical knowledge at the age of 14. However, beyond an estimated 10%, teachers do not devote any time to such units.

4. In the general secondary schools ("gymnasiums") the mathematics curriculum is divided into compulsory and optional parts. The final school leaving examination, as well as the university entrance examinations, are related to the compulsory part only. This part does not offer stochastics. The suggested curriculum for the optional part contains a unit on stochastics during the last 2 years. This unit starts with descriptive statistics, explaining the mathematical background of the location and dispersion parameters. These are used to motivate the introduction of concepts in probability. Probability is restricted to the discrete case. Its means are then used to formulate and solve statistical decision problems and estimation tasks. There are now 19 highly maths-specialized classes per year in the country, where, depending on the teacher's decision, this unit may be dealt with much more in depth, reaching the level of a simpler introductory university course. Textbooks for both kinds of options are written by the first author of this article.

Statistics is receiving more direct attention in schools specialized in economics and computer technology. They follow the same philosophy as in the optional parts referred to above, but greater emphasis is placed on concrete calculations, and solution of problems. A textbook written by the second author of this article contains a number of real life problems and presupposes very active work of the students.

5. In teacher training for lower primary and secondary schools no credit course on statistics are offered. Future teachers might attend some seminars on statistics or on the didactics of stochastics, but this not typical. The program for prospective teachers for the middle age group (11-14 year olds), prepared by the third author, integrates statistics into a probability course, similar to the optional program already mentioned.

6. A new "National Basic Curriculum" has been under development for the last 4-5 years, and will proceed to registration in the fall of 1995. This curriculum will prescribe subject matter in mathematics for about half of the time. It seems to give a more prominent role to statistical thinking. Key words from the syllabus are: elements of descriptive statistics, collecting and representing data, interpreting graphs, location parameters, performing

random experiments, frequency distributions. The intended minimum goals are not very ambitious: By the age of 12 students should be able to calculate averages, and at 14 to produce and interpret graphs.

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FUTURE CONFERENCES

1st ACTM, December 1995

The 1st Asian Technology Conference in Mathematics will be held in Singapore 18-21 December 1995. The conference will be hosted by the Association of Mathematics Educators, Singapore, in conjunction with the Nanyang Technical University, National Institute of Education, Singapore, and Radford University, Virginia, USA.

The theme of the conference is Innovative Use of Technology for Teaching and Research in Mathematics. The 1st ACTM will provide mathematics educators, computer specialists, technologists, researchers, policy makers, and teachers with an opportunity to share and discuss the latest developments in their areas of specialization. The conference will also provide an avenue for the possibility of collaborative research among participants. The scientific programme of the conference is planned by an International Programme Committee, chaired by Dr. Wei-Chi Yang, Radford University, Virginia, USA. Papers are invited from people involved in the use of technology in teaching and research in higher institutions and schools. The conference programme will include plenary lectures, paper presentations, and workshops on mathematics teaching and research with the use of technologies. Also an exhibition of educational products with the use of technology will be mounted. The working language will be English.

Abstracts not exceeding 200 words should be sent to

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SEACME 7, June 1996

The Seventh South East Asian Conference on Mathematics Education will be held at Hanoi University of Technology, Hanoi, Vietnam, 3-7 June 1996. The organising institutions include the Hanoi University of Technology, the Hanoi Pedagogical Institute No. 1, the Hanoi University, the Research Institute of Education Science, and the Vietnamese Mathematical Society.

The themes of SEACME 7 are Mathematics education in upper secondary schools, and Mathematics education for mathematicians, scientists and engineers, social scientists, and mathematics teachers. The programme will include invited lectures (delivered by international experts), working groups, topic groups, workshops, national presentations, and posters. Exhibitions of textbooks, software and other types of material are being planned as well. The conference languages will be English and French.

If you want to obtain the Second Announcement or other type of information, please contact

Nguyen Dinh Tri,
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ICME-8, July 1996

See separate announcement elsewhere in this issue of the Bulletin.

Second European Mathematical Congress, July 1996

This congress will be held 21-27 July 1996 in Budapest (Hungary), hosted by the János Bolyai Mathematical Society. The Scientific Committee is chaired by Jürgen Moser, Germany, and the Organising Committee by Gyula Katona, Hungary.

To obtain a copy of the First Announcement, please contact

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Fő utca 68,
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Junior Mathematical Congress-96, July-August 1996

As a satellite conference to the above-mentioned Second European Mathematical Congress, this meeting - which aims at bringing together the future mathematicians of Europe - will take place 29 July - 2 August 1996 in Miskolc, Hungary.

The conference welcomes young people between 13 and 19, interested in mathematics, from all countries in Europe. It will provide an excellent opportunity for the participants to make friends and meet famous European mathematicians. In addition to new ideas, participants will become acquainted with several new branches and applications of mathematics as well as educational software and logical games. Apart from lectures by scholars, the participants may themselves give talks or exhibit posters. Those wishing to give a talk should submit a manuscript no later than 31 March 1996.

For further information and preliminary registration, please contact

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The official languages of the conference are English and Hungarian. Contributions in Hungarian will be translated into English. Contributions in any other language are welcomed if supported by an English translation.

The ICMI Bulletin on E-Mail

The ICMI Bulletin is stored as an ASCII file in the editor's (i.e. the ICMI Secretary's) electronic post system. If you want to receive a copy of this issue as an ASCII text through e-mail, please contact Mogens Niss at <mn@mmf.ruc.dk>.

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