

Around ICME-10

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In the beginning of July 2004 (4th-11th) the 10th International Congress on Mathematical Education (ICME-10), took place on the campus of the Technical University of Denmark at the outskirts of Copenhagen. In this article we give a brief report on the statistics of the congress and a condensed outline of the scientific programme. ICME-10 was organised as a joint effort amongst the five Nordic countries: Denmark, Finland, Iceland, Norway, and Sweden. This is a novelty in the history of the ICME's. Therefore, in this article, we pay some attention to how the co-operation was organised and to some of its effects on the continuing Nordic co-operation in mathematics education research.

Statistics

More than 2.300 researchers in mathematics and mathematics education, teacher trainers and mathematics teachers representing all levels of the educational system from pre-school to university attended ICME-10. There were participants from nearly 100 different countries, (see figure 1 and 2; complete statistics can be found at www.icme10.dk). In total we estimate that close to a thousand of the participants contributed to the scientific programme of ICME-10. In addition 317 accompanying persons and some 100 professional exhibitors took part in the event. Assisted by the so-called Solidarity Programme, funded primarily by a 10% solidarity tax on the registration fees, it was possible to partially support about 175 individuals from less affluent countries with grants for participation.



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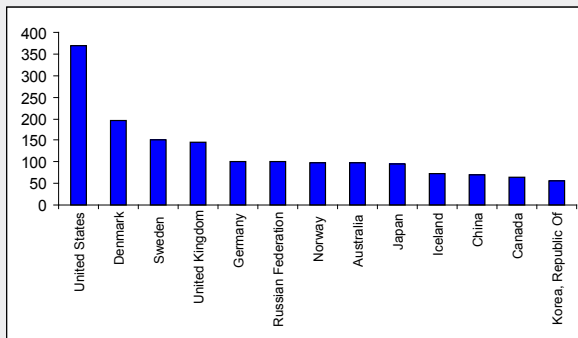


Figure 1: The number of participants from the top 13 countries.

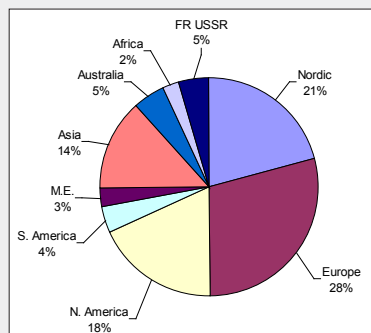


Figure 2: The distribution of participants on geographical regions.



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The scientific programme

The scientific programme of ICME-10 was composed as a rich mixture of classical, renovated classical, and quite novel and innovative components.

The classical components comprised 6 Plenary Lectures, and one Plenary Panel Debate, 79 Regular Lectures, organised in parallel sessions, 29 Topic Study Groups in which particular topics were considered in presentations during four “mini conference” sessions, poster presentations, commercial and non-commercial exhibitions, presentations of recent ICMI studies, National Presentations and meetings of the five ICMI Affiliated Study Groups.

The National Presentations were given by Korea, Mexico, the Nordic countries, Romania and Russia. Each of them included very nice exhibitions and an entire afternoon programme with lectures and workshops allowing participants to get an insight into the mathematics education research and the practices of mathematics teaching in each country taking part in the presentations.

Renovated classical components included 24 Discussion Groups (in which there were no presentations, apart from an introduction, but structured discussions on pertinent challenges, issues, and dilemmas), and 45 Workshops established on the basis of submissions made by individuals or groups.

The novel components were pretty numerous: A Plenary Interview Session, in which four highly prominent mathematics education veterans were interviewed by another prominent scholar, proved to be very well received indeed. Five so-called Survey Teams worked for three years to survey recent developments in a particular sub-field of mathematics education. The outcomes of their work were presented in plenary or regular lectures. One afternoon was designed as a so-called Thematic Afternoon during which the entire Congress was divided into five parallel themes. Twelve Sharing Experiences Groups, established on the initiative of individuals, allowed participants to share and discuss mathematics education experiences in small groups. In addition to typical poster presentations a new scheme was adopted: Poster Round Tables in which 3-5 posters were grouped thematically and were discussed together under the direction of a moderator. More than 100 of the 217 posters were discussed at such Round Tables.

In addition to the scientific programme there were two other activities with an interesting mathematical content running through the entire congress. The Congress was pleased to be able to display an interesting travelling exhibition on mathematical objects and phenomena mounted by UNESCO and ICMI. Also a so-called mathematical circus, initiated by the Nordic Contact Committee (NCC, see below), was organised during ICME-10. Contributors mainly from the Nordic countries offered a number of entertaining and mathematically rich activities to Congress participants and their family members. The day before the congress the Circus also had some activities in the local community centre to inspire and entertain the general public.



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Newcomers programme

As a newcomer it is not easy to navigate in the programme of an ICME congress. The programme structure is very complex and the programme offers a wealth of opportunities, and therefore also requires a lot of decisions to be taken by each individual participant. Many have indicated that their first ICME was quite a bewildering experience. Therefore, as a novelty a special newcomers programme was set up during the planning of ICME-10. The programme was initiated by the ICMI executive committee and launched by NCC. The aim of this programme was to help newcomers improve their outcome of ICME-10 scientifically as well as socially. All participants who considered themselves as newcomers were given the option to participate in the newcomers programme during ICME-10. Experienced ICME-participants among lecturers, members of the executive committee or the programme committee, people responsible for TSGs or DGs and so on were invited to act as mentors. The interest was large and about 500 newcomers and 50 mentors participated in the programme. The programme consisted of several components. One mentor and about 10 newcomers were grouped together and some groups had made contact by email already before ICME-10. The outcome varied a lot between the groups. The evaluation amongst participants also brought out a number of interesting suggestions for the future ICMEs – if the newcomers' programme is to appear again.

It will be up to the organisers of the next ICME, ICME-11 to be held in Mexico in 2008, to decide which of all these programme elements should be kept, perhaps in a modified form, and which should be dismissed.

Although we are not the right people to judge the success of the Congress, based on the feedback we have received from a large number of participants it is, we think, fair to say that the scientific programme of ICME-10 went rather well in most respects.

The Nordic co-operation

As ICME-10 was organised as a joint effort amongst the five Nordic countries, Denmark, Finland, Iceland, Norway, and Sweden, a couple of questions seem natural to pose. Why do "small" countries like the Nordic (the number of inhabitants range from 300 000 to 9 millions) offer to host a huge congress like ICME? Why do several countries volunteer to cooperate in organising such a congress? The answer to the first question is obvious; for the same reasons as large countries, the two main ones being to accelerate the development of the field within the country and to make mathematics education and research of the country more visible on the international scene. However, the demands on resources – both economic resources and resources in terms of scientific infrastructure – to manage the organisation of an ICME congress are greater than those at the disposal of most small countries. This is the obvious reason why earlier congresses have been hosted by large countries, and this is why the five Nordic countries made a joint offer to host ICME-10.

As arranging an ICME through co-operation between countries may be relevant in the future it is interesting to address questions like: What are the specific requirements on



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countries for such an endeavour? How was the organisation of ICME-10 made possible from this perspective? What positive side effects have appeared so far from the intensive and extensive co-operation during the preparation of ICME-10?

The first question may be answered in a tentative way only, based on the experiences from ICME-10. The success of the co-operation seems to require first of all an already well established co-operation between the communities of mathematics education in the countries, and working networks. Secondly, the structure of the organisation must be decided at an early stage and the actual co-operation should start as soon as the preparations of the congress are launched. A realistic picture towards what is possible to achieve is important, considering that projects will take longer to carry through when several countries are involved.

In the case of ICME-10 the organisation and working format of the co-operation was straightforward and built on existing contacts. A Nordic Contact Committee (NCC) was established in 1999 with representatives from the five countries - one from Iceland and two from each of the other countries. The commission of NCC was to ensure support of the organisation of ICME-10 from the four countries beside Denmark, and to encourage participation and contributions to ICME-10 from all Nordic countries. The committee was able to meet and work intensively for a couple of days twice a year during the whole period, alternating between the countries. Four members of NCC were members also of the local organising committee, thereby ensuring easy spread of information in both directions.

The co-operation between the Nordic countries concerned a number of projects related directly to the congress as described below. However, an even more significant outcome was the general boost of the Nordic collaboration within mathematics education during the four years of planning. Common projects aiming beyond the congress developed through the continuing contact.

The members of NCC were appointed by the national ICMI representatives and in Denmark and Sweden by the national ICMI committees. Through its members NCC had close links to all Nordic research environments in mathematics education, to national organisations for teachers, and to existing Nordic networks within mathematics education. New contacts over the national borders between persons involved in these networks were developed through the initiatives of NCC. National and Nordic networks within mathematics education were strengthened by the work of NCC and more people became involved.

Funding

The Nordic Council of Ministers, a Nordic governmental co-operation body, supported the Congress financially to some extent. However, it turned out to be impossible to get funding for the Congress organisation directly from any of the countries other than Denmark. This was a disappointment and left a heavy burden on the local Danish organisation. On the other hand, governments and non-governmental organisations in the other countries made substantial grants for the preparations of ICME-10 within each country. The costs directly related to NCC's work were covered by such means. The



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Malmö symposium, *Educating for the Future*, described below, offered a possibility to cover travel expenses for one of the ICME-10 programme committee meetings by resources from Norway and Sweden.

Conferences

Two international conferences were arranged on the initiative of the NCC in May 2003, the year before the Congress: one was an international symposium - *Educating for the Future* - on the education of mathematics teachers and one was a *Nordic Pre-conference to ICME-10* with the aim of encouraging contributions from young Nordic researchers to ICME-10. Both conferences were documented through proceedings (Växjö University, 2003; Brandell, G., Grevholm, B. and Straesser, R., 2004).

The symposium *Educating for the Future* was arranged in May 2003 in connection with an ICME-10 programme committee meeting. About 40 researchers from all over the world were invited to the symposium, among them the members of the ICME-10 programme committee and a number of key persons within mathematics education with special interest in research on teacher education, such as the members of the editorial board of *Journal for Research on Mathematics Teacher Education*.

A number of internationally recognised researchers in mathematics education were invited to the *Pre-conference to ICME-10* in Växjö in May 2003. Invited lecturers addressed questions and raised issues of great importance for the development of mathematics education as a research field. Over 150 doctoral students, researchers, teachers and educators from the Nordic countries attended the conference and there were 80 presentations in parallel sessions. The majority of the presenters were young researchers who had not earlier presented their work outside their own country. Each presenter got feedback from two of the invited experienced researchers, who could give constructive critique on how to improve and develop a contribution. The aim was to encourage as many young Nordic researchers as possible to contribute to ICME-10. Almost all of the active presenters in the Pre-conference actually managed to contribute to ICME-10, in most cases to one of the Topic Study Groups of the congress or within the Nordic presentation.

The two conferences were planned to be close in time and space in order to make it possible for those invited or interested to conveniently attend both.

Satellite meetings of PME and HPM, two of the affiliated subgroups of ICMI, were organised in the Nordic countries directly after ICME-10. The yearly meeting of the International Group for the Psychology of Mathematics Education: *PME 27* was held in Bergen, Norway and the Summer University of the History and Pedagogy Group (HPM) was organised in Uppsala, Sweden.

NOMAD

The Nordic research journal on mathematics education – *Nordic Studies in Mathematics Education*, NOMAD - has played a crucial role for the Nordic research community in Mathematics Education since it first appeared in 1994. Starting in 2002 the journal had been suffering from administrative and financial difficulties. Due to this the journal did



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not appear as planned for some time. The NCC judged it to be of utmost importance that the journal would start to appear again before ICME-10 in order to have the necessary platform to publish research and reflect the development of the research field in the Nordic countries. Therefore the NCC took the initiative to finance and support the appearance of a special issue in connection with ICME-10, and suggested guest editors for this special issue (Bekken, O. B., Jaworski, B., and Kristjansdottir, A., 2004). The special issue contains nine articles by authors from all of the Nordic countries. The aim of the issue is to give an idea of some current research in mathematics education in the Nordic countries. This initiative and other efforts helped to reactivate NOMAD, and the journal has been published regularly since 2004. The special issue was funded by grants from Finland, Norway and Sweden. It was printed in a large number and was spread to a larger audience during ICME-10.

Nordic Presentation

NCC took on the responsibility of arranging a common presentation of mathematics education in the Nordic countries at ICME-10. Obviously, the NCC wanted to avoid a solution with five “small” presentations, one for each country. The fact that there were contributions from teachers and researchers from five countries enriched the programme. In a few cases there were even joined presentations given by researchers and teachers from different countries. On the other hand the joint Nordic presentation also created some difficulties since the educational systems, national curricula, teaching traditions, and learning outcomes varies between the countries. Hence it was not possible to create a common frame by describing one educational system and its outcomes. The solution was to have two invited “plenary” speakers to give their outline of mathematics education and research in mathematics education, with examples from several countries. The other presentations – about 60 lectures, workshops and exhibitions – each dealt with just one country. The NCC had defined a number of common themes, sent out together with the invitation, in order to create some structure. The themes grew out of discussions within the NCC – and with others – where the aim was to identify common characteristics within mathematics education in the countries. The programme will be documented in a separate proceedings.

A book was prepared by the NCC (Stedöy, I., 2004) to accompany the Nordic presentation. It was printed in a large number and distributed during ICME-10. The book gives a picture of different aspects of mathematics education in the Nordic countries. In an introductory article, an effort is made to identify and discuss a “Nordic dimension” in education.

The KappAbel-competition

In Denmark summer school holidays occur in July. Hence it was not possible to offer visits to schools in the Copenhagen area during ICME-10. However, the KappAbel competition presented an opportunity to meet Nordic mathematics students during the congress. The KappAbel competition for pupils in school year 9 (or 8) started in Norway around 1999. A number of special features make this competition interesting from a didactical point of view. Some of these features are the following: KappAbel is a mass competition, the first round is for large groups of students (school classes), short tasks are complemented by class projects, the final is a competition between teams of two



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boys and two girls selected by the classes. The problems used in the competition are offered to teachers to use in follow-up activities in their ordinary teaching. The competition was spread to the other Nordic countries through the support and networks of the NCC. The first Nordic final was held in 2003. The second final was held during ICME-10, with five competing teams, one from each country. The members of the teams showed what joy and excitement mathematics can produce and especially the project presentations were highly appreciated by the 300 congress participants that experienced the final.

Although the planning of ICME-10 required an enormous effort we all feel that it has been worthwhile and we are convinced that the ICME-10 co-operation will have long lasting positive effects on mathematics education research in the Nordic countries.

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