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The Sixth International Conference on Science and Mathematics Education in Developing Countries

Mandalay University (Myanmar)

November 1–3, 2013

http://www.mu.edu.mm/mathconference/%index.htm

The five previous occurrences of this *International Conference on Science and Mathematics Education in Developing Countries* were organized by Chan Roath in Cambodia. The first one in 2008 took place in Phnom Penh, organized by Chan Roath and Michel Jambu. In 2010 there were only 8 foreign participants, in 2012 the number was 24. Last year, in Phnom Penh, it was decided to organize the sixth one in Mandalay (The Republic of the Union of Myanmar). The seventh one is already scheduled at the same period of the year in 2014 in Yangon, the next one in 2015 could take place in Vientiane (Laos). This turns out to be a very successful scheme.

This conference was attended by about 400 participants, more than 40 of them were coming from 17 countries other than Myanmar, namely 12 countries from Asia:

- Cambodia, China, Hong Kong, Japan, Korea, Laos, Malaysia, Nepal, Philippines, Singapore, Thailand, Vietnam,

and 5 other countries

- France, Germany, Ghana, Sweden, USA.

The international program committee, chaired by Graeme Fairweather with Chan Roath as co-chair, was composed of 19 mathematicians, most of whose were present. The local organizing committee, chaired by Nyunt Swe, had 10 members, but a very large number of staff and students from Mandalay University contributed

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to the organization, including people from the department of English. There were 5 plenary speakers (Padmanabhan Seshaiyer, Chan Roath, Le Tuan Hoa, Fidel Nemenzo, Dohan Kim), who had slots of 45' each, 18 invited speakers (30') and 11 paper presentations (20'); all these lectures took place in the same room, there was no parallel session. Including the opening ceremony the first day (with the Rector Khin Swe Myini, Ministry of Education, Department of Higher Education), the discussion session, the concluding remarks and the closing ceremony at the end, the three days program covered about 18 hours. There were different types of lectures: some on the science education and pedagogy (like the first lecture, given by Padmanabhan Seshaiyer *Engaging the next generation mathematics and science education workforce in developing countries through modeling across the curriculum*), some on the situation of mathematics in certain countries (Cambodia, Vietnam and Korea - unfortunately not on Myanmar), some colloquium like lectures (including the lecture by Fidel Nemenzo on *Numbers, Triangles and Curves*), and some technical mathematical talks. A small number of lectures dealt with several of these aspects, like the talk by Dohan Kim who started with a presentation of ICM 2014 in Seoul, pursued with the history of Korean mathematics and then delivered his mathematical talk on *Fourier analysis between distributions and hyperfunctions*. A group of four young students (two girls and two boys) from Philippines gave a very nice paper presentation *Why study math and math education: a case study of DLSU Manila freshmen students*.

The *Convocation Hall* of Mandalay University, where all the events took place, is a superb room with all necessary facilities. There were two large screens and all the speakers used beamer presentations (the only negative point is that one of the two projectors did not work properly).

There were four lectures on the situation of mathematics in certain countries: two on Cambodia (by Chan Roath *Cambodia toward technology integration in the education sector in 2015* and by Sem Ngonn), one on Vietnam by Le Tuan Hoa *A brief survey on development of mathematics in Vietnam* and one on Korea by Dohan Kim. As far as mathematics is concerned, Vietnam and Korea are two success stories (and it is not a coincidence if this is true more widely for the economic and technological development of these countries, not only for mathematics); both speakers emphasized the importance of the support of the government at the highest level. When a government is aware of the fundamental role of science in the development of the country, its support is a key for the existence of a strong mathematical school like in these countries. Such a support does not yet exist in Cambodia, however.

Such a talk on the history, development and current state of mathematics in Myanmar was missing. For most of the foreign participants, including myself, this was the first opportunity to visit Myanmar. The information I had on the situation of mathematics in Myanmar originated from Georg Bock from Heidelberg when he

was a member of the Committee for Developing Countries of the European Mathematical Society. His institution, *Interdisciplinary Center for Scientific Computing IWR at the University of Heidelberg* had established good contacts with the Yangon University. His contact persons were Myo Thein Gyi (doctoral degree with Peter Markowich at TU Berlin, *Numerical methods for Maxwell equation*) and Zaw Win (doctoral degree with Martin Groetschel at U. Augsburg, *Combinatorial optimization*). He leaded a partnership programme for developing countries financed by the German Academic Exchange Service (DAAD) and partially by the Daimler-Benz Foundation to build up a network for mathematics, computer science and computational sciences on the South East Asian subcontinent. This network included the National University of Laos, Institute of Mathematics of the Vietnam Academy of Science and Technology, Ho Chi Minh City University of Technology, Royal University of Phnom Penh, and Yangon University. He organized one workshop in Myanmar on Computational Science in November 2006 (with a strong emphasis on mathematics). The follow-up event scheduled at the end of 2008 in Yangon was canceled due to the lack of confirmation in due time.

Together with Bangladesh, Cambodia and Maldives, Myanmar was one of the partners in an *Erasmus Mundus EMMA – External Cooperation Programm for "Lot 13" (1999–2013)* directed by the University of Nice Sophia-Antipolis (Francine and Marc Diener) and the University of Heidelberg (Georg Bock, Gerhard Reinelt, Willi Jaeger, Johannes Schloeder, Michael Winckler).

The number of mathematicians in Myanmar is much larger than most of the participants to the conference would have expected. The country is divided in two parts, upper in the North and lower in the South. There are 24 university in each of these two parts (all are public, there is no private university in Myanmar), making a total of 48, and in each of them there is a department of mathematics, with a total of mathematicians exceeding 1000. Among them, there are 150 with a PhD in the upper Myanmar, 100 in the lower Myanmar. Among these 250 PhD, 20 of them have been obtained abroad. In Mandalay University there are 35 mathematicians with a PhD including 5 obtained abroad.

After the last talk on Sunday afternoon, a discussion session was chaired by Chan Roath with Miya Oo (Myanmar), Le Tuan Hoa (Vietnam), Padmanabhan Seshaiyer (USA), Toh Tin Lam (Singapore), Dato' Rosihan M. Ali (Malaysia), Leif Abrahamsson (Sweden), Graeme Fairweather (US) and myself. The concluding remarks were made by Chan Roath who emphasized the role of such meeting in establishing national, regional and international cooperation involving developing and developed countries, and in building networks. Further, this meeting provided the opportunity of launching a mathematical society of Myanmar, which will become a member of SEAMS. Furthermore, this conference gathered most of the leading

mathematicians from Asia involved in the project of launching an Asian Mathematical Union before ICM 2014, according to the resolution voted in Busan in July 2013 during the Asian Mathematical Congress. The last day, the organizers gave a CD to each participants (with some information on the conference, like the list of participants with their e-mail addresses), a memo to the speakers and an evaluation questionnaire to everybody.

I reached Mandalay on October 29 evening, so that I had two days free before the start of the conference. This provided me and a few colleagues with the opportunity of visiting the University of Yadanabon and meeting its Rector, Khin Maung Oo (PhD Tokyo) . We had a fruitful discussion with him on the international cooperation, which existed already more than two years ago, but which can be much more easily enforced from now on.

On the second day of the conference, I gave an invited lecture (30') *On the abc conjecture and some of its consequences*. The pdf file of this talk is available on the internet at URL
    http://www.math.jussieu.fr/~miw/articles/pdf/abc2013VI.pdf.

I participated to this conference as a representative of CIMPA. The cost of my air ticket was supported by CIMPA, apart from the leg Yangon – Mandalay which was covered by the organizers. The cost of the accommodation was supported by myself, and the organizers took care of all the food (excellent), meals and coffee breaks, also for the two days of my stay before the conference.

The hospitality of our colleagues from Myanmar has been remarkable. During the two days before the conference they took care of the early bird participants and showed them some of the superb treasures of their town. During all the three days there was always several young people from Mandalay ready to help the foreign participants, to serve as translators when needed, to join them to the cultural programs they organized (including a puppet show *Mandalay Marionettes Theater* the first evening, a Myanmar traditional dance program *Mintha Theater* the second one, and a fair well party the last evening).

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The pdf file of this report is available on the internet
    http://www.math.jussieu.fr/~miw/articles/pdf/RptMandalay2013.pdf