

ICMI

ICMI Newsletter

A Newsletter from the ICMI-International Commission
on Mathematical Instruction

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1. From the desk of Jill Adler, President of ICMI: Commemorating the jubilee of ICME Congresses



Just four and a half months ago, I wrote the last "From the President's desk" while I was in Portugal at the conference of ICMI Study 25: *Teachers of mathematics working in collaborative groups*. It was a different world then. Over a hundred mathematics educators sat together, ate together and engaged deeply and collaboratively with an important area of research and practice in our field. It feels as if a few lifetimes have passed since then!

In early February, the COVID-19 epidemic was centered in China. Our concern as ICMI was the ICME14 scheduled for July in Shanghai. By the middle of March, COVID-19 was a pandemic spreading across the world. Together with our colleagues in China, we took the necessary decision to postpone ICME14 for one year to July 2021. We have not, however, postponed the General Assembly. This will take place virtually and I return to discuss this below.

We have yet to understand the full impact of the corona virus on all our private and professional lives. I have no doubt each of you reading this newsletter has your own important story. For ICMI, it is not evident what the longer-term impact will be on some of the activities at the center of ICMI's work as these are organized around international travel and close social contact. Most significantly, and as a community, we need to ask what has been the impact of the disruption to "normal" school and university education on the lives of young people the world over? What does this all mean for mathematics education in the short, medium and longer term; and for our goals as ICMI to continue to grow as a global networked organization? Also, what would be the impact on the role mathematics may play in understanding what

happens around us, as we all have seen how critical mathematics is in making sense of phenomena and in making decisions accordingly.

Hopefully we will have opportunity to reflect deeply and collectively on all of this during ICME14.

In times of stress, it is important too to celebrate important milestones. And we certainly have one. Our ICME congresses have been running for fifty years! It is thus with much pleasure and celebration that I alert you to the article in this newsletter by Celia Hoyles. She shares with us her experience at her first ICME congress in 1972. This was ICME2! Celia reminded us that the first ICME congress was in 1969, with Hans Freudenthal in a central role as President of ICMI at that time. Half a century has passed and just as ICME2 “stimulated a lifetime of inspiration” for Celia, so have the eleven ICME congresses over the past fifty years done the same for many, many others.

My first ICME experience was at ICME6 in 1988 in Budapest. This and subsequent ICMEs were undoubtedly influential in my academic life. At ICME6, for the first time, there was a “special day” in the program devoted to “Mathematics Education and Society”. Steve Lerman wrote some years later of this “social turn” in mathematics education. I was a much younger South African living in the dying days of the Apartheid regime. It was of critical importance to me that as an organization and through its Congress, ICMI demonstrated awareness of, and openness to, the social fact that access to mathematics in many countries and across the world was deeply unequal. It was important then and remains important now, that cognition and mathematical thinking, knowledge about which was growing in the mathematics education community, were considered in the social and cultural context contexts where teaching and learning occurred. It is a human tragedy that in today’s world where we have seen so much development, there are still many people who can’t breathe easily (or at all!), be this from illness, or acts of brutality or racism.

It is not typical for an ICMI President to bring political elements into their communication with the international community. However, at this historical moment, silence is equally ‘noisy’. We, and here I mean ICMI and so the organization at large, and the EC that does its ongoing work, need to embrace the challenge of the future that COVID-19 has placed at our door. Specifically, what will a new world order mean for an inclusive ICMI organization? We can see in one glance the incredible power of mathematics; and the need for an approach to curricula, teaching and research in mathematics education that is able to simultaneously imagine and support and grow curricula, teaching and research in mathematics education that confronts inequitable access to this powerful disciplinary knowledge.

Much has developed in ICMI since 1988. ICMI has grown up in many senses. It is already more than a decade and a half that ICMI elects its own Executive Committee.

Bernard Hogdson, ICMI curator, reminds us of the history in his already traditional vignettes that became an integral part of this Newsletter. Since then, many new projects have been initiated. CANP is perhaps the most visible extension of ICMI activity into corners of the world previously not easily reached. ICME14 will hopefully be a space for further reflection and discussion. Three of the books produced so far by CANP 2, 4 and 5 are in their final production stages and will soon be available as open access.

Just this week, in a zoom meeting with Prof Jianpan Wang and others in the LOC in Shanghai, we learned of planning for the Congress, notwithstanding the ongoing uncertainty. The IPC will continue to work on necessary and possible adjustments to the scientific program.

Unfortunately, as time goes by, many pioneers of ICMEs are leaving us. Claude Gaulin, an assiduous participant to the ICMEs and the convener of ICME7 in Quebec in 1992 has passed away recently. Aside from the postponement and reorganization of ICME14, COVID notwithstanding, the ICMI EC has nevertheless been busy.

One of the most important activities in the early months of the year was the work of the Nominating Committee for the new ICMI EC. Under Michèle Artigue’s able leadership as Chairperson, the slate for the new EC was developed and last month this was sent to all Country Representatives. Following our statutes,

the slate has to be announced two months before the election of the new EC at the ICMI General Assembly (GA). The GA needs to take place every four years and we have thus also been hard at work to make sure we run a valid virtual election and ICMI General Assembly this year. All our Country Representatives are now aware of the procedures being developed to enable each and every Country Representative to vote for the EC they would want to take ICMI work forward. I take this opportunity to thank Lena, Abraham and the IMU staff in the Berlin office for all the work they are doing to ensure this. Readers will find the full slate in this Newsletter. The results of the election of the new EC will be announced to the community soon after it takes place virtually.

I am also pleased to report that ICMI Study 25 conference proceedings have been completed and placed on the website. These reflect the variety of papers that formed the substance of the conference and how *teachers working and learning in collaborative groups* is being enacted and researched across our diverse world. The ICMI Study 25 IPC together with conference participants are now working on their chapters for the study volume. In addition, the study volume for ICMI Study 24 is progressing well, and we can look forward to both these volumes being available online and at ICME14 in July next year.

Staying with the ICMI Studies, our online survey and meta-study with past participants from ICMI studies 12 – 25 has been completed. Merrilyn Goos, our vice-president, reports on the first level of analysis of the survey results in this newsletter. There you can see the detail of what we sought to find out, and the responses received. I urge you to read the report. I am sure, like us, you will find the feedback very interesting. We are in discussion on how this helps us think about future ICMI Studies, as well as on continuing the study into a next and more in-depth phase. If you participated in one of those studies but did not complete the survey and would like to contribute to our investigation, please contact both Merrilyn (merrilyn.goos@ul.ie) and Lena (icmi.administrator@mathunion.org) so that we can follow up with you.

I wish you all good health, and hope, in my next and last newsletter as President, we will have a little more understanding of both the challenges and opportunities that lie ahead for us in a post COVID-19 world.
Jill

2. The upcoming election for the ICMI EC 2021-2024

The General Assembly (GA) of ICMI meets every four years on the day before the opening of the International Congresses on Mathematical Education (ICMEs). The GA congregates the ICMI Country Representatives (CR) and other special guests. During the GA, the ICMI Executive Committee (EC) and the ICMI Affiliated Organizations provide a quadrennial update of their activities and discuss future directions. During the GA, a main responsibility of the CR is the election of the Executive Committee to serve starting the following calendar year. Given the postponement of the ICME14 to July 2021, this time the election of the upcoming ICMI EC will be done online in July 2020. ICMI is now setting up the voting system, which will be announced soon to the CR.

As established by the election procedures see

https://www.mathunion.org/fileadmin/IMU/EC/Procedures_ICMI_2006-31-12_2012-01.pdf,

the slate of candidates established by the Nominating Committee is the following:

President	Frederick K. S. Leung (Hong Kong, SAR, China)
Secretary-General	Jean-Luc Dorier (Switzerland)
Vice-Presidents	Merrilyn Goos (Australia - Ireland)
	Anjum Halai (Pakistan)
Members-at-large	Kiril Bankov (Bulgaria)
	Eduardo Basurto (Mexico)
	Marta Civil (USA)
	Patricio Felmer (Chile)
	Mercy Kazima (Malawi)
	Núria Planas (Spain)
	Susanne Prediger (Germany)

ICMI will communicate the ballot results through several channels of communication.

The ICMI Executive Committee (EC), which usually holds its last annual meeting around an ICME, will instead meet this year online in September. A report on this EC meeting will appear in the November 1st issue of this Newsletter, the last one under the current editors.

3. ICME14 – Memorandum by Jianpan Wang, ICME Convenor

Due to the global pandemic caused by COVID-19, ICMI and ICME14 organizing committee have decided, after careful discussion and consultation, to postpone the original session and hold ICME14 during **July 11th–18th, 2021** at East China Normal University (Putuo campus).

Relevant arrangements are summarized as follows:

1. All executed practices continue to be valid (including registration, contributions, payment, TSG paper and poster's review and acceptance and etc.)
2. Registration system remains open all along during this state of emergency.
Address for registration is <https://reg.icme14.org/login>.
3. Payment channel will re-open on **September 1st, 2020**.
 - Fully paid before (inclusive) March 31st, 2021, RMB 3 500;
 - Fully paid between April 1st and May 31st, 2021, RMB 3 800;
 - Paid on and after June 1st, 2021, RMB 4 000;
 - Accompanying person's registration, any time, RMB 1 000.
4. Submission channel for TSG papers and posters will re-open on **August 1st, 2020**. We consider that in a year's time, researchers are likely to refine or come up with new research advances and results, or polish the paper to a higher quality. Therefore, a participant whose poster has been accepted is allowed to withdraw it and re-submit a paper. For detailed operation instructions please see updates on our website.
5. New proposals for organizing Discussion Groups and Workshops are also welcome. Please send emails to DG@icme14.org and WS@icme14.org respectively to submit a proposal.
6. Application for Solidarity Fund will reopen on **November 1st, 2020**. The new round of application is only open to attendees who have never submitted an application before. For application form, please see <https://www.icme14.org/static/en/news/60.html?v=1590631349483>.

Applicants who have submitted application forms last year are requested not to submit them again.

But if

- (1) the grade of your contribution has changed, e.g. from poster to paper; or
- (2) your identity has changed, e.g. from normal attendees to invited participants, including Invited Lecturers, team members of Plenary Panels, Survey Teams and Topic Study Groups, or become contributors or proponents of TSG, National Presentation, Discussion Groups, Workshops and Thematic Afternoon, please inform us by emailing to grant@icme14.org with your name and ID number included.
7. Registered participants are appreciated to send a confirmation letter of your attendance on ICME-14 in 2021 to reg@icme14.org before October 31st (instead of June 30th in our earlier announcement).

For more details and latest news please stay tuned to the updates on www.icme14.org.

4. Review of ICMI Studies: Some initial findings - Merrilyn Goos

A review of ICMI Studies was announced in the March 2020 newsletter. The aim of the review is to obtain structured feedback from the wider ICMI community on whether the stated goals for ICMI Studies remain relevant and the extent to which these are being realized. Each ICMI Study is built around an international conference of invited experts in a specific field of contemporary interest in mathematics education, and results in a published Study Volume that communicates the main outcomes as well as proposals for future research and action. At the time of writing, 23 ICMI Studies have been completed, and an additional two Studies are in progress.

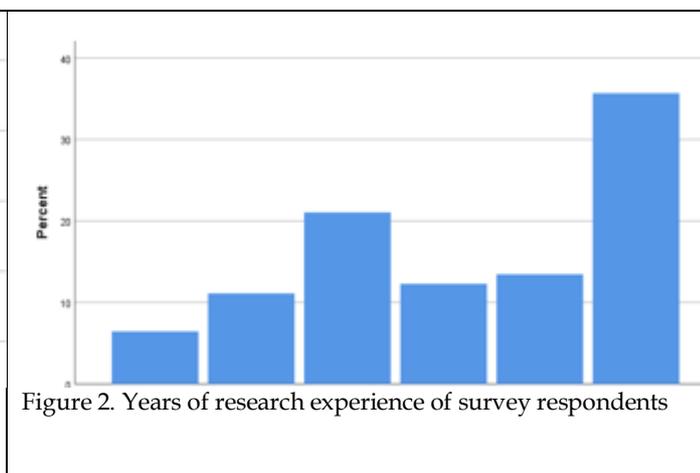
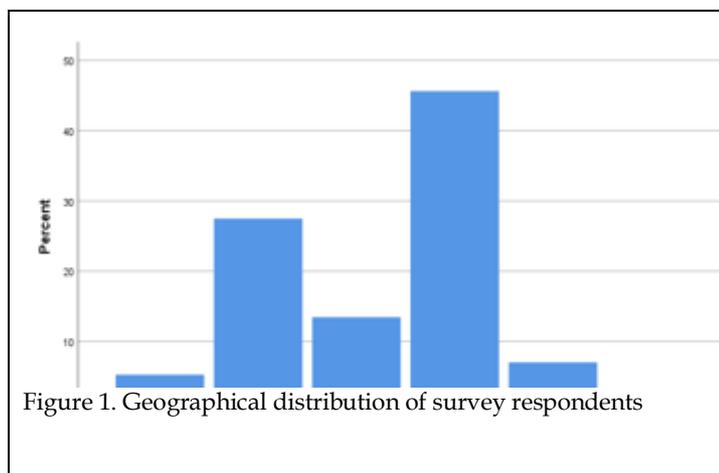
The first phase of the review comprised an online anonymous survey of past ICMI Study participants (for Studies 12 to 25).

The survey asked the following broad questions:

- How relevant are current goals of ICMI Studies?
- To what extent are these goals being met?
- Is the time frame for completing a Study (up to 3 years) feasible for ensuring that the Study Volume is an up-to-date resource?
- What evidence is there of the impact of ICMI Studies on theory, policy, practice, research community development, and individual careers?
- What is the distinctive contribution of a particular ICMI Study to growth of that field?
- What is the cumulative contribution of ICMI Studies to the field of mathematics education?
- To what extent are the Studies “international” in intention and enactment?
- How can participation and voice of developing countries be broadened in ICMI Studies?

There were 171 responses to the online survey, 41% of whom were male and 59% female.

The geographical distribution, years of research experience, and ICMI Study distribution of the respondents are shown in Figures 1, 2, and 3 respectively.



Almost half (45.6%) of the survey respondents came from Europe, and a little more than one-quarter (27.5%) from the Americas, with 13.5% from Asia, 7.0% from Oceania, 5.3% from Africa, and 1.2% from other regions.

Half the respondents had more than 20 years of research experience.



Figure 3. ICMI Studies attended by survey respondents

The number of respondents who had participated in each Study varied from 6 (for Study 16: *Challenging mathematics in and beyond the classroom*) to 51 (for Study 25: *Teachers of mathematics working and learning in collaborative groups*). While 71.3% of respondents had participated in only one Study, 12.2% had been involved in two, 8.8% in three, and 7.6% in four or more Studies. The respondents included Study Conference participants who had a paper accepted, conference co-chairs, IPC members, invited speakers, and ICMI Executive Committee members.

There was strong endorsement of the *relevance* of ICMI Study goals, with at least 65% of respondents rating all nine goals as being of either high or very high relevance. Based on these responses, the most relevant is Goal 1: *To bring together international scholars (representative of diverse cultural contexts, perspectives, and backgrounds) to exchange knowledge, collectively reflect and discuss a specific theme, topic or issues in mathematics education* (endorsed by 87.7% of respondents). More than three-quarters of respondents (76.1%) considered that ICMI Study goals *were met* to a large extent or in full.

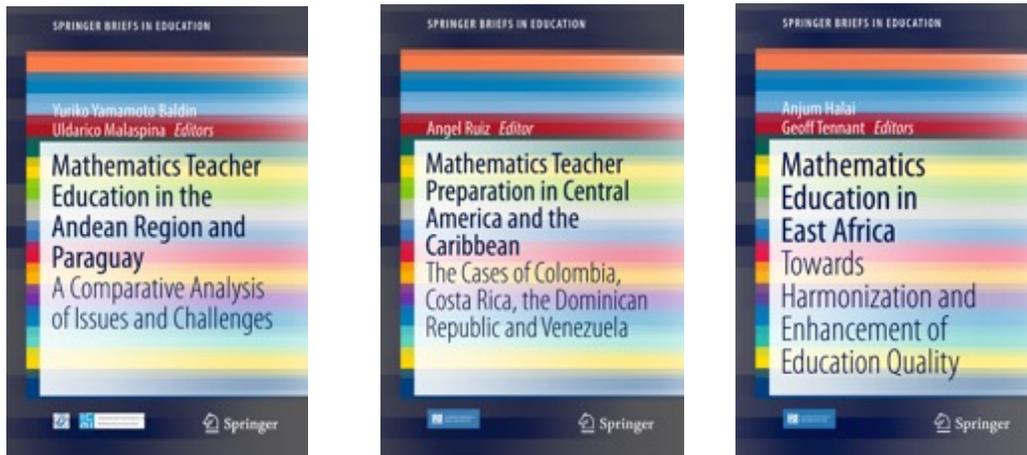
In contrast to these positive assessments of the value of ICMI Study goals, the survey respondents were less certain of the *impact* that ICMI Studies have on *theory, policy and practice*. However, the Studies were thought to have substantial impact on *research community development* and, to a lesser extent, an impact on *individual careers* (65.5% and 39.2% of respondents, respectively, rated these as high or very high impact). ICMI Study participants who responded to the survey identified many distinctive contributions of ICMI Studies to the field of mathematics education, in particular the fostering of international participation across diverse contexts, cultures, and theoretical perspectives. Respondents also recognised ICMI's efforts to achieve greater inclusion of participants from low income or developing countries, while acknowledging the challenges of fully realising this intention.

We would like to thank everyone who responded to the survey, and especially Dr George Ekol for his contribution to quantitative analysis of survey responses. In this article, we have deliberately refrained from presenting any commentary on the survey responses, because we would like to invite readers to contact us with your own interpretations. (Please send your views to both merrilyn.goos@ul.ie and jill.adler@wits.ac.za.) Your additional contributions will inform our analysis and discussion with the ICMI Executive Committee, as well as subsequent phases of the review that will involve interviews with key participants in past ICMI Studies.

5. CANP - Open Access publications (NEW!)

With the publication of ICMI Study 23, ICMI has decided to make relevant publications accessible to all (Open Access). Readers can find the Volume of ICMI Study 23 at <https://www.springer.com/gp/book/9783319635545>

ICMI has signed a contract with Springer to publish the upcoming ICMI Study Volumes (24 and 25) as open access as well as the existing books published by CANPs 2, 4 and 5, which will be available very soon.



6. Gender Gap in Science book now available

In the March 2020 newsletter we provided a link to the electronic version of the Gender Gap in Science project's final report (https://gendergapinscience.files.wordpress.com/2020/02/final_report_20200204-1.pdf). This was a three-year project funded by the International Science Council (see <https://council.science/>) together with eleven scientific partner organizations to investigate the gender gap in STEM disciplines from different angles, globally and across disciplines. ICMI Vice President, Merrilyn Goos, was involved in several aspects of the study including the authoring of sections of the final report.

The study developed innovative methodologies and tools together with a set of recommendations addressed to different constituencies – instructors and parents; educational institutions; scientific unions and other organizations responsible for science policy – in order to reduce and possibly eliminate the gender gap. See the project website at <https://gender-gap-in-science.org/> for details.

The Gender Gap in Science book is now available in hard copy format through the low-cost print-on-demand service of IngramSpark. It can be ordered through many retailers worldwide (e.g., Book Depository, €10.41).

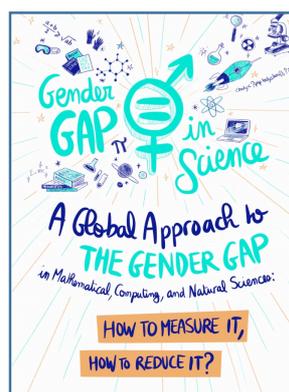
Here are the publication details for the book:

A Global Approach to the Gender Gap in Mathematical, Computing, and Natural Sciences
How to Measure It, How to Reduce It? Authors Guillopé, Colette; Roy, Marie-Françoise.

Publisher: International Mathematical Union,

Publication date 6 June 2020, Language English, Format Paperback, Pages 244,

ISBN-10 3000655336, ISBN-13 9783000655333



7. COVID-19 Resource Website

Epidemics and pandemics have long been studied by mathematicians. IMU has created a page within its website devoted to current resources and recent activities related to COVID-19 which includes links to general resources, online seminars and related mathematical research. Please see <https://www.mathunion.org/corona>

8. My First ICME: stimulating a lifetime of inspiration - Celia Hoyles

First let me remind you of the relevant history of the International Commission on Mathematical Instruction, ICMI, just as I had to remind myself in preparation for writing this short piece. The President, in 1966 a relevant time for my story, was Professor Hans Freudenthal who led the widening of ICMI's activity by organizing the First International Congress on Mathematical Education (ICME), in 1969 in Lyon, France. This was attended by 655 people from 42 countries. At that Congress, various resolutions were passed including the following that I choose as I find it rather amusing and also again as most relevant to this paper.

- *It is necessary for the teacher of mathematics to pursue further professional study during his (sic) employment.*
- *There is a ...need to pay more attention ... to pre-school education, elementary education, mathematical education for young people of all ages, and adult education.*
- *And that international congresses should be held every four years*
 - *In years with dates divisible by 4,*
 - *So they alternate with those of the international congresses of mathematicians whose dates are congruent to 2 (modulo 4) ☺*

The Second International Congress on Mathematics Education (ICME) was duly held in 1972, this time in Exeter, U.K. with proceedings published in 1973, by Cambridge University Press (Figure 1). 1384 people attended ICME2 from 76 countries, a big increase in participation, ... and I was one of them ☺. And what a conference it proved to be!

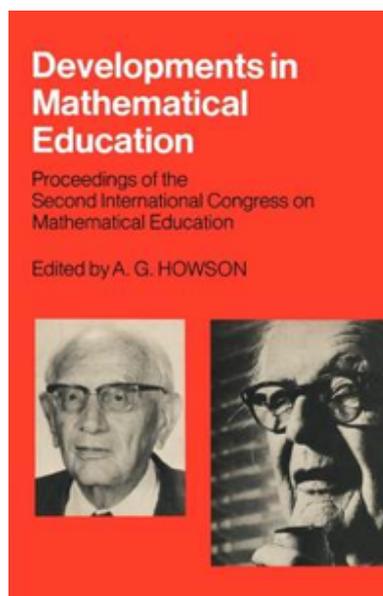


Figure 1: The Proceedings on ICME 2 published in 1973

ICME2 was simply transformational for me as a teacher attendee, and I do not exaggerate. Firstly, there was the brilliant presidential address by Sir James Lighthill. He had founded the Institute of Mathematics and its Applications (IMA) in 1964, an organization that also much later happened to shape my mathematical life, through my election as a Fellow in 2003, and as President in 2014, the first educator to hold this position.

Secondly, on re-reading my proceedings for that conference, I am struck by the letter from HRH The Prince Philip, Duke of Edinburgh, (Figure 2), which sums up how mathematics is viewed as a minority talent, a perception I have constantly battled to counteract.

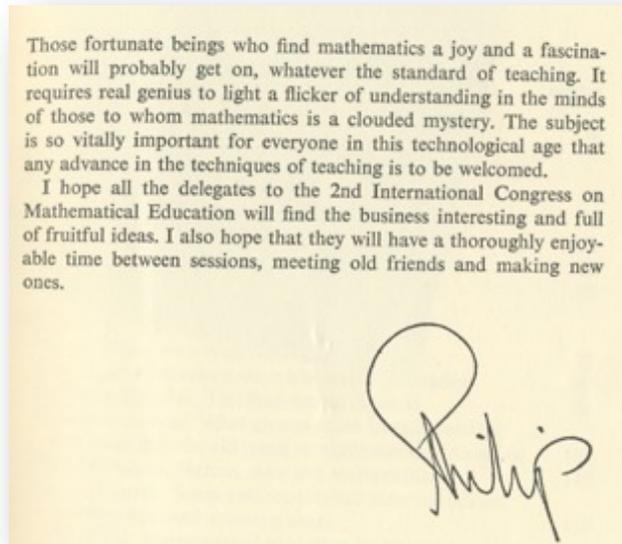


Figure 2: Extract from letter to ICME2 from Prince Phillip, the Duke of Edinburgh

Thirdly, there was the privilege of reading the invited papers, written by so many stars in the Mathematics education and Mathematics firmament, but also beyond these to encompass anthropology and philosophy. Figure 3 shows the list of invited papers. I read them all of course but I must admit not remembering all the keynotes,... well it was a long time ago. I am therefore grateful to Professor Howson for letting me know that they all in fact attended, with the exception of Piaget who sent his apologies. I do however recall being particularly excited by one keynote, the one delivered by Hugh Philp about mathematical education in developing countries. I simply had not previously thought about how mathematical education in developing countries might differ from our own prevailing view in UK. So it proved to be quite a revelation.

- *George Polya, As I read them*
- *Jean Piaget, Comments on mathematical education*
- *Sir James Lighthill, The Presidential Address*
- *Hans Freudenthal, What groups mean in mathematics and what they should mean in mathematical education*
- *David Hawkins, Nature, man and mathematics*
- *Edmund Leach, Some anthropological observations on number, time and common-sense*
- *Hugh Philp, Mathematical education in developing countries -some problems of teaching and learning*
- *S.L.Sobolev, Some questions of mathematical education in the USSR*
- *René Thom, Modern mathematics: does it exist?*

Figure 3: List of invited papers to ICME2

What a triumph the conference must have been for the Program Committee, chaired by Elizabeth Williams, and for Professor Geoffrey Howson, of the University of Southampton who was responsible for the Proceedings.

Fourthly, as so often at conferences we meet people who remain important and influential in both our personal and professional lives for many years to come. During ICME2, I worked with Prof Stieg Mellin-Olsen from Bergen as part of a working group on 'Mathematics and the slow/reluctant learner', which related

to the topic of the Master's degree dissertation that I was undertaking at that time. Stieg was one of those whom I met at Exeter and who remained a friend until his death. So indeed is David Tall whom I was lucky enough to meet there as well.

And finally, there was one more hugely important transformative experience for me in Exeter. I happened to chance upon a scrap of paper on a tree, as I vaguely recollect, advertising a *Turtle Workshop*, saying something like: 'This way to the turtle pond' (but I am not completely sure, it was a while ago!). The workshop was led by leading researchers, Marvin Minsky & Seymour Papert¹ and colleagues from MIT, including Cynthia Solomon, a researcher there at that time². The history was that Digital Equipment Corp. had coincidentally sold a PDP-11 computer to the University of Exeter. DEC transported a PDP-11 and all the peripheral equipment to Exeter to be used at ICME: 4 display turtle stations, 1 floor turtle, and 4-voice music box. All attendees were helped by a group of local 10, 11- & 12-year olds who had worked with the MIT group prior to the conference and showed their work to conference participants. The 12-year-olds took over computer management during the conference, and according to Cynthia Solomon, even put out a small fire while the adults were at dinner. ☺ For me, it was spellbinding and inspirational. I just had to find out more.

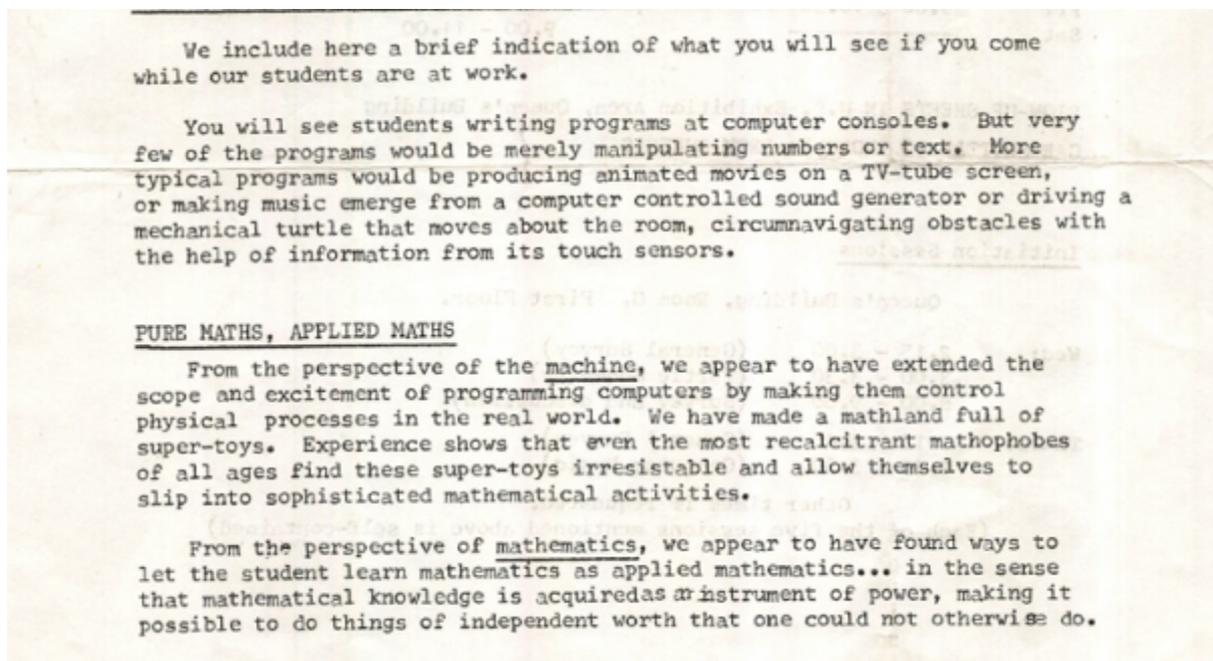


Figure 4: Exeter Mathland Demonstration Flyer 1972

During the workshops we watched students writing computer programs (producing animated movies, making music using a computer-controlled sound generator); and notably driving a mechanical turtle around the room circumnavigating obstacles with the help of information from its touch screen. I have since discovered that one of the students was Jon Pledge. Jon used the floor turtle to discover an algorithm (*the Pledge algorithm*) that allows a person with a compass to find her way from any point inside any finite and fair two-dimensional maze, to an outer exit, regardless of the initial position of the solver. (Cited in Abelson, H. & diSessa, A., 1980).

I notice in retrospect that all the speakers at the conference were male (as indeed were all the student helpers at the Turtle workshop). To be honest it made no difference to my involvement and I did not even notice it at the time, which in retrospect is surprising. Times have changed and there have been huge

1 Papert was asked to submit a paper for inclusion in the Proceedings, a decision taken by the committee I chaired consisting of Freudenthal, Trevor Fletcher, Bob Davies, Tamas Varga and Maurice Glaymann - but he kept missing deadlines and so his paper never appeared - indeed, I never ever received it but I must have told him several times what would happen if he did not get a move on. A pity it had to end like that; his contribution would have been a valuable one.

2 I would like express my sincere thanks to Cynthia Solomon for sharing with me some documents and recollections about the Turtle workshop.

strides made since 1972 to ensure ICME is more inclusive and diverse with more female speakers from a wider range of countries.

So, to conclude, may I urge you to go to ICME conferences and participate in their diverse activities. Anybody, who knows anything of me and my academic life will appreciate how my encounters with the individuals I met at ICME2, and in particular with the turtle in the MIT workshops, really did shape my future. I am still working and researching in 2020 the potential of digital environments to engage more and diverse students in mathematics. And of course, with the advent of widespread access through the Web, we are really beginning to reap the benefits (see for example, Noss, R. et al, 2020).

I hope you will, like I did, experience how ICME meetings can open up a whole new world of mathematics, of friendships both in your own country and from across the globe.

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9. Once upon a time... Historical vignettes from the Archives of ICMI: The ICMI election procedure. Bernard Hodgson, Curator of the ICMI Archive

Due to the COVID-19 pandemic, the 2020 General Assembly (GA) of ICMI will be held as a virtual event, an important item on the agenda being the (electronic) election of the 2021-2024 ICMI Executive Committee (EC). As the current election procedure was implemented in 2008, it will thus be the fourth time that the ICMI EC is elected by the ICMI GA. Formerly, the responsibility of electing the ICMI EC rested on the GA of the International Mathematical Union. It may be of interest to present the historical context that led to this dramatic change in the life of ICMI.

The initiating event of the new procedure was Resolution 8 adopted by the 2002 IMU GA, which reads:

“The General Assembly of IMU expects the Executive Committee to develop a proposed mechanism to involve members from the National Committees for Mathematics, not on the Executive Committee, to assist in the selection of slates. This proposal should be put forth to the 2006 General Assembly.” [1, p. 11]

The spirit of this resolution was to request the IMU EC to set up a more transparent procedure for the various elections happening at the IMU GA, notably with respect to the selection of the slates of candidates for these elections. The potential “conflict of interest” (or “perceptions” thereof [2, item 2.1]) resulting from the role previously given to the EC of IMU (and also of ICMI, in the case of the ICMI election) was presented by IMU President John Ball as “the reason why the IMU GA took exception” [3] to the election procedures then in force. Some criticisms would even allude to a kind of “old boys’ network” culture (as mentioned in [2]). Such issues could become at stake for instance when the IMU EC was “to discuss which if any of its own members merits a second period of office, and which if any should become President, Secretary or a Vice-President.” [4]

In reaction to Resolution 8, the IMU EC “decided that it was necessary to set up a Nominating Committee [(NC)], independent of the EC, to undertake this task” [5] (that is, the slate’s selection). Moreover, this same NC “should also select the slates for ICMI” [5] (and for two other bodies whose elections occurred at the IMU GA). The first version of the revised election procedure was proposed to ICMI just prior to the first meeting of the 2003-2006 ICMI EC, in early June 2003.

While acknowledging that “the model proposed by the IMU EC [did] in fact go a long way toward addressing the concerns expressed by the IMU GA”, the ICMI EC was of the opinion that it failed to meet an essential criterion, namely “that the formation of the election slate be made by a group knowledgeable about and professionally concerned with the functions of the offices for which candidates are being proposed.” [6] To remedy this difficulty, the ICMI EC proposed a model based on the same principles, but

more in line with the specificities of ICMI, where a different NC would be charged with the selection of the ICMI EC slate. In that proposal, a role was given to the ICMI GA in the appointment of this ICMI NC, thus “for the first time, [giving] the ICMI GA a role in the election process, albeit a rather minor one.” [6] The ICMI EC then concluded its comments by pointing to a possible direction for further improvements: “We wonder further what the IMU EC might think of a more fully symmetric model, in which the ICMI slate were submitted to the ICMI GA rather than to the IMU GA, which might seem more functionally natural.” [6]

Many months later, on March 24, 2004, the ICMI EC received a document from the IMU leadership ([7]) presenting the method proposed for constructing slates, to be discussed at the IMU EC meeting taking place a month later. However, no attention was paid in that document to the concerns formulated by the ICMI EC and no reaction at all offered about the possible evolution mentioned above. In the words of ICMI President Hyman Bass, the IMU proposal provoked “uniform reactions of disappointment and dismay” [8] among the ICMI EC members. An intense period of email discussions promptly followed inside the ICMI EC, leading to a letter from Hyman Bass to John Ball less than a week later, where the situation was analysed within the general framework of the IMU-ICMI relationship, and the necessary link of “trusteeship” between the two bodies, which, “from the point of view of ICMI”, then “[appeared] to be failing in every respect.” [8] Contrasting the situation with the recent “hard won progress” in the IMU-ICMI relations, after a difficult period at the end of the 1990s (on this account, see for instance [9, pp. 239-240]), Bass concluded:

“The present situation is undignified and potentially humiliating for ICMI, and it can only breed resentment, and potential revolt from the ICMI community.” [8]

When forwarding Bass’ letter to the whole IMU EC, Ball put as the subject line of his email: “Blast from Bass!” (Personal communication [10])



Hyman Bass, ICMI President 1999-2006
(Source: IMU Archive)

The reaction of IMU President John Ball was immediate, strong and positive. He first indicated openness to rework the NC model “taking the ICMI suggestion into account”. [11] And slightly later, commenting on an ICMI NC model where the slate would be presented to the IMU GA, he added, as had been raised in [6] (see above): “You suggested that instead the ICMI GA carry out the election. This is an important point that we should discuss.” [12] Over a period of less than three weeks, it was possible for the IMU and ICMI leadership to develop a common vision for the election of the ICMI EC, including the appointment of a specific ICMI NC as well as the election to be transferred to the ICMI GA. One finally reads in the minutes of the April 2004 IMU EC meeting that “the EC drafted two Nominating Committee models” and that “the second model will be used to nominate the EC of the International Commission on Mathematical Instruction.” Moreover, the ICMI NC “will be formed with the purpose of presenting the slate of nominations (...), in preparation for the ICMI elections by the ICMI General Assembly.” [13]

This was without any doubt a truly extraordinary development, totally unexpected only a few years earlier! Information on this outcome was first presented to the ICMI community during the ICMI GA held in July of the same year during ICME10, as well as in my Secretary-General’s closing remarks delivered at the final session of that congress [14, p. 544]. A report also appeared in the ICMI Bulletin [15].

Once the main principles were agreed upon, the new procedure still required some fine-tuning, a task that was first pursued at the following ICMI EC meeting held in Copenhagen in July 2004 and in the presence of John Ball – it has then been a very long time since an IMU president would attend an ICMI EC meeting – and also over the following two years. The next (and final) step was the approval by the 2006 IMU GA of the new procedures (both for the elections of the IMU and the ICMI ECs), as requested per Resolution 8 of the 2002 GA. As is now the tradition, the ICMI President and Secretary-General were invited to that IMU GA, so that it was possible, in addition to observations by IMU President John Ball, for Hyman Bass and myself to react to questions or comments from the GA participants about the ICMI election procedure proposed by the IMU EC. I then had for instance the opportunity of clarifying some confusion about a few technical points related to the ICMI environment. But much more importantly – and in fact a truly essential ingredient of the final outcome – Hyman Bass, with his exceptional credibility as a distinguished and respected research mathematician, could speak frankly to the mathematicians attending the GA and tell them about the pertinence of not only having a different NC for ICMI, but also of transferring the voting responsibility to the ICMI GA. Many people from ICMI circles are convinced that the status of ICMI President Hyman Bass in the mathematics community, combined with his interest and personal involvement in mathematics education, allowed him to play a truly outstanding role in this stunning evolution of the governance of ICMI within IMU.

The first ICMI election under this new procedure took place two years later, at ICME11 in 2008, when the ICMI GA elected the 2010-2012 EC, thus completing the time-wise transition (combined with the election of the 2007-2009 EC at the 2006 IMU GA) from the IMU GA series to the ICMI GA series. Since ICME-12 (2012), the ICMI ECs are back to usual 4-year terms. The 2020 election of the ICMI EC will add still another level of exceptionality, this time because of its virtual status.

(Note: The author is fully responsible for the content of this text.)

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10. "I accepted to be nominated as president of ICMI with the intention of assuring that the process of my nomination would not be repeated". Hyman Bass

Editors' note: Hyman Bass is the Samuel Eilenberg Distinguished University Professor of Mathematics & Mathematics Education, University of Michigan. He was ICMI President during 2003-2006. The notes below were written as a reaction to the historical vignette by Bernard Hodgson which in Hyman's words "promoted some reflections on the event" not made public before. The editors are grateful to both Bernard and Hyman for their contributions and thoughtfulness.

I believe that the ways to address problems of social need should be guided by a combination of the professional expertise, together with appropriate stakeholder representation, relative to the problem at hand.

In 1998, I received a phone call from David Mumford, then President of the IMU, inviting me to allow my name to be put in nomination as President of ICMI. The then current tradition was that a single nominee would be put forward by the Executive Committee of the IMU, and that nominee would be elected at the General Assembly of the IMU, taking place during the International Congress of Mathematicians.

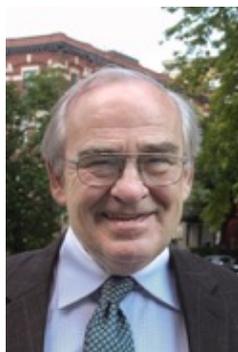
David Mumford is a world class mathematician, whom I continue to hold in the highest esteem, so, in that regard, I was superficially honored by his gesture. At the same time, it stunned me. I had become somewhat involved in U. S. policy committees on mathematics education, enough to learn how much about mathematics education, as a newly maturing field, that I did NOT know, so it made little sense to me that I should lead an international organization devoted to that field. As I said above, I give high priority to professional expertise, and, in a position of leadership, to broad knowledge of the field, both of which I lacked. Even worse, I had never attended an ICMI sponsored event, and knew relatively little about it as an institution. So, as I reflected over a couple of days, on David's invitation, I saw myself being enlisted into what seemed to me to be a deeply dysfunctional practice.

In this predicament, the only principled responses that I saw were to either decline the offer, or to accept it with the resolve to put an end to the practice that empowered me. The desired resolution was clear. ICMI, as the leading international organization of mathematics educators, should be governed by its own professional leadership, rather than by a model that made it appear to be a kind of colony of the IMU. This is not to suggest an alienation of ICMI from the IMU. Quite the contrary, there is a deep and organic synergy between the IMU and ICMI, between mathematics as a discipline and mathematics education, that I am happy to say has remained strong, though not without some tensions. But for the leadership of ICMI to be essentially appointed by a committee mostly lacking expertise or deep professional engagement in mathematics education was, on its face, patronizing.

My main point in writing this is to confess that I accepted the presidency of ICMI with the private agenda of transferring its governance from the IMU to ICMI itself. Unsurprisingly, ICMI was quite hospitable to this idea, though somewhat skeptical about its prospects. Bernard Hodgson was a tireless and skillful partner in this lengthy, culture changing effort. Fortunately, IMU President John Ball was gracious, understanding, and constructive in the lengthy negotiations involved. Needless to say, I am pleased with the outcome of this small, unobtrusive, educational revolution.

11. Claude Gaulin (1938-2020) – In Memoriam. Jean J. Dionne and Bernard R. Hodgson (Université Laval)

It is with deep sorrow that we have learned of the passing on June 6, 2020, at the age of 81, of Professor Claude Gaulin, our colleague from Université Laval and retired *didacticien des mathématiques*. He had been diagnosed with Alzheimer's disease in late 2017 and died of complications from COVID-19. Through his legacy and in the mind of the numerous people he has inspired—in Québec, in Canada and at the international level—his memory will long remain alive. He will be missed, but not forgotten.



Very early in his career, and partly under the influence of Zoltán Dienes (of “Dienes blocks” fame), then at the Université de Sherbrooke, Claude Gaulin got involved in the deep evolution arising at that time in the teaching and learning of mathematics. Already in the 1960s, he collaborated to the development of in-service courses for secondary school teachers. He was hired in 1971 as a *didacticien* in the Faculté des sciences de l'éducation of Université Laval, a position he kept until his retirement in 2006. He promptly became involved as well in the education of primary school teachers, notably as the main instigator of PPMM-Laval, an in-service programme where mathematicians and mathematics educators would join with some school teachers in the preparation of courses that were first presented to a group of school pedagogical coordinators, who would then in turn offer them to teachers in their own region. This “multiplicative model”, due to a large extent to the vision and leadership of Claude Gaulin, was very successful and lasted more than a decade. Its influence still being felt today.

Throughout his career, Professor Gaulin approached the work of a mathematics educator with a strongly personal touch. This is borne out by the way he supervised his many master and PhD graduate students. A tireless international traveller, he incessantly frequented the main meeting places of researchers, whether public or private, and had thus access to the intimacy of research teams, to the more private parts of their works. He excelled in making his students benefit from such a privileged access: through him, they could progressively immerse themselves in the community of those involved in important projects, not only gaining as a staple diet the main research results, but also witnessing research in progress.

Still about the importance he attached to the supervision of graduate students and the particularly rich way in which he conducted this activity, it should be reminded that his international implication led him to the development of interuniversity cooperation programmes with Morocco, and later with Brasil. These programmes brought to Université Laval important cohorts of master and PhD students. The quality of these students gave a new vitality to our graduate studies programmes in education—with the added boon that it was then possible to offer more courses, as the sizes of the class groups would allow it. While the accomplishments of Professor Gaulin in international cooperation led to valuable outcomes for the targeted countries, they also significantly enriched us, at the local level. One can only praise the fruitful character of this endeavour, leading to such a win-win situation.

The implication of Claude Gaulin in numerous national and international bodies ought to be stressed. To provide only a few examples, he was in Québec among the founding members of the *Association mathématique du Québec* (AMQ) and of the *Groupe de didactique des mathématiques du Québec* (GDM). On the Canadian scene, he was one of the founding members of the Canadian Mathematics Education Study Group (CMESG) and one of the three invited speakers at its very first meeting, in 1977. He also served as

president of the group. It is under the auspices of CMESG that is now published *For the learning of mathematics*, an important journal in the field of mathematics education founded by David Wheeler, also a founding member of the group. On the international scene, Professor Gaulin took part, already early in his career, in meetings organised by ICMI, under the patronage of UNESCO, that led to the *New trends in mathematics teaching* series (1966-1978). He was a regular attendee to activities of CIEAEM (Commission Internationale pour l'Étude et l'Amélioration de l'Enseignement des Mathématiques), PME (International Group for the Psychology of Mathematics Education) and CIAEM (Comité Interamericano de Educación Matemática). He served as president of CIEAEM in the 1970s and vice-president of CIAEM from 1979 to 1987. He was especially present and influential among Spanish- and Portuguese-speaking countries, thanks to his fluency in these languages.

Many of the international connections of Professor Claude Gaulin are directly connected to ICMI. To take one concrete example – maybe somewhat trivial but still illuminating – he belongs to an evolving subset of the ICMI community with a decreasing cardinality. On the occasion of ICME7, he coined the expression *vieux routiers* (Old Hands) to designate those who have participated in all ICMEs. There were then exactly twelve members of this “happy few” group. And today this set cardinality is very small, though strictly positive. In his case, he attended all the congresses from ICME-1 (Lyon, 1969) up to ICME12 (Seoul, 2012). More in line with his exceptional knowledge of international matters, he was for instance an invited speaker at the symposium jointly organised in Geneva in 2000 by ICMI and *L'Enseignement Mathématique* to celebrate the hundredth anniversary of the journal – the official organ of ICMI. He then spoke on “Mathematics educational from the perspective of international infrastructures”, a typical “Gaulin topic”. But possibly the most memorable achievement of Claude Gaulin is the role that he played in the organisation of the 7th International Congress on Mathematical Education, held at Université Laval in Québec in 1992. This event can be seen in many ways as “his” congress. Even the fact that ICMI accepted the invitation of the Canadian community to host the congress in Québec is undoubtedly connected to Claude himself and to his deep and practical knowledge of the ICMI culture, tradition and expectations. He knew exactly what it means to organise an ICME and all the details that need to be attended. He was the mainspring behind the setting-up, in Canada and more particularly in Québec, of an infrastructure ensuring the success of the enterprise. His roles were many, as he was for instance on the Executive Committee of the ICME7 organisation and, more importantly, he chaired the Local Organising Committee – a properly monumental responsibility. Again, his exceptional qualities, both as a visionary and a manager, allowed him to secure all the necessary supports, local and external, so to build a first-class team, the keystone of an organization whose complexity was matched only by its virtuoso competency.



ICME7 (1992) Honorary degree ceremony
(Michel Gervais, rector of Université Laval, Henry O. Pollak, recipient, Claude Gaulin)

Such is the memory that we wish to keep of Professor Claude Gaulin, of our friend Claude. First, that of a builder who never hesitated neither in provoking events in order to defend and improve what he thought deserved to be, nor in bringing into existence what ought to be created. And also the memory of a unifier who knew how to convince and gather the best people in order, together with them, to ensure the success of the actions put forward.

12. Upcoming Conferences

ICME14, Shanghai, postponed to 11th-18th July 2021 <https://www.icme14.org/>

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