

Behind the Scenes of ICIAM

June 2, 2014

Near the beginning of her two-year term as SIAM president (2013–14), Irene Fonseca identified two top priorities: internationalization and industry. These are precisely at the two poles of ICIAM ("which has two I's"), she says. For SIAM ("which has only one I, but I double it!"), "being part of ICIAM is fundamental to bridges to the rest of the world." Few would agree more with the value of such bridges than Barbara Keyfitz and Maria Esteban, president and president-elect, respectively, of ICIAM.

Fonseca, Keyfitz, and Esteban were among the distinguished visitors from around the world who gathered at the Mathematical Biosciences Institute at Ohio State University, May 15 and 16, to attend the annual board meeting of the International Council for Industrial and Applied Mathematics. At the request of *SIAM News*, Keyfitz (a professor of mathematics at OSU), made arrangements for a taped lunchtime conversation among the three during the workshop that preceded the meeting.

As anyone who has attended ICIAM will know---the most recent congresses were in Vancouver (2011) and Zurich (2007)---ICIAM offers prodigious opportunities for bridge- and network-building at the individual level, and up through the society/national/international levels. Mathematical scientists from all five continents take part, and the invited talks and prizes represent work at the highest levels of the field.

What Does the ICIAM President Do?

The ICIAM president and the board, which is made up of representatives of participating societies, are responsible for the high quality of ICIAM, beginning with selection of the site---Beijing in 2015, Valencia in 2019. The rigorous process of choosing a site continues through the formation of a 20-member scientific program committee, which in turn chooses the 27 invited speakers. A proposed slate of speakers (or for that matter the proposed make-up of the scientific program committee), according to Keyfitz, rarely wins board approval on the first try.

That ICIAM invited speakers do outstanding work and are leaders in their areas is a given. Beyond that, the list of invited speakers must be balanced---mathematically and geographically---and it must be diverse with respect to academic vs. industrial work, gender, type of academic institution. . . . Giving an invited talk at ICIAM is an honor, conferring considerable prestige on the speaker. The list of invited speakers for Beijing

can be found at www.iciam2015.cn/newsletter-invited+speakers.html.

Five ICIAM prizes---Collatz, Lagrange, Maxwell, Su Buchin, and Pioneer---are awarded at each congress. In Beijing for the first time, Keyfitz says, the prize recipients will have the opportunity to speak (30 minutes each); each recipient plans to attend the meeting and is eager to use the time to present his/her work. The prizes and talks will be part of the opening ceremonies. Having recently overseen the selection of the 2015 prize recipients, Keyfitz testifies to the intense, thorough, and time-consuming scrutiny directed to all nominees. When she succeeds Keyfitz in 2015, Esteban will bring to the job her experience as a member of the Abel Prize Committee.

How Does ICIAM Differ from the ICM?

An invitation to give a plenary or other invited talk at the International Congress of Mathematicians, which dates back to 1897 (when the first one was held in Zurich), is considered one of the most significant recognitions a mathematician can receive. Almost all ICM speakers are invited, Esteban points out.

"You go to the ICM to listen, to ICIAM to speak," Keyfitz says.

Among the events most closely associated with the ICM is the presentation of prizes, including the Fields Medals. The names of the prize recipients are a closely held secret, revealed only during the ICM. For ICIAM, the names of the 2015 prize recipients will be announced in mid-September.

An important distinction from the ICM is the bottom-up nature of ICIAM minisymposia. For ICIAM, it's the community that proposes minisymposia, almost all of which are accepted. The presence of the community is clearly felt in the minisymposia, which in a sense are the heart of the congress. Keyfitz, Esteban, and Fonseca encourage readers to propose minisymposia for Beijing.

ICIAM is rapidly attaining the level of prestige associated with participation in the venerable ICM, they believe. In its relatively short history---the first ICIAM was held in Paris in 1987---the high standards of ICIAM member societies, host countries, and scientific program committees have led to steady increases in the recognition accorded invited speakers at ICIAM.

What Industry-related Activities Are Planned for ICIAM 2015?

As a leader in launching the EU-MATHS-IN project, Esteban is deeply invested in the subject of industrial math. Even with several minisymposia devoted to the subject on the ICIAM program, she sees "a need to increase the presence of industrial math at ICIAM."

In Europe, she says, realizing that different countries approach industrial math in different ways, "we decided to sit down together and see what works and what doesn't. Maybe this European experience could be amplified at the world level." Europe is relatively homogeneous, even counting Eastern Europe, compared with the rest of the world. Increasing the impact of mathematics on society in countries that haven't thought about or tried to improve the way they organize industrial math is a challenge, one that's well worth taking on!

One of the main reasons to attend an international meeting is to share and learn from the experiences of others. ICIAM could become a great forum to make industrial mathematics known, Fonseca says.

In engaging in the community-oriented activities touched on in this narrative version of their conversation at MBI, Fonseca, Esteban, and Keyfitz maintain a delicate balance with the well-respected research for which each is known.

Esteban, perhaps less familiar than Keyfitz and Fonseca to many in the SIAM community, in a sense speaks for all three when she writes in an email message to SIAM News:

"At especially busy times, I cannot think about my research for weeks. . . . But when you are involved in some research project that is going well, you manage to find time. . . ."

"When I started my career, I saw myself doing research, and not more. I never thought that I would spend so much time in extra-research activities. . . ."

In one way or another, she continues, "I started doing this at my university, and then I got involved in [the French applied mathematics society] SMAI, and from this I jumped to the European scale by getting involved in some [SIAM] Mathematical Society, and finally came ICIAM engagements that I have or have had in the past. I think I kind of liked some of the things that can be done out of work."



Three strong believers in the importance of the International Congress on Industrial and Applied Mathematics took a break during the most recent meeting of the ICIAM board to discuss their activities and the experiences they envision for those who attend ICIAM 2015, in Beijing. From left, SIAM president Irene Fonseca of Carnegie Mellon University, ICIAM president

Barbara Keyfitz of Ohio State University, and ICIAM president-elect Maria Esteban of the applied mathematics research center CEREMADE, at the University of Paris–Dauphine.