BIRS-OAXACA WORKSHOP ON WOMEN IN MATHEMATICS IN LATIN AMERICA

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The workshop "Women in Mathematics in Latin America: Barriers, Advancements and New Perspectives" took place 21–26 August 2016 in Oaxaca, Mexico at the Mexican affiliate of the Banff International Research Station (which is based in Canada). The event was supported by BIRS-Oaxaca, CONACYT (the Mexican equivalent of NSF), the Mexican Mathematical Society (MMS), the Kovalevskaia Fund, and several other organizations. The workshop was the brainchild of Dr. Lilliam Alvarez, head of the Kovalevskaia Prize Committee and the Commission on Women of the Cuban Academy of Sciences. Cosigners of the grant application to BIRS-Oaxaca were Dr. Alvarez, Dr. Gabriela Araujo (who is head of the Commission on Equity and Gender (CEG) of the MMS), Neal, and I. The Kovalevskaia Fund paid for the air tickets of the two Cuban and three Peruvian participants, BIRS-Oaxaca financed all local expenses, and the MMS, CONACYT, and the International Mathematical Union's Committee for Women in Mathematics financed travel for most other attendees.

The 45 participants (42 women and 3 men) came from Argentina, Brazil, Chile, Colombia, Cuba, Dominican Republic, Mexico, Paraguay, Peru, and the U.S. The majority were Mexican, and an effort was made to ensure a preponderance of younger women. At Neal's and my insistence, the language of the workshop was Spanish. This marked a departure for BIRS-Oaxaca since the language of all of their other workshops has been English, but we thought that using Spanish was absolutely crucial for fostering open discussion. Although many of the participants are used to attending math talks in English, several of them remarked on how relieved they were to be able to converse in their own language about topics where the English vocabulary might have been unfamiliar. Many of those present, especially the younger women mathematicians, had never before talked about gender issues in mathematics, and they confessed that they would have found seminars and discussions in English uncomfortable and taxing.

The workshop followed a general plan of having technical talks in the morning and seminars and roundtables on gender issues in the afternoon. Speakers had been encouraged to make their morning presentations as accessible as possible. Most of them did this (even I, a non-mathematician, learned a little about what they were working on), and most included at least some biographical information or description of their outreach activities. Participants ate all meals together, so generally we were engaged in the subject of the workshop from about 7:30 in the morning until after 9PM. The week was absolutely exhausting but extremely stimulating, and local organizers Gabriela Araujo, Natalia García-Colín (currently Vice President of the MMS and a member of the CEG), and the CEG and BIRS-Oaxaca staffs did a wonderful job of keeping things running smoothly.

Seldom have I been so impressed by my fellow attendees at a conference. I'd love to give a summary of each of the thirty talks, but there's no room for that here, so I'll have to concentrate on a few points. Dr. Julia Taguëña of CONACYT noted that the organization is (finally) beginning to think in terms of "equity as well as formal equality." Recently, CONACYT changed one of the conditions for its prize for young scientists to reflect gendered differences in life courses and responsibilities (pregnancy, child care, and elder care, for example). The maximum age for women applicants is now 43 as opposed to 40 for men—a distinction that Dr. Taguëña termed "equity rather than [formal] equality." She also noted that there is beginning to be more cognizance in Mexico of gender differences in medical conditions and accident rates. For example, women develop more lesions in the top third of their intestinal tract while men tend to develop lesions in the bottom third. Yet sigmoidoscopy (the less invasive, more routine diagnostic tool) only probes the bottom third. Dr. Taguëña also said that CONACYT is now offering graduate stipends for indigenous women as well as women with children.

Dr. Alvarez reminded people of a comment English-speaking feminists sometimes make about being relegated to the 'Triple-A League' (as in baseball): Assistant Dean, Associate Provost, Advisor to the President, and so on. Latin American professional women, she noted, are in the 'Triple-V League': Vice Dean, Vice Director, Vice-President. And indeed, several participants gave examples of that sort of discrimination (sometimes called "the glass ceiling") based on their own experiences.

Speakers from country after country outlined the situation of women in math in their homelands, and the picture was fairly similar: women make up

about 20–45% of most math-related majors, with the percentage steadily declining as one moves up the ranks; and women receive only between 5% and 15% of available research monies in those countries with established grant-giving entities. Moreover, often national and international conferences have no women invited speakers at all, even when there are prominent women in the given specialty.

This is not to say that the workshop participants felt discouraged and depressed, or that they portrayed themselves as downtrodden victims. To the contrary, the mood was upbeat. The women professors and students at the workshop take great pleasure in mathematics, and were extremely happy to meet others who share the same passion for their field. There is no question, however, that women mathematicians and their allies need to remain vigilant, and there was a consensus that some sort of network of women mathematicians in Latin America and the Caribbean would be a good idea. As I put it in my opening remarks, such an organization can act as the conscience of the mathematical profession: gathering statistics by gender at all levels, ensuring that eminent women are not passed over for promotion or honors, doing outreach to bring more racial, economic, and regional as well as gender diversity to the mathematical community in future generations.

One of the pleasant surprises of this meeting was learning how much outreach is being done to attract young women into math. Speakers from Argentina, Brazil, Chile, Colombia, Mexico and the U.S. described some amazing outreach programs, and interested participants shared videos, tutorials, and lesson plans (see links below). Some of the programs are specifically aimed at young women, while others are less targeted. But all feature the enthusiastic participation of prominent women mathematicians and their students. To give just one example: the Festival of Mathematics sponsored by the Institute of Mathematics of the National Autonomous University of Mexico (UNAM) in 2015 drew 45,000 visitors in three days, and half of those were female. Moreover, 77% of the hundreds of graduate volunteers for the event were women, a fact which certainly helps put to rest the notion of math as an all-male field.

Toward the end of the week proposals for future activities and actions were discussed. As noted above, a collaborative network will certainly be formed. Other suggestions included:

- forming permanent women in math commissions in those countries that do not yet have one;
- ensuring that there is at least one session on women/gender at all national and international math meetings;
- maintaining a Facebook page;
- collecting statistics;
- having a second meeting, possibly in Chile;
- supporting the development of mathematics in the Dominican Republic;
- writing a manifesto condemning sexual harassment (especially by professors) and sexual violence between students, both of which are widespread problems in our institutions.

In sum, I am extremely proud that the Kovalevskaia Fund was an important part of this event, and that several former Kovalevskaia prize and grant recipients from Mexico and Peru were in evidence: Dr. Araujo was, of course, a key organizer of the meeting, and Dr. Roxana López Cruz of Peru was the motive force behind assembling the Peruvian participants. (And indeed, I had preliminary discussions with the three Peruvians about the possible resumption of Kovalevskaia Prizes in Peru.) In addition, three other Mexican women mathematicians told me how much they appreciated Fund support; in all three cases the women now have women students of their own.

Useful links:

http://www.mathunion.org/cwm/

http://www.birs.ca/events/2016/5-day-workshops/16w5003/videos

http://www.comisiondeequidadygenero.org/

http://www.europeanwomeninmaths.org/

http://africanwomeninmath.org/