

Maths needs to factor in more women

Opinion: quotas help shortage of women in science



Fields Medal winner Prof Maryam Mirzakhani from Stanford University broke new ground on two accounts. She is both the first Iranian and the first woman to win the medal in its 78 years of existence. Most of the reporting of this achievement focused on the latter aspect. Photograph: Stanford University

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Regularly news reaches us that some animal can count or perform some calculations. It would not cross our mind to wonder whether gender played a role in the mathematical performance of a rhesus monkey or a newborn chicken. Yet when it comes to women mathematicians, gender is often put forward as having some significance.

Take the recent announcement of the world's most prestigious award for research in mathematics, the Fields Medal. One of its winners, Prof Maryam Mirzakhani from Stanford University, broke new ground on two accounts. She is both the first Iranian and the first woman to win the medal in its 78 years of existence. Most of the reporting of this achievement focused on the latter aspect. Why is that, when gender should not matter with respect to mathematical performance?

The simple and depressing answer is that there are too few women reaching the highest echelons of research in mathematics, and in science in general. The reason for that state of affairs is that the vast majority of them leave the career early due to pressure from a combination of practical issues, cultural stereotypes, gender bias and sexism.

Ireland is in line with the EU average on this account, with twice as many men as women working in the public and private research sectors across all fields in Ireland (14,000 versus 7,000 in 2009, according to Eurostats). In mathematics and statistics, 30 per cent of students graduating in 2012 with an honours degree were women and for PhD enrolment, the proportion was 33 per cent, according to the Higher Education Authority.

Female professors

Further up the food chain, it is disheartening to realise that in those fields, only one permanent academic in five is a woman across the seven Irish universities, and that only one individual has reached the highest grade of full professor.

What can be done to attract, hire and promote more women in mathematics?

I am all in favour of quotas to quickly restore some balance. Some would argue that with a smaller pool of candidates to pick from, the likelihood of hiring mediocre female candidates increases with the imposition of quotas. So what? After all, if men and women are equally talented, they must be equally untalented too, and a balance must also be found in the underperforming subset of mathematicians. In any case, there is now a good body of work available to show gender quotas raise the quality of recruitment and attract more highly qualified women.

Of course imposing quotas is a sensitive issue and is probably not on anybody's agenda any time soon for science. However, we could put floor requirements in place, ensuring a minimum number of women gets hired or promoted over a given period. Some universities are taking steps in that direction.

Targeted schemes

The next avenue is to propose targeted support schemes, to help women researchers fund their research and raise their profile. For instance, the Advance Award programme for women postdoctoral researchers in science, technology, engineering and mathematics recently launched by Science Foundation Ireland, which is a welcome initiative. If other institutions could create similar grants, it would ensure Ireland develops a reputation as a good place for training, hiring and supporting women in mathematics and statistics.

Finally, everyone can do their bit to encourage female pupils and students who enjoy maths, and help them take its study to the highest level. They will need all the moral support and encouragement they can get to progress and overcome some of the barriers still standing in their way.

Every day I come across students, male and female, who tell me they love maths. I can feel that their families look positively and proudly on this inclination and wish they will do well. Finding a permanent position in academia is no small feat in general, and requires tremendous amounts of perseverance, patience, passion and a good deal of luck. I am privileged to have been able to find one, so that I can keep solving equations to my heart's content and teach about them to enthusiastic students. I am also keenly aware that the playing field was not completely level when I was competing for career progression.

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