

Hi, I am Courtney, I am about to go into pure maths honours at Sydney University in semester 2 this year. I've been asked to give an overview of what has influenced me to choose a maths degree and pursue honours, in particular the circumstances I have found to be helpful or unhelpful as a woman.

I originally became interested in maths thanks to my father - he studied it at university himself. He showed me simple proofs and ideas which started to get me interested in problem solving and logical thinking. I remember trying to explain to my primary school friends why the square root of two couldn't be expressed as a fraction - I think both the subject matter and my explanation abilities didn't go down too well.

Throughout primary school and high school I became more and more interested in maths. I believe there were a few factors in this - I always found maths the most natural and enjoyable class, and I really enjoyed the challenge of thinking through harder problems. But I also had a lot of encouragement from both my parents and some particularly passionate teachers. My year 9 maths teacher even took me to a public speech given by Terry Tao at UNSW.

There were also a few factors that were against me as a teenage girl interested in maths. I went to all girls schools and it was definitely not the norm to enjoy maths class. I even remember one of our teachers saying "I know this isn't interesting but we just have to get through it". There were some efforts to change our attitudes though. During year 12 my school created a maths club which met weekly to learn about new maths and help each other with our homework. By getting some of the older girls who had a more positive attitude to mentor the younger girls I thought the club had real potential to change some of the fear and ambivalence surrounding maths.

I decided to apply for a Bachelor of Science in advanced mathematics as my first preference. This decision was not a hard one for me to make - maths had interested me more and more throughout high school, but 4 unit particularly inspired me to learn more. I enjoyed the abstractness of complex numbers, and the type of thinking required to solve the harder problems.

The degree didn't disappoint me - although in first year I branched out and tried a few different subjects, I found that maths drew me in the most. I found it fascinating and challenging. Wrestling with a new concept, exploring how it works and eventually playing around with the ideas myself was highly satisfying and enjoyable.

Once again as I progressed through my degree it was very noticeable that women were the minority. I was involved in a special studies program in second year with about 12 other students where I was the only female. In third year I applied for a women's scholarship for women involved in the talented students program at the university. I received this award, but I was also the only person who applied for it. The year previously it was not awarded as nobody applied. It was an honour to be awarded this scholarship, and I found it helpful in completing my degree, however since it was already targeted at women involved in an extension program it did not really do too much in terms of attracting more women to the field.

By the time I was halfway through third year I was very interested in pursuing research, as I enjoyed learning and working with maths a lot. On the other hand I knew that it was a competitive field, so I still had my hesitations. I decided to do Honours in order to try to get more of a taste of what research would be like, and to set myself up well in order to complete a PHD if I chose to do so.

I was surprised to learn that in the corridor assigned to the offices of Honours students there was only a male bathroom, while the females had to go upstairs to use a different bathroom. As the only woman completing pure maths Honours in my year, this did not help me feel welcome.

On the other hand, there were a few events centred around women in maths and science that were encouraging to me. The Sydney University Maths society offered an event with female speakers talking about their experiences in pursuing research and working in the field. I particularly enjoyed this event - it was nice to have successful female role models highlighted to us, as a large proportion of our lecturers tend to be male. The AMSI Summer School also offered a number of events over the course of the school which highlighted the work that was being done to try to change the gender gap within the field. It was comforting to know that there were programs being put in place to try to change some of the statistics.

Overall I have loved studying maths at university. Although being the minority in all of my maths classes has been disappointing, I have still found lecturers supportive and helpful, and I have found that my classmates generally have a positive attitude towards changing the gender distribution in maths. While gender based events and seminars have helped to give me advice and guidance as a woman navigating potentially going into research, I would say that programs the university ran to expose us to more maths helped a lot in my decision to pursue pure maths Honours. These include summer research projects, reading courses and student run seminars. These helped inspire me to learn more, and gave me more confidence in both my knowledge and ability. I am looking forward to pursuing Honours next semester, and exploring any future research opportunities that may follow.

Courtney Darville, 23 June 2017