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New challenges ahead

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I grew up in an old part of Ahmedabad in Gujarat, India. My first school C.K.Bal Mandir was at one end of the street where we lived. In the beginning I loved going to the school, but soon I hated it and walked there as slowly as possible. The houses on our street were row-houses with common walls shared by the houses on either side. There were water taps just outside the houses and I chatted with people brushing their teeth, looked at the cows and buffaloes, still half-asleep on the street and managed to stretch the two minutes' walk to at least ten. As a result of reaching late, I invariably got scolded and often punished by my class-teacher until one day I found her waiting for me eagerly, even beaming. It was my maths result that made her happy. After that day I was punctual again, except on the day of the result, when I went late on purpose!

My father is a civil engineer and mother was a home-maker. For his degree my father had to go to a college fifteen km away. He travelled on a bicycle every day, gave tuitions to pay for his fees and studied under a street-lamp as they had no electricity in the house. He was very good at mathematics and can, even now, do any complex calculation in his head. He was my role-model and I wanted to be an engineer. But my mother used to tell me that I would do a Ph.D. in mathematics. I did not really have any idea of

what that meant. But she would tell me that it meant higher studies and finding new rules and developing new theories in mathematics. This sounded very interesting and easy as I loved mathematics but I still wanted to be an engineer until I was in high school.

My mother always encouraged us (my brother and three sisters and me) to study well. She used to say that we must do at least two graduations. Every day, after we came back from playing, she made us sit down to study. She could not continue her studies after matriculation because of her family's financial problems. That was her only regret. Her house was in front of the town library and she read a lot of Gujarati literature and encouraged all of us to read books from our school library and later the town library. She also insisted on enrolling us in what were considered good high schools, even though they were far from our house and we had to commute by public bus. My grandfather, as well as, my brother and sisters, were all very supportive of me.

I went to the G.M. Prakash High School, which was a girls' school. I liked to fiddle with numbers and once found a simple rule about ordering a particular type of fractions. I used it whenever I could. The Principal of my school, Kusumben J. Shah, was very encouraging and sent me to P.C. Vaidya, then Vice-Chancellor of Gujarat University. He was very kind to me, heard me out and told me it was really correct. But then he asked me if I knew how to prove it! I could check it for any given set of fractions but could not prove it in general. He went to the blackboard, took a chalk and explained a simple proof. It was then that I realised for the first time that one could prove something about an infinite set in a few lines! This motivated me to pursue higher studies in mathematics. I still did not know and would not know until much later, what research really meant.

At St. Xavier's college, Ahmedabad, where I studied mathematics as a major, we had very good teachers. Throughout my undergraduate studies, Shanti Prasanna inspired and encouraged me greatly. She had faith in my abilities, took a lot of interest in my well being and essentially treated me like her daughter. To this day she is my friend and adviser. There was S.S. Vora who used to

be annoyed with my ready answers and no doubt thought that I was acting smart. Then one day he asked us about directional derivatives and I could tell him about its relation to partial derivatives, which he could not find in any book to which I could have had access. He told me about a master's programme in mathematics at the Indian Institute of Technology, Bombay.

Although in those days sending a girl out of town for higher studies was unheard-of in our community, my parents encouraged me to apply to I.I.T., Bombay. I learnt a bit about doing research while doing a project under the guidance of D.V.Pai at I.I.T. After an M.Sc. from I.I.T., Bombay in 1986, I appeared for an interview at the Tata Institute of Fundamental Research for a Ph.D. fellowship. I enjoyed the interview so much that I did not even care if I got selected or not. It took me a while to start on research, especially because all the other students in mathematics in my batch either left or were asked to leave. The pressure to perform was extreme. Here I must give credit to M.S. Raghunathan, who suggested the first problem, and that I work with S.G. Dani, who was working in the area of probabilities on groups. It was Dani's gentle ways of helping that propelled me further. He was always ready to discuss mathematics and answer my questions, however silly, any time of the day. I enjoy collaborating with him and value his advice on many issues, mathematical or otherwise.

Meanwhile, unknown to me, my parents kept all matrimonial proposals at bay. I often suffered from cold-related allergies having moved from the dry climate of Ahmedabad to Mumbai, which is always humid. In T.I.F.R., there were very few women's toilets as there were only a handful of women in the beginning. On some floors, such as ours, there were two men's toilets but none for women! One had to go to other floors even to blow one's nose. Finally, after a persistent campaign of a few years there is a women's toilet on every floor.

It has been a long way from the blissful ignorance of a small-town girl to the fascinating and cosmopolitan world of mathematics. Many people, including my family and friends, have played a role in shaping my career. One special person is my husband, without whose support I could not have made it here; I had free-

dom to pursue my career even though he had a research job elsewhere and we had to stay separated by thousands of kilometres. My parents-in-law showed a lot of understanding, which is rare in Indian society.

Not much would change if I had to do anything differently – I would still like to do mathematics; however, if I had the power I would have ensured that we did not have to go through the years of forced separation and our son would have had both of us around.

Last year we moved to the Jawaharlal Nehru University in Delhi, where we are finally able to live together as a family after many years. The excitement and challenge of shaping a new department of mathematics at J.N.U. marks a new turn in my career.