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A blessing in disguise

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I grew up in Faizabad, Uttar Pradesh, in a large family of ten children. My father, a doctor by profession, gave priority to higher education for children above all other matters. My mother, although highly intelligent and well-informed, could not study beyond high school. She made sure that her daughters received as good an education as her sons. Further, to educate herself, she kept reading books. This instilled in me a love for reading. However, coming from traditional orthodox Brahmin families, both my parents did not consider it necessary for a girl to think of a career. While all my six elder brothers chose science and mathematics as their subjects, my elder sister opted for humanities. There was slight resistance when I declared in class nine that I would opt for science, but they relented as by then it was considered quite natural for a good student to opt for science.

I chose science only because I loved mathematics and there was no option available to take maths with any other subject. I had to shift to an ordinary Government Girls' College to pursue science, but my maths teacher Mrs Vichitratarata Srivastava for the next two years was simply outstanding. An excellent and devoted teacher often changes the course of his or her students' lives. I enjoyed geometry so much that I was always looking for books

with challenging problems. In eleventh standard, I developed a liking for physics too.

I did very well in class twelve and my parents' initial aversion to my taking up science was replaced by feelings of pride and admiration. As Faizabad is a small town, I had to leave home to join the University of Allahabad as all my elder brothers and sister had done. It was a two-year B.Sc. (pass) course and I opted for Physics, Mathematics and Statistics. University of Allahabad as well as my home had an atmosphere best suited for Indian Administrative Service (IAS) exam preparation and it was understood that all good students would appear for the civil services exam.

At this point I was pretty ignorant about how to go about choosing a career. Of course, I had read about Marie Curie and Ramanujan from early childhood, but in University of Allahabad the best students were not expected to become researchers. One of my teachers, Dr. Pankaj Sharan, was a Ph.D. from I.I.T., Kanpur, and he encouraged some of us to apply to I.I.T. for M.Sc. So I applied to I.I.T., Kanpur for both physics and mathematics. As luck would have it, the physics test took place before the mathematics test. I was one of the ten students selected and I never appeared for the maths entrance exam.

The next two years I had to work very hard to keep up with the hectic schedule at I.I.T. I was the only girl in my class and due to my upbringing and Allahabad University's culture I found it difficult to interact with my classmates. However, I was lucky to be taught by some of the best teachers. One was then Prof. S.D. Joglekar later became my Ph.D. guide. I worked on Renormalization Theory and we published a number of papers. All hell broke loose at home when I announced that I was not going to appear for the I.A.S. exam. I was considered the brightest amongst the ten children, having topped almost all the exams from class one till M.Sc. They really thought (and probably still think) I had gone crazy!

In the meantime I had married Raghava, my friend and classmate from M.Sc. days. Both of us completed Ph.D in 1989 and he joined TIFR as a postdoctoral fellow immediately thereafter. I had two good offers both outside Bombay, but I was expecting my first child and decided to be with my husband at this

crucial time. I spent the next one and a half year looking after my son. When my child was an year old, I joined Saha Institute in Calcutta as a post-doctoral fellow, but my husband got a post-doctoral fellowship at State University of New York at Stony Brook. This offer was too good to refuse and once again I accompanied him, leaving S.I.N.P. after just three months.

It took us a while to get settled. When I had almost given up all hopes of continuing physics, my husband persuaded me to visit the Institute of Theoretical Physics at University of Stony Brook to meet Prof. George Sterman, a renowned theoretical physicist, who is also, as I learnt later, an excellent human being. He understood my dilemma about wanting to get back to physics and agreed to help me. He gave me a couple of papers and asked me to choose one for a seminar course he was offering that semester. One of them was on Light-Front Quantum Electrodynamics by Wilson and collaborators. I chose to present this one and this was the beginning of a totally new phase in my career. I spent the next year learning light-front field theories, working out things literally on my kitchen table and meeting Prof. Sterman occasionally for discussions.

My first research paper after Ph.D. was written from home. When I showed the results to Prof. Sterman he immediately said it was worth publishing in *Physical Review* and offered me a guest lecturer's position at the Department of Physics so that I could have a place to work and, more importantly, an affiliation. If someone were to ask me to single out one person who helped me to come back to physics after having taken a break for my family, it has to be Prof. Sterman. Not only did he provide me a platform but also gave me the confidence that "I can".

By the time I established myself as a researcher, it was time for my husband to come back. We returned to India in 1994. He joined Bhabha Atomic Research Centre (BARC) and I joined M.R.I. (now H.R.I.) temporarily while looking for jobs. Prof. H.S. Mani, one of the most inspiring teachers at I.I.T., Kanpur was the Director of H.R.I. and was keen to help me to get back to active research. My husband got an offer from I.I.T., Bombay, but whenever I applied for a job, the four-year gap came up as a negative point. Prof. Mani helped me to get a research associate position at University of Mumbai.

My younger son was born when I started working with Prof. Rohini Godbole at Bombay University. She also understood that for me my family and my career were equally important. Her unwavering faith in my potential and more importantly in my dedication to work has helped me to regain my self-confidence. I must say that she is the other person who has played a stellar role in my continuing with science.

I was soon selected as a lecturer in the same department and I am fortunate to have found a profession of my liking. Teaching is not just a job for me; it is a passion. I have also continued my research work in High Energy Physics. Quantum Chromodynamics or QCD keeps me occupied when I am not teaching. I have continued my research work on Light-Front Field Theories, which provide a hope to explain an important puzzles in strong interaction physics namely how quarks bind together to form hadrons.

My advice to young researchers would be to avoid any breaks in career: Keep in touch even if you have to work part-time. Whenever I applied for a job there was always a question about the four-year gap. Luckily I can reply that I did my first independent work during that break. Probably in my case, it was a blessing in disguise as I was able to stand completely on my own. Not all areas of research provide this luxury of working from home and not everyone is fortunate like me to be able to take a break and make a comeback at will.

It is very difficult in our society for a woman to be career-minded and still be devoted to family. I have tried to do both with only partial success on both fronts. Even this would not have been possible without constant help and encouragement from my husband. I fought my way through all prejudices and was somehow able to tackle the usual problems of not getting quality day-care and domestic help, but the biggest obstacle I faced was my own sense of guilt at not spending enough time with my children. Now I realise that indulging in those feelings was a mistake. Trying to be a superwoman only led to health problems and complicated the situation even more. The sense of guilt is bound to go away when you come to know that your kids are proud of you. It is better not to have such feelings from the beginning so that you can contribute in a more efficient manner to the profession you are passionate about.