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Dream your own dream

Rama Govindarajan

The stars shone down on 47 weeping girls, while a gentle sea breeze could do little to help them. On this evening of drama, the prosaic words “housewife”, “graduate” and “bank employee”, were being scrawled in autograph books under “Your ambition is to become a ...”. And no, the overweight, under-confident specimen occupying the schoolyard for the last time did not scribble “research scientist”!

Not even years later did I understand what the term meant. What does it feel like to be one today? My website talks about the science I do, so I’ll only say here that I completely love it. However, I did not know this when I started out. All I wanted to become was a “regular guy”, which to me and my peers meant having enough money for a gracious life-style and being in charge of a group of people, preferably large. First big mistake: borrowed objectives.

Dear reader, if you are young, please dream your own dream. Also, please, please dream big. My grandmother, Alamelu, did, for me. She also set an example by fighting tooth-and-nail for what she believed was right, and by never obeying a rule of which she was not convinced. As a young bride, *circa* 1920, she risked ostracism by her community to cook and eat *meen-*

kozhambu with a Dalit family in their hut. My other early influence was my mother, Shakuntala, practically a single, working, parent, who made light of an extremely tough life to create a home where poetry and laughter ably substituted for luxury. My only regret is that my achievements fall far short of her sacrifice.

Doing a B.Tech. at Indian Institute of Technology (IIT), Delhi was a simply superb experience. I was given the opportunity to study rather than memorise, and had the fun of discussing science with peers. Like many other girls in IIT, I emerged near the top of my class, picking up self-assurance, a “can do anything” attitude, and many close friendships. It would be good if within the next few years, half of every IIT class would be girls – it would be a change from when I was one of 54 in the chemical engineering class!

My Ph.D. advisor Prof. Roddam Narasimha, has been the biggest influence on my scientific career. Apart from fluid mechanics, he taught me to do science the right way, which for him includes a thorough and critical understanding of the subject, extreme care in methods, and zero exaggeration in making claims. I also like his conviction that the youngest student in a group may be right in a scientific discussion.

I am also blessed with a home completely free of gender bias and its manifestations. So, what can go wrong when one has the best education and heavy-duty determination, and is surrounded by good people? Read on.

I am an engineer first, and fluid dynamics has always been a favorite, but my career in research began almost by accident. When I graduated, I wanted and got a plush job, in Mumbai. Every morning I became part of the compacted mass of humanity in the ladies compartment of the 6:57 fast train to Andheri. Soon the mass revealed itself as having faces, lives, and stories. The one common theme in the stories was the incredible hard work and determination involved. These women – executives, secretaries, fisherwomen, new mothers, very-soon-to-be-mothers, many malnourished, some from home-lives too terrible to describe, running top-speed across the overbridge at Grant Road at 6:56 a.m. – are my role-models and I think back to them every

time I imagine I am having a hard time. An important ingredient for success is the willingness to push yourself to work really, really hard.

It took me two months on the job to realise that something a lot less plush and a lot more mentally demanding would suit me better. I then did a Masters in the U.S., which did not launch me into the planned orbit in industrial R&D, maybe because I soon tied myself by marriage to one city. A guest at my wedding remarked that Bangalore (as it was then) was not at all the place for a chemical engineer, and how right he proved to be! In my efforts to leave no stone unturned, I went to dozens of interviews within the next couple of months, looking for unsuitable jobs. I finally took one of them just to put my share of rice on the table. The really big mistake: not realising that the world offers myriad choices for a young couple in search of two good careers. Just don't be scared to experiment, to spend a few years as a nomad. Don't feel guilty if your spouse has to make some temporary sacrifice as well. It would be best if you can postpone marriage to the post-nomadic stage!

It dawned on me that to succeed in Bangalore, I must redefine myself. The software industry was in its infancy, but I decided, maybe stupidly in some people's opinion, that I would not be part of the big boom which I didn't know then was coming. I went into the defence-related aerospace industry instead. Here, I wanted my experience with process control and computing skills, to be put to use to avoid importing control algorithms. The set-up of the industry made this wish impossible to fulfil.

So, four years after my B.Tech., I finally turned towards research in fluid mechanics, and have never in the twenty years since then wished to do anything else. For ten of these years I worked in a national lab, during which I also completed my Ph.D. and postdoctoral work. The last ten years in academia have finally been the "real thing", this was an extremely lucky break, since the place I work, the Jawaharlal Nehru Centre for Advanced Scientific Research (JNC), came into existence at the right time for me! In my experience, independence and constant exposure to other researchers is crucial for doing basic research, and for these, an

academic institution is unbeatable. A typical national lab has other main objectives to fulfil, and cannot be expected to focus on basic research in the same way.

If you are the type who likes every day to be different, scientific research is the career for you. If you like working with young people with bright ideas, who keep you on your toes, and if you like teaching yourself new concepts, this is the career for you. If you are prepared to toil long and desperately for the dazzling discovery you are not sure you'll make, this is the life to choose! Even on a bad referee-report day, I am happy I do science!