
The Road to IISc

The author of the article is a distinguished mechanical engineer. The circumstances which led to his studying, at the Indian Institute of Science, and later joining it as faculty, taking up the study of acoustics, are truly remarkable. They may be both fascinating and inspiring to our readers, giving a portrait of our country in the immediate post-independence era. The story is related in Prof. M L Munjal's thought-provoking personal reminiscences transcribed by Maneesh Kunte, Post Doctoral fellow, Archives and Publications Cell (APC), IISc, from which we carry an edited and abbreviated extract below. The story covers the early part of his life till he joined IISc. Apart from describing outstanding achievement in the face of extreme odds, his account makes us wonder if we are doing everything we can today to open up opportunity to talent wherever it is found. The author's article on 'Designing for Quieter Living' on page 320 captures the essence of technical acoustics, a field that he established in IISc.

– *Rajaram Nityananda*
Editor

Maneesh Kunte (MK): I wanted to get some idea of your life's journey.

M L Munjal (MLM): You want me to start from my childhood?

MK: Sure, something about growing up and college...

MLM: I was born in a village called Hasu Balel in the Tehsil of Shorkot, district of Jhang, which was at that time in Punjab, but then, you know, after partition, it has gone to Pakistan.

I was about three years old at the time of the partition. My father and eldest brother - they were in a village across the river, and that river is where Chenab and Jhelum in Punjab, which are now in Pakistan, meet. These were the days of the rainy season and all that; the whole thing was in spate. My father and my eldest brother (who was at that time 13-years old) got completely separated from us, and then the riots happened and communication completely broke down. And there was no way they could get together; so each ran for his life. My mother, fortunately, could come with her brothers and they had already some place in Hoshiarpur in Eastern Punjab, which is now in India. So, she came quite safely with me in the lap and all that.

But after being separated, it took my father and brother three months of going from place to place to trace me and my mother. Then we started our life in a refugee camp – absolutely penniless, my father and mother both were illiterate, and only Father could keep accounts. He



was good in mental arithmetic. And he used to keep accounts for the Zamindars or land-lords, you know, in Pakistan. So he was good in keeping accounts but not in English, or Hindi, or Punjabi; but in Landes – that was a very local kind of script that those people had then.

In the refugee camp, my father always used to – while praying to God - thank Him all the time. All others used to ask for this, ask for that, cry, and all that. My father always used to thank. I asked him. I said, “What do we have? We don’t even know where the next meal is going to come from. What are you thanking God for?” And he said, in Punjabi, “Son, we are alive. Isn’t that sufficient?” That has remained with me all my life as the ultimate bottomline. We have all sorts of desires, and we get worked up for the smallest of things. But, nothing matters in the long run. And I must say I was very lucky from that point of view, that he worked hard – first as a labourer, then as a hawker – all that, you know, but he brought us up and he didn’t let us feel anything and gave us education, though I used to travel almost 4 km barefoot to the school. And they gave us complete free education. And there was also a kind of refugee grant being given to refugees for some time, till we settled and all that. So that way, you know, Government helped us a lot, and that is how we started our education.

We used to have, like any school, a prayer. And after the prayer, once a week, or once in two weeks, we used to have an invitee – somebody who would lecture to us on life. So one particular man was a psychologist, and also, I think, an educationist. And he made this statement – he said, “Nobody is born a genius; it all depends on us. So it’s all in your hands”. And that really, I mean, went in. I caught on to that.

“Yes, I may not have been born to very educated parents and all that, but that’s no disadvantage. It’s all in my head. I’ll do everything the way it has to be done and all the time challenge myself.”

Our language which we spoke at home, that was more like Sindhi. Even in the school, children would laugh at me whenever I would speak. So imagine a child who doesn’t have anything, and then he is laughed at; you know what it can be. So, challenging myself all the time made me stand first in every subject, and all through. So that really gave me self-esteem and then, also, children would leave me alone. They would come to me for doubts, rather than laughing at me.

The best thing that happened was at the end of Higher Secondary. Higher Secondary had just started those days. Earlier it was 10+2, etc. Then it became 11+1 : Higher secondary, then we had a class – pre-engineering or pre-medical class.

I stood 5th in Punjab University. It was a big thing because, there was only one university in the whole of present Punjab, Haryana and Himachal Pradesh, called Punjab University. So, standing 5th rank in that was, you know..., I mean, it came in the newspapers, and the merit sheet



and all that. We were feeling very happy. At the same time, what was being discussed at home was, “What do we do with this child?” There was no way they could send me to engineering college, or anything like that.

Now this is where I had a first-hand experience of ‘God helps those who help themselves.’

Just about ten days after the results, the principal of the the higher secondary school, he called me. He said, “There’s a good news for you.”

I said, “what happened?”

“The Government of India has started what they call a Government of India scholarship, and that is for life, till your PhD. And all you have to do is minimum First Class.”

And he said these scholarships are for first ten ranks of every university in the country. And there were only 25 universities those days. Imagine now there are more than 600! In one go, my whole education was ensured! So I joined Government College, Hoshiarpur and did my pre-engineering class. Then I got 8th rank there and then I joined Punjab Engineering College, Chandigarh.

In fact, those days, people were discussing about IITs and all that but Punjab Engineering College had much better reputation than all IITs; they were just coming up. One started in ’61, other ’62-’64. Nobody even thought, you know, anything about IITs those days. So I joined Punjab Engineering College. That is where I did my engineering.

MK: But at this point you had decided to do Engineering and didn’t want to do Science or pure Maths?

MLM: I’m glad you asked. I wanted to do Mathematics. But everybody – my relatives, my *mamas*, etc., who were at least a little educated – they said, “Look at your father, how he has brought you up. What will Mathematics give you? If you really want, take some line which takes care of your good technical career; at the same time, you can use Mathematics.” So that is how I got into Mechanical Engineering.

Something very interesting happened, again something only God can explain. We came to Bangalore; in those days, educational tour was compulsory. Whole of 90 students of Mechanical Engineering, they visited Bangalore and Mysore, etc., for 20 days. So we came to Bangalore. After seeing HMT and BEL and ITI – you know, those were the main factories those days – and the Indian Institute of Science – it was decided that we should also go to Mysore. There was some misunderstanding within our group., and I was stranded in Bangalore. They left without



me. So, those 2 days, I discovered Indian Institute of Science. I stayed in the hostels and went and visited the departments, including mechanical and others, saw the library and all the journals and books – that was a dream. Then I also saw the central workshop where everything could be done. And then, the general culture of library remaining open between 8am to 11pm and everybody can sit there and study... what I'm trying to say is, I really discovered that this was the place for me! This was really the place for me because all my life I had prepared myself for research and I found there couldn't be a better institute than this!

So I applied here. And in those days, there was nothing like this entrance examination and things like that – that was not there. You apply and then they used to look at your career – like you should have got a rank at least once somewhere, and also should have got very good marks all through. That's how they used to select. I got a telegram which said, "You are invited for an interview on the 29th of July at 9 am at the Department of Internal Combustion Engineering." (I'd applied for Internal Combustion Engineering). The next sentence was, "The fact that you have been shortlisted for interview, [means] you stand a good chance of getting selected. So come prepared to join." Had that line not been there, I would not have been able to persuade my parents to send me 3000 km from Hoshiarpur to Bangalore. And those days there was no direct train – Hoshiarpur to Jalandhar, Jalandhar to Delhi, Delhi to Madras, Madras to Bangalore. No reservations, nothing – I'm getting this telegram on 26th or 25th and 29th is the interview. That sentence made all the difference!

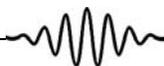
So I joined for my Masters. Here again I stood first in all the semesters. In the fourth semester we had to do this dissertation project. I was just asked to work on a particular project called, "Analysis and design of mufflers". We had not been taught acoustics at all. The only reason why that project was given was because muffler fits onto engine. So therefore it was relevant to Internal Combustion Engineering department, that's all.

My friends told me, "You go back to the chairman and tell him you have not studied acoustics at all. So you will not be able to do it; he should change the topic for you."

But again now, you might laugh at it, but I had that self-confidence and the habit of challenging myself. I said, "No, I'll not go to him. It has been given; I'll make the best of it."

And then my friends, they pitied me, "You may be very intelligent and all that, but I'm sorry, you're being very foolish! You'll really regret it."

Despite that bravado, the fact remained that I didn't even know where to start! I went to the library; I didn't even know acoustics journals! You wouldn't believe, I picked up a journal called *Engineering*, and went to the index and looked for the word 'muffler', 'silencer' and I



could find in each of those volumes about 7 or 8 papers. So this is how I laid my hand on about 30 papers which had something to do with mufflers or silencers.

I found most of those papers – they were only dealing with hit-and-trial. A few of them, I found, had some analysis. And then I looked in the list of references of those papers. And I found there was one common book. And that was this ‘*Fundamentals of Acoustics*’ by Kinsler and Frey (1962, second edition). So I had come down to a book which I could start with.

So I did the same thing to myself as I did earlier. I gave myself a crash course in that book. I used to sit in the library – I would be there almost 14 hours a day! And that took me a little more than one week, about 10 days. And in the process, I found that very little had been done in the field of mufflers. I said, “I can do better than that.”

So when all my other classmates, by that time, had just finished their literature survey, I was already on the way to developing my own algebraic algorithm. And in about three months’ time, I was really at the top of it.

When the seminar happened (final dissertation viva), that was in the month of, I think, June or so, I presented the whole thing and everybody – all the teachers – everybody was giving me very weird looks! When I said, “Any questions?” the only question somebody could ask was, “How did it occur to you?!” There was no other question anybody could ask because nobody had any knowledge also on that!

After that I submitted the thesis and all that, I went for the interview to Tata Motors; the Engineering Research Centre was just opening at the time. I was selected there, but by the time I came back, Prof. Srinath (Prof. AV Srinath, then Chairman of ICE department) said, “No, you are not going to Tata. We are offering you a job here.”

So I was offered a lecturer’s post. They made an exception and later on I came to know the story. The story was: after the seminar, all the teachers, they met Chairman the same evening. They said, “This boy should not go out. The Institute needs him.”

As transcribed by Maneesh Kunte, Post Doctoral fellow, Archives and Publications Cell (APC), IISc, Bengaluru.

