

## **The Milestones of my Professional life**



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*If you want to succeed in life, you should strike new paths rather than travel paths of accepted success. ( John D Rockefeller)*

The above statement has guided me through my four decades of professional life to a great extent. I graduated in 1947, the year of our independence from British Rule, from College Of Engg & Technology, Bengal, Jadavpur in Mechanical Engineering. My first job was in one of the finest light engineering industries of the time, Jay Engineering Works Calcutta (now Kolkata), which used to manufacture sewing machines. The company, liquidated many years ago, was owned by late Lala Shri Ram.

Jay Engineering was reputed to have very progressive and forward looking policies of that time. During the mid nineteen fifties and early nineteen sixties several West German experts were engaged as consultants to improve product quality and manufacturing productivity. Keurtz Hotz, a brilliant mechanical engineer and the Head of Development Department then, offered me a privileged opportunity to work with him. This was a turning point in my professional life. Under his mentorship I developed a very high degree of technical competence and self confidence to develop new products, product improvements and new manufacturing methods for increased productivity. I owe this mentorship to my ability to shoulder challenging problems in my future professional life.

In 1958 the second IIT of the country was established in Bombay (now Mumbai) through the UNESCO Assistance Program, largely with the help of the USSR (now defunct). After eleven years in the industry I decided to switch from industry to academics and pure research. Though I was specifically recruited for developing the postgraduate program of Machine Tool Design, as an Assistant Professor I happened to be the senior most faculty member of the Mechanical Engineering department of the institute at that point. This gave me the unique opportunity to work with the experts from USSR and other developed countries who visited the institute to guide us in initiating postgraduate programs and research projects.

Besides developing the curriculum for the first two years, I also had the responsibility of planning and constructing the mechanical workshop and drawing room facilities. My industrial experience was of immense help in the challenges during the first few years of the institute. In 1962 one of the country's first post graduate program on Machine Tool Design was started in IIT Bombay with the close cooperation of the USSR experts. The program received good response from the industry since the country's focus in the Second Five Year Plan was in machine building.

I received a UNESCO Fellowship to complete my PhD from Moscow Machine Tools & Small Tools Institute. On my return in 1965 I was appointed full Professor and served as the Head of the Department from 1967 to 1969. The next turning point in my professional life came in the form of a summon from CSIR in early 1969 to appear for an interview for the post of Director of the Central Mechanical Engineering Research Institute (CMERI), Durgapur in West Bengal. The chairman of

the interview panel was Prof VKRV Rao, the renowned economist and the then Minister of Industry and Commerce and also the Vice president of the CSIR. I had no hopes of getting the job since the other candidate was my old boss at Jay Engineering and I had said “I don’t know” to one of the questions the minister had asked. However I was pleasantly surprised to receive the appointment letter. Much later I came to know that the minister favoured me because I had not answered that question by inventing some story. Honesty triumphed.

The assignment at CMERI was daunting from three major points. One, I was expected to manage an institution with over one thousand engineering, scientific, technical people and a large number of industrial staff. Second, at that time Durgapur was the hub of ultra-leftist political movement and radical industrial disputes. Third, my predecessor had left the institute six months earlier due to policy issues with CSIR HQ. People were waiting for the new incumbent to join. It was test for a professor of a department of an educational organization in a politically peaceful state.

Within the first few days I had to deal with the “charter of demands” and permission to start “Employees’ Association”. Within the first few months I had to deal with the transfer of technology of the 20 HP Tractor Project which was a prestigious project of the institute with a major agricultural impact. None of them were areas of my previous expertise.

Dealing with a militant but un-recognized Employees Association was valuable time wasted, including being gheraoed several times. However, I was successful in introducing a new technique of “R&D Management” and attempted to change the moribund research culture. I also concluded the transfer of technology of the 20 HP Tractor to Punjab Tractors Ltd a PSU of the Punjab State, with a path breaking decision to depute the project leader Mr. Chandra Mohan with his team along with the technology for commercial production. This turned out to be a successful introduction of an indigenously developed product to the market. The product enjoyed a modest market share and CMERI earned a royalty of over rupees four Crores within a period of five years. I believe my moral courage, integrity and transparency in dealing with complex problems stood me in good stead.

In 1974, just as I was getting settled in supervising many projects under my personal supervision at CMERI, I was persuaded by the then DGCSIR, Dr Y Nayudamma and the then Union Minister of Education Prof Nurul Hassan to accept the responsibility of Director IIT Bombay. I joined on 1<sup>st</sup> July 1974 and over the next six months handed over the projects to new leaders at CMERI. Though I had approach to the minister himself, I committed a Himalayan blunder in not negotiating the transfer of my services from CMERI to IIT. This resulted in my forfeiting my rightful pension benefits. What hurt me more was the administrative support system failed me where I needed it most. I have since advised all, that one should be alert to one’s rightful privileges and not be swayed by entirely by emotional appeals.

In 1974, IIT Bombay did not have a state of the art mainframe computer apart from burdened with obsolete scientific research equipments. Finance was scarce as the country was going through financial difficulties. Luckily the Department of Science and Technology was created around this time. I was able to utilize the resources so available and for the first time after the UNESCO program ended, the institute could procure badly needed equipment without depending entirely on the Ministry of Education. The computer came much later, as there was embargo on supply of such computers to the country. For future purchases, attempts were made to avoid small purchases and consolidate the institute’s plan funds for major research equipments.

On the academic front I put in special efforts to strengthen the Humanities and Social Sciences in addition to the core Engineering and Science faculty with the inception of several Centers of Studies. To boost consultancy the Industrial Research and Consultancy Centre was created. A new

integrated MTech program for JEE entrants was offered. The conscious effort was to change the perception of IIT from a teaching to a research organization. Globally this helped the institute to rank better in prestige.

One incident in 1980 however had the potential of becoming an embarrassment. Four students of Indian origin but hailing from Malaysia and Sri Lanka were asked to leave the institute due to their inadequate academic performance as by the rules of the institute. These four students went on a hunger strike in protest with the support of a section of the local students. I along with some of the senior faculty members were confined in my office to force us to revoke the decision on the four students. Against advice to the contrary, I had the academic activities suspended and got the hostels vacated to restore normalcy. This decision was supported not only by the intelligentsia but also media and the political system. Regular activities resumed in three weeks upholding the standard of the IIT.

Atomic Energy Regulatory Board (AERB) was created in 1984 through a Govt of India Gazette Notification to independently supervise all safety related activities of nuclear power generation and help protect public from the effect of undesirable nuclear radiation. I was offered the post of Chairman of AERB, a post equivalent to Secretary to the Govt of India, sanctioned by the Union Cabinet. After an initial hesitation I happily accepted the new challenge.

I soon discovered that neither the Department of Atomic Energy (DAE) nor my boss, the Chairman of Atomic Energy Commission (AEC) actually wanted the AERB to function as an independent body. The intended role of AERB continued to be played by the DAE Safety Review Committee and peripheral activities of evaluating safety from radiation of medical equipments was assigned instead. The grip of DAE officials on the Govt of India was very strong and efforts to apprise the PMO of the situation, since DAE reported to the Prime Minister, did not appear to bear any result. In December 1986, the 40MW Prototype Fast Breeder Reactor at Kalpakkam was to be inaugurated by the then PM Shri Rajeev Gandhi. Mandatory clearance from AERB was needed as per the law. The DAE realized this too late and the office of the Chairman AEC sought an ad-hoc approval from me without furnishing any information relating to safety issues. I refused, but was successful in getting the approval well in time by obtaining and placing the relevant safety related matters to the AERB for due diligence. DAE officials must have been very upset at this show of independence. So much so, that the Chairman AEC personally disparaged me in the presence an officer in DAE, when I went to hand over my charge on demitting office as Chairman AERB in 1987.

However as events unfolded, within a few months I was asked to again take over as Chairman AERB by the new Chairman AEC, with the intervention of the PMO. I accepted the offer, only on the condition that the DAE Safety Committee is disbanded and AERB plays its mandated role as the sole safety regulator for nuclear engineering operations, independently. I am proud I helped establish the fledgling AERB as a credible and strong organization for safeguarding the public from harmful nuclear radiation.

My success was all the more satisfying that this battle happened without the media coming to know of it and without adversely affecting the prestige of any organization or person. My objective has always been to acquire rights for an organization aggressively but responsibly. One should not avoid a conflict, however strong the adversary. If the goal is right, you will prevail. In conclusion, the above facets in the shape of various ``Avatars`` that I played my role in professional career with their own pit falls, successes and failures.