

## “A Man of Science, But with No Art of Storytelling”

“A Life in Science” by C.N.R. Rao, Penguin Books, Rs. 499/- (2016).

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Bharat Ratan was instituted in 1954 and among the first recipients was the famous scientist, Sir C.V. Raman. It is a measure of the value that our society places on science, that in the next sixty years no scientist was awarded this highest civilian honour. The late A.P.J. Abdul Kalam does not count since he was not a scientist. Then in 2013, the well-known chemist, C.N.R. Rao was awarded this award.

C.N.R., as Rao is almost universally known, is of course not a stranger to honours and awards. There would scarcely be an academic honour (minus the much coveted Nobel) which he has not received. Apart from his path-breaking and well recognised scientific achievements, he has also, for the last many decades been involved with scientific administration and policy making. One therefore expected that this autobiography of a person who has been so intimately associated with science in India for the last half a century, would offer unique insights into the world of science in India. Unfortunately, this book disappoints in this respect.

The book starts with autobiographical sketches of 6 famous scientists from different fields of science. Titled “Why be a scientist”, this section is an interesting glimpse of the different trajectories that these 5 men and a woman took on their way to becoming world famous. The next section, “What is Science All About”, has CNR telling us what constitutes science. Amazingly, for someone who has self-confessedly been obsessed with science all his life, the author doesn’t seem to have any new ideas at all about this interesting topic. Instead, what we have is basically quotations from several scientists about various aspects of science. A typical para goes thus: “Pyotr Kapitza stated ‘theory is a good thing, but a good experiment lasts forever’, Leonardo da Vinci said that ‘there is no higher or lower knowledge but only one flowing out of experimentation’. According to Eigen, ‘A theory has the only alternative of being right or wrong; a model has a third possibility. It may be right but irrelevant’ ”.

CNR’s life story is the subject of the next 4 chapters. Born in 1934 to a government employee in Bangalore, CNR finished school and college at Bangalore before going to Benares Hindu University to do his Masters and Purdue University, USA for his PhD degree. After a few years of research in the US, he returned to India to work at the Indian Institute of Science (IISc) and subsequently IIT Kanpur eventually returning to IISc in 1976 where he later became the Director. He was and continues to be extremely prolific, having published 1600 papers and authored more than 50 books. National and international recognition followed as did the membership of various scientific academies and policy making bodies.

Though there are some interesting observations and trivia in these chapters (like for instance his encountering a doughnut for the first time and mistaking it for a *vada*), by and large they are an account of his research, the papers and books he wrote, the accolades that he got etc. What are missing are his views about the larger world or even the broader world of science. The description of his scientific work is unfortunately too perfunctory and technical to be of any interest to the non-specialist. And it does get pretty tiresome to read page after page of this honour or that medal that he got or this lecture he gave that got “eloquent praise” from that famous scientist etc.

Thus, for instance, there is no discussion about the way science has developed in independent India where a huge dichotomy exists between the research institutes (which are supposed to be the sites for research) and the universities which are supposed to be for teaching alone. This is an anomalous situation since it is well recognised that universities need to be the loci for research since research and teaching feed synergistically into each other.

The genesis of this privileging of the research institutes vis-à-vis the universities goes back to the pre-Independence era. At that time the Congress party was trying to prepare a blueprint for how the soon-to-be-independent India was to be run. For Science & Technology, opinion was split between two camps led by Homi Bhabha and Meghnad Saha. As argued by Etel Solingen and Robert Anderson amongst others, the two had very different views. Bhabha advocated the primacy of elite research institutes while Saha favoured the view that universities should be the primary location for scientific research. The suave and anglicized Bhabha being very close to Nehru won the day while Saha’s views were ignored.

The legacy of this decision is evident in our scientific landscape today. While the universities are constantly starved of funding for any meaningful and cutting edge research, a few research institutes work in a world-class environment. This is not to argue that the institutes are not doing excellent research. It is an argument for a more broad based approach and one which ultimately would be more productive simply because of the previously mentioned synergy between teaching and research.

The vast potential of talent which exists in the more than 700 universities in the country, if nurtured and encouraged could possibly make a huge difference to the quality and quantity of research in the country. Strangely, CNR, who is obviously extremely passionate about promoting science in the country, does not have anything to say about this fundamental issue. In fact, despite occupying the highest positions of decision making in S&T policy, there is little evidence that he attempted to do anything about it. To be fair, he was instrumental in the establishment of the Indian Institute of Science Education & Research (IISER) in various parts of the country and these institutions have performed very well. However it would seem obvious that though the opening of new institutions is welcome, the existing ones also need to be nurtured and improved and be left to decay and die.

Eminent scientists in India seem to have a fairly predictable career graph- a period of excellent research followed by scientific administration and policy making and then after their superannuation, running institutes that the government had helpfully set up for them when they were in positions of power. CNR was no exception, though it must be said that he continues even today to be an active researcher. After his retirement, he ran the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) that he had helped found earlier, for several years and continues to be associated with it.

Though widely respected as a scientist, CNR is no stranger to controversies. As early as 1987, there was a controversy regarding preponing the date of receipt of some research papers when in fact, the manuscripts were received after the formal date of publication. This was to establish precedence in getting the credit for the research. The editors of the journals as well as CNR admitted to this "lapse" when asked by the Society of Scientific Values. This strangely finds no mention in the book. In 2011, a paper which CNR had co-authored was found to have some parts which were plagiarised. This was easily caught by the standard anti-plagiarism software which all journals use now. The authors did publish their apology subsequently but blamed it on a lapse on the part of their graduate student who was the first author. The renunciation of authorial responsibility by the co-authors was commented on by several commentators to be extremely unfair and unfortunate. This controversy is mentioned in the book, though strangely CNR adds that "Many of my friends abroad were shocked by the unwarranted reactions in India on a matter of routine occurrence" [sic]. Unwarranted reactions? Routine occurrence? One can only imagine how the career of a not-too-well-known researcher caught in similar circumstances would proceed after such an incident.

The book also has a section on short biographical sketches of the scientists who have inspired the author. The Epilogue has his personal reflections on his career and his views on science in India. It would have been nice if instead of the bulk of the book recording his various achievements, he had expanded on these views and given the readers some insights. The book is a let-down - an expanded Wikipedia piece would have almost all that is there in the book except possibly the fact that a doughnut was mistaken for a *vada*!

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