

CURRENT SCIENCE

Volume 82 Number 2

25 January 2002

EDITORIAL

Transition

I have got my leave. Bid me farewell my brothers! I bow to you all and take my departure.

Here I give back the keys of my door—and I give up all claims to my home. I only ask for last kind words from you.

We were neighbours for long, but I received more than I could give. Now that the day has dawned and the lamp that lit my dark corner is out. A summons has come for me and I am ready for my journey.

— Rabindranath Tagore
(*Gitanjali*, Translation by the Author,
Macmillan, 1913)

*Life is real, life is earnest,
And the grave is not its goal,
Dust thou art, to dust returnest,
Was not spoken of the soul*

— Henry Longfellow

Bangalore was a quiet, sedate town in the 1950s and the Indian Institute of Science was tucked away in its northern corner, its existence unannounced even by a signboard. There were no impressive gates at its entrance, no visible sign that the cluster of low-lying buildings housed an institution that already had an international reputation as a centre for scientific research; one that would serve as a centrepiece for the development of science in post-independence India. C. V. Raman had already established the physics department as a major presence, in the tumultuous period between his entry into the Institute as its Director in 1935 and his formal retirement as a professor of physics in 1948. Despite being armed with the Nobel prize, a level of attainment that would have made him invincible today, Raman was removed as Director by the Institute's Council in 1937, moving him from the centre of administrative power to the seclusion of his own laboratory. Homi Bhabha had come and gone, moving to Bombay (now Mumbai) to begin the establishment of the Tata Institute of Fundamental Research and the Atomic Research Centre at Trombay, now named after him. By the mid-1950s the Institute had begun to lapse into middle-aged obscurity. Jawaharlal Nehru and his principal advisors were already embarking on a major program of

building India's scientific infrastructure; new institutions, national laboratories and the glamorous Indian Institutes of Technology were already on the anvil. Few would have spared a thought for an ageing and established institute that seemed to be slowly slipping into a comfortable state of academic somnolence. It was into this ambience that Satish Dhawan made his entry into the Institute in 1951, as a member of the faculty of the Aeronautical Engineering department, rising in dramatic fashion to become its Director in 1962, at the remarkably young age of 42. When he formally retired in 1981, he left an institution that had grown enormously in size and scope and was arguably, the pre-eminent institute of science in the country, comparable to many in the developed nations of the West. Legend has it that Dhawan entered the Institute as an extraordinarily dashing young man, driving a red sports car; I saw him when he left it, a remarkably handsome and distinguished figure exuding a quiet charm that was uniquely his. In this period he transformed the academic structure of the Institute, moving it from a feudal departmental structure presided over by a single, powerful, and most often, inhibitory professor to a more collegial model which promised the prospect of collective decision making on academic matters.

During his long innings as its Director, Satish Dhawan gently and at times, unobtrusively guided a transformation of an established academic institution; a formidable task that required a clear vision, a firm resolve and an ability to persuade recalcitrant academics to tread a new path. Experience tells us that in our surroundings when old institutions begin to falter, it is easier to contemplate setting up new ones; the hope is that this strategy sidesteps the difficult problem of effecting reform and change, in institutions with set traditions. Dhawan's administrative achievement at the Institute in Bangalore, has faded into obscurity, dimmed by the lustre of his achievement in building up the Indian Space Research Organization (ISRO) into the formidable structure it is today.

In the period between the late 1960s and early 1970s, Dhawan began a program of expansion at the Institute, which would bring in a very large number of faculty, some of them at the professorial level. The institution was soon to acquire a breadth of discipline that was

unprecedented; the influx of new blood hastening the process of democratization. Many new departments, which were later to become pre-eminent, were established during this time, among them were Computer Science and Automation, Centre for Theoretical Studies, Molecular Biophysics Unit and Solid State and Structural Chemistry Unit. The latter two units were to bring to Bangalore two of India's most accomplished scientists, G. N. Ramachandran, already a world renowned figure, and C. N. R. Rao who would very quickly have a major influence not only on the development of the Institute, but indeed on the growth of contemporary science in India. Dhawan's ability to attract men of unique and varied talents and his role in shepherding the Institute during this phase of explosive growth, a period that coincided with the development of mechanisms for large-scale funding of academic science, must surely rank as one of his finest achievements. The Institute's focus on research, nurtured carefully by Dhawan, deepened in later years, providing an institutional ambience that was clearly distinct from other institutes of technology.

Dhawan's love for Bangalore and his attachment to the Institute led inevitably to the choice of this city as the headquarters of the Indian Space Research Organization. Vikram Sarabhai's untimely death in 1971, catapulted Dhawan into a dual role heading both ISRO and the Institute for a decade. The space program has had a wonderfully romantic history, with Satish Dhawan as the guiding force; in times of failure he shouldered responsibility, in the heady days of success he stood quietly by the sidelines. Dhawan's ability to build an organization whose success relied on teamwork, discipline and collective dedication was truly remarkable, particularly when one recognizes that he was simultaneously guiding an institution, where individuality and idiosyncrasy were cherished qualities.

My view of Satish Dhawan is necessarily circumscribed by the limited perspective from which I saw him. For a man of many facets, any historical assessment must, of course, come from a scholarly study of his life and times. But, at the distance from which I viewed him, separated by the gulf of age, position and discipline, Dhawan was a man who engendered immense respect by his grace of conduct. There was an engagingly shy air of reticence about him, uncommon in men, who have experienced power and distinction. In thinking about Dhawan, my thoughts drifted, almost inevitably, to some of his contemporaries, whom I have known, who have also departed in the last few months. Just a few days before Dhawan's passing, T. R. Govindachari, an organic chemist of special distinction, died in Chennai at the age of 86. In the months before, two more of India's eminent scientists passed away; V. Ramalingaswami at the age of 80 and G. N. Ramachandran in his 79th year. Govindachari built an extraordinary record of natural products research in the most modest surroundings of Presidency College,

Chennai in the 1950s. He moved in the mid-1960s to the Ciba-Geigy Research Centre in Goregaon as its first Director; an unusual step at the time. This was the first major private R&D centre in India, opened by Jawaharlal Nehru in 1963. Govindachari was an amazingly uncomplicated person, interested passionately in experimental work. He managed to work in a laboratory well into his eighties, returning to Chennai to set up two private R&D centres. I have rarely met anyone with such an enthusiasm for experimental detail; he was always completely immersed in the wonderful molecules he coaxed out of nature. Govindachari set standards for scholarship and rigour that few are prepared to emulate today. G. N. Ramachandran, a man of remarkable achievement and distinction, also did his path-breaking work on protein and polypeptide structures in Chennai, before moving to Bangalore in 1971; a transition initiated by Dhawan. Ramachandran, a biophysicist, was brilliant, unpredictable, totally dedicated to his science, leaving behind him an indelible impression on his discipline. Finally, there was V. Ramalingaswami, who more than anyone else influenced the development of medical research in India. He headed the All India Institute of Medical Sciences and later the Indian Council of Medical Research. His work in the area of nutrition brought him great international distinction. Until the end he was a much respected figure in making biomedical research policy. I saw and heard him on many occasions and was always struck by the clarity of his thinking, the elegance of his presentations, the intensity of his commitment and above all, the graciousness of his manner. In thinking about this quartet of remarkable men of science, I was reminded of the famous quartet of Indian spinners, who spun us to many a famous victory – Bedi, Prasanna, Chandrasekhar and Venkataraghavan. Here were men of different backgrounds, contrasting styles and distinctive abilities, consistently propelling their team towards success. The four men of science also had their unique styles; Dhawan and Ramalingaswami were men who presided over Academies, rubbed shoulders with Prime Ministers, accepted great responsibilities and challenges, whose dedication is evident in the accomplishment and character of the institutions they built. Ramachandran and Govindachari were academic scientists, focusing intensely on their chosen disciplines, carving for their laboratories a level of international visibility, that allowed their surroundings to bask in reflected glory. These were all men who dedicated themselves to the cause of science in India, as men in the prime of youth in the heady years after independence. They played full and magnificent innings, which bear retelling in the years to come. For those who bemoan the absence of role models in our midst, reflecting on Satish Dhawan and his remarkable contemporaries may be instructive. Many of us must count ourselves as fortunate to have seen them all.

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