

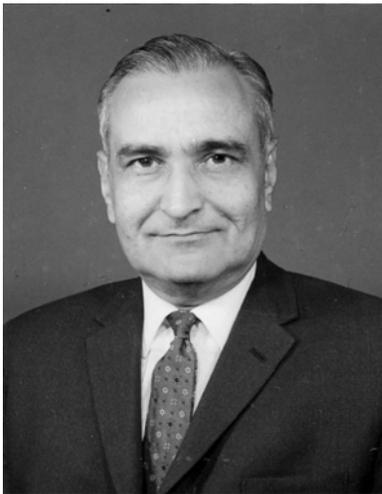
Remembering Nautam Bhatt

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At a time when India is looking to leverage its elite, but substantial, tradition of engagement with modern science into a basis for a place of honor in an emerging global knowledge economy it seems appropriate to honor the founders of this tradition.

One such founder was Nautam Bhagwanlal Bhatt who passed away just this past July at his home in Madison, New Jersey at the ripe old age of 96. I met Dr. Bhatt rather late in his long life - at the home of his son, my Princeton colleague Professor Ravindra Bhatt - and he was still a commanding figure, consistent with his remarkable accomplishments in life.



Nautam Bhatt was born in Jamnagar in 1909, schooled in Bhavnagar and completed his undergraduate education in Ahmedabad. He then left Gujarat to obtain his M.Sc. in Physics under the great C.V. Raman, at the Indian Institute of Science (IISc) in Bangalore. Following a year of teaching at Samaldas College, Bhavnagar, he was awarded a fellowship by the Maharaja of Bhavnagar to study at Massachusetts Institute of Technology, where he obtained his Doctorate in Science in 1939, for his research on the application of wave theory to architectural acoustics under his advisor, the theoretical physicist, Professor Philip Morse.

Nautam Bhatt returned to India after his studies and spent a major part of the 1940s at IISc as a faculty member, and became Professor and first acting head of the newly created Department of Electrical Communications Engineering. This is also where he met his wife Indira- herself a pioneering

Indian woman in science who who was later to retire as Head of the Department of Biochemistry, Maulana Azad Medical College, Delhi and who survives him.

In 1949, two years after India's independence, he joined the Defence Science Organization, where he served until his retirement. He was one of the pioneers in the initial development of the Defence Science Laboratory in Delhi. From 1953-7, his services were lent to the Council of Scientific and Industrial Research (CSIR), Government of India, to plan and build the Central Electronics Engineering Research Institute (CEERI), in Pilani, Rajasthan. He then returned to Delhi to organize a Radar research unit, which later evolved into the Defence Research Development Laboratory in Hyderabad, later headed by President Abdul Kalam. From 1962 until retirement in 1969, he established the Solid State Physics Laboratory in Delhi and was its founding Director. His role in founding several institutions at the forefront of scientific research in the decades around India's independence is perhaps unique among scientists in India.

Under his leadership and active involvement, the Defence Laboratories undertook several important research projects, including the development of semiconductor grade silicon, development and fabrication of solar cells, fabrication of Helium Neon and semiconductor lasers, and several other semiconductor devices. Several of his own projects were classified - such as the development and deployment of the VT Fuse for the Department of Defense in the mid-1960s, in response to India's security needs at that time. On republic day (January 26) 1969, it was announced that he was awarded a Padma Shri by the President of India - Dr. Zakir Hussain; most appropriately, the actual ceremony was held on Bhatt's 60th birthday,

Although forced to retire by rules that made little sense for people such as him, he continued to pursue his passionate interest in science, engineering and acoustics. He spent a year as Scientific Advisor to Alembic Chemical Works in Baroda. In addition, he was a frequent advisor to the Union Public Service Commission of India, on the advisory board of Indian Institute of Technology, Madras, and served on numerous Science Advisory and Policy Committees for CSIR and Government of India. In 2003, he received the Distinguished Service Honor Award of the Institution of Telecommunication Engineers.

Nautam Bhatt was a renaissance man - he also had a professional interest in Hindustani Music. He was an accomplished vocalist who learnt the intricacies of the classical style from the late Ustad Lal Khan. He was a founding member of the Bhartiya Kala Kendra and served for a long time on the All India Radio's audition board with top musicians such as the late Ustad Amir Khan. Fittingly, his dual love for music and acoustics led him to design the acoustics of several theatres and concert halls. Noteworthy, were the acoustical designs of the first two 70mm theatres in India - Sheila and Odeon in Delhi, as well as Birla Matushri Sabhagruha in Mumbai. In addition, he designed the acoustics of several moderate sized concert halls specifically for Indian Classical Music for a more natural sound, which did not require the use of powerful audio systems.

Clearly he led a remarkable life. At a time when the foundations of modern Indian science were being laid, there was a need for visionaries, and Nautam Bhatt was one of those, who by dint of sheer talent, acquired the skills necessary to play this role for his countrymen. Unlike many other giants of his generation, he also had the satisfaction of living long enough to see the early promise of Indian science begin to be redeemed on a global stage. It is hard to imagine a more suitable coda to his life.

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