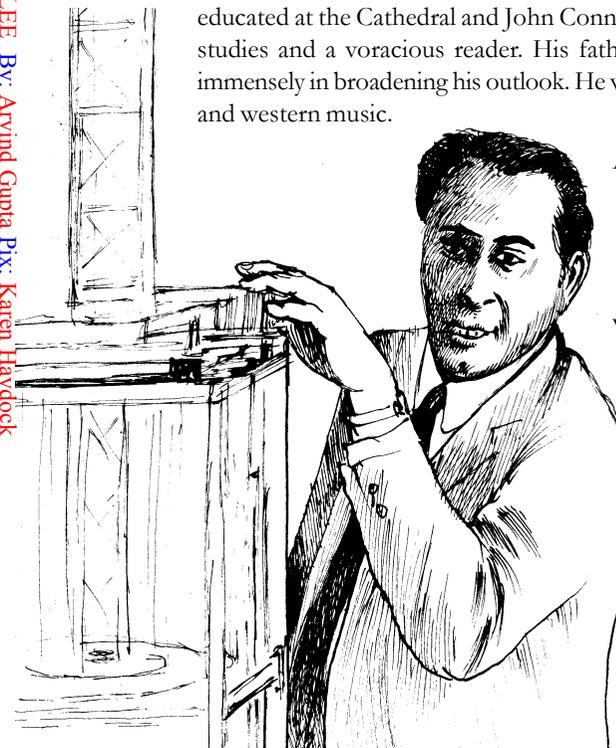


*“No country which wishes to play a leading role in the world can afford to neglect pure or long-term research,”* said Bhabha. He was the sole architect of India’s Nuclear Energy programme and nurtured its Space and Electronics programmes. He created institutions of excellence around accomplished individuals. Institutions like the TIFR, BARC and ISRO bear testimony to his futuristic vision.

Homi Jehangir Bhabha was born on 30 October 1909 in Bombay in a distinguished family related to the Tata’s. The house he was born in was later destined to be the cradle of India’s Nuclear Programme. Young Homi was educated at the Cathedral and John Connon High School. He was brilliant in studies and a voracious reader. His father’s wonderful library helped him immensely in broadening his outlook. He was also keenly interested in painting and western music.



After passing Senior Cambridge he studied for a few years at the Royal Institute of Science in Bombay. Then he proceeded to Cambridge for higher studies. His father wanted him to become an engineer so that he could later join the Tata Group as an executive. But Homi was only interested in studying physics. Physics was then undergoing a major revolution and Cambridge was the place for action.



Physicists Albert Einstein, Hideki Yukawa, John Wheeler, and Homi Bhabha

Homi's liberal father allowed him to study for the Mathematical Tripos after completing the Mechanical Sciences Tripos. In 1932, the young Bhabha won the Rouse Ball Travelling Fellowship. This enabled him to work with Wolfgang Pauli in Zurich and Enrico Fermi in Rome. Later, the Isaac Newton Studentship allowed him to spend time at the Niels Bohr's Institute in Copenhagen. In between Bhabha completed his PhD thesis under the supervision of R. H. Fowler. Fowler was also the guide of the brilliant astrophysicist S. Chandrasekhar.

Bhabha's Cambridge days were exciting. He discovered the electron-positron scattering process which is now known as *Bhabha scattering*. Along with Walter Heitler he enunciated the *cascade theory* describing cosmic-ray showers. These contributions established him as young and talented physicist.

In 1939 Bhabha returned to India for a brief holiday. Just then the Second World War broke out. The onset of war dried up availability of funds for research in Europe. In a sense it was a blessing in disguise for now Bhabha had to look for a job in India. His reputation got him a research position at the Indian Institute of Science, Bangalore. Here, with a grant from the Sir Dorab Tata Trust he started research on cosmic rays.

During his stay in Bangalore Bhabha's theoretical work led to the construction of an equation for a particle with two mass-states (now called the *Bhabha Equation*). He also collaborated with Harish Chandra who later attained fame as an eminent mathematician. To study cosmic ray behaviour at the higher altitudes he built Geiger Counter Telescopes and flew them in Air Force planes.

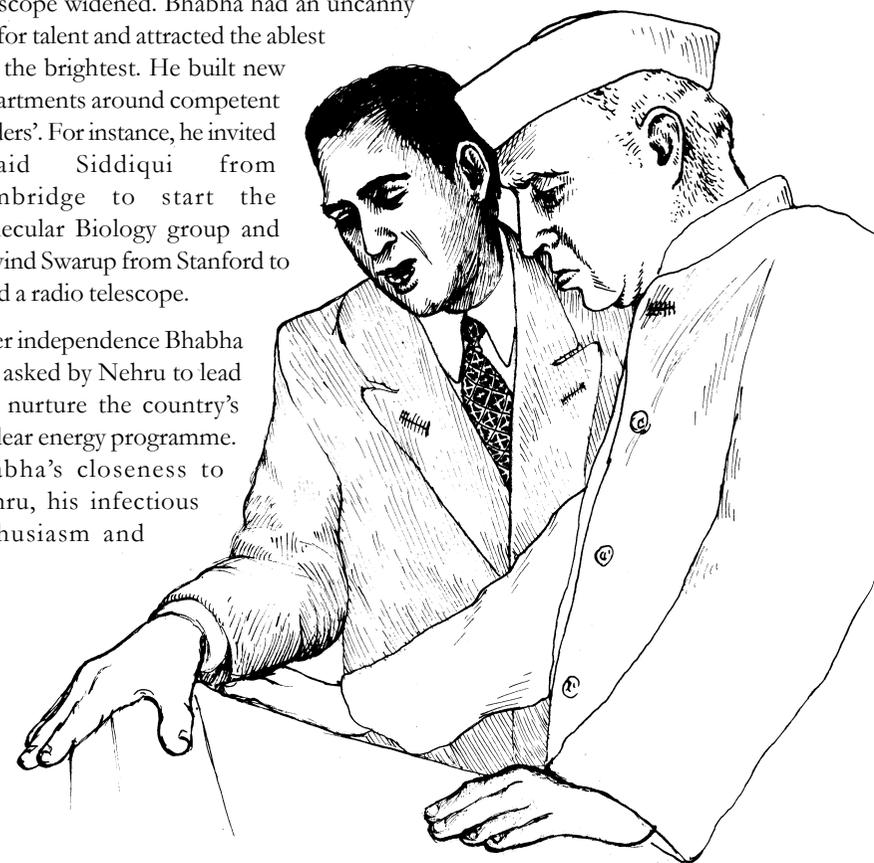
With the end of the war Bhabha was again confronted with a choice. Should he return to Europe which offered abundant opportunities or should he stay back in India? He sought the advice of his friend J. R. D. Tata asking, "*It is one's duty to stay in one's own country and build schools comparable with those that other countries are fortunate in possessing?*"

Bhabha was of the firm opinion that these *schools of excellence* would provide the scientists for the country's Nuclear Energy development and India will not have to seek these experts from abroad. With a seed grant of just one lakh rupees Bhabha founded the Tata Institute of Fundamental Research (TIFR) on June 1, 1945. The Institute started in Bangalore but within a few months was shifted to Bombay and located in the very house where Bhabha was born!

India's first Prime Minister Jawaharlal Nehru shared Bhabha's world view on the need to build up indigenous capabilities in science and technology. He provided Bhabha the political space, resources and a free hand to build the country's scientific infrastructure.

Initially the TIFR concentrated on cosmic rays and mathematics. But slowly the scope widened. Bhabha had an uncanny eye for talent and attracted the ablest and the brightest. He built new departments around competent 'leaders'. For instance, he invited Obaid Siddiqui from Cambridge to start the Molecular Biology group and Govind Swarup from Stanford to build a radio telescope.

After independence Bhabha was asked by Nehru to lead and nurture the country's nuclear energy programme. Bhabha's closeness to Nehru, his infectious enthusiasm and





boundless energy cut through the proverbial bureaucratic red-tape and things began to take shape. Both the TIFR and the Indian Atomic Energy Programme blossomed in a few short years.

His achievements drew a shower of awards on Bhabha. He was elected a Fellow of the Royal Society in 1941 awarded the Hopkins prize in 1948, the Padma Bhushan in 1954 and countless honorary doctorates. He will always be remembered as the Father of Nuclear Energy in India.

Though a theoretical physicist, Bhabha was also well versed in technology. He laid the foundation for India's Space programme which was later nurtured and steered with great care by Vikram Sarabhai and Satish Dhawan. After the 1962 Chinese attack Bhabha realised India's backwardness in electronics. He prepared a blueprint to help the country leapfrog in this vital area.

Bhabha was a multifaceted personality, as fluent with complex mathematics as he was with the nuances of classical music. He was an artist and a connoisseur of all the good things in life – art, music, literature, architecture, landscaping etc. For his catholicity of interests he was hailed as a modern day Leonardo. After the TIFR building was constructed Bhabha commissioned the painter Maqbool Fida Hussain to do a wall mural, for which he was then paid a princely sum of Rs 15,000/-. Few people know that 1% of the TIFR budget was earmarked for buying 'art'. Bhabha's paintings still adorn the TIFR and BARC campuses. He represented the best in both the sciences and the arts. Because of his many preoccupations he never married. When a reporter once asked him about his marriage, he said, *"I am married to creativity."*

As a young man Bhabha told his father, *"Who says we can't do science in India?"* Not only did he do cutting-edge research but he set up *institutes of excellence* to enable thousands of Indians to do the same.



At the height of his career Bhabha's life was snatched away when the plane he was travelling in crashed on Mont Blanc in France on 24 January 1966. All the passengers died leaving the nation in shocked grief.