

Homi Jehangir Bhabha

(1909 – 1966)

Mumbai Legacy Project
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Homi Jehangir Bhabha was born on 30th October 1909, to Jehangir H. Bhabha and Meherbai Framji Panday at Kenilworth House on Peddar Road, present-day's Dr. Deshmukh Marg, which belonged to Bhabha's aunt Cooverbai Panday. He was a pioneering physicist who led India into its first nuclear programme in 1944. He believed in building expertise in the domain of nuclear energy in India. The Former Chairman of the Atomic Energy Commission, Homi Sethna, said that Bhabha was a visionary who dreamt of a self-reliant India through progress in nuclear power. He visualised a powerful country, rich in knowledge and fearless in scientific experiments. Nuclear science was simply Bhabha's way of life (Sethna 2006).

He was named Homi after his paternal grandfather, Dr. Hormusji Bhabha, who was the Inspector-General of Education in the princely state of Mysore. (Nath 2022, 15). As a child, Homi hardly slept, which worried his parents. On consulting a famous child specialist in Paris, they told the parents that there was nothing to worry about and that Homi had an extraordinarily active brain that kept him from sleeping. The doctor told the parents that all they could do was create a favourable environment at home, and the child would surely grow up to be a genius (Nath 2022, 16).



As a young boy, Homi Bhabha was exposed to great nationalist fervour. Every afternoon, he would walk across the road to Esplanade House, the ancestral home of Jamsetji Tata. His paternal aunt Meherbai was married to his elder son Dorabji Tata. Homi Bhabha witnessed the emerging Indian industry and caught glimpses of the conversations between political leaders like Mahatma Gandhi, Pandit Jawaharlal Nehru and the industrialists (Chowdhury and Dasgupta 2010, 17-18). These experiences would, in many ways, shape his visions of science after Independence. He rose to prominence as the chief architect of India's nuclear program. His relentless pursuit of knowledge and groundbreaking research propelled him to the forefront of the nuclear renaissance, earning him accolades and respect on the global stage (Penney 1967, 79-80).

Homi Bhabha was schooled at the Cathedral and John Connon School, Bombay and years later, he acknowledged that the school did much to foster his love for science when he received a letter in 1955 from Mr. C.H. Hammond, the former Headmaster. During his time in school, Homi learnt Latin and French and developed an appreciation for poetry, art and music. At eight years old, he knew symphonies of Mozart, Beethoven and Wagner. He had already read Einstein's relativity theory, which was revolutionary in itself, as it invalidated the assumptions of classical physics and narrowed the applicability of Newton's laws. It allowed a new understanding of the world while he took up the Senior Cambridge Examination. However, at the age of sixteen, when he was too young to join any foreign university, he attended Elphinstone College and the Royal Institute of Science for a year before he flew to Cambridge. In the one-year delay, he developed a passion for physics. When the distinguished American physicist, Arthur Compton, delivered a lecture on the 'cosmic rays', the concept was not only brought to his mind for the first time but it would also become his specialised field of study later (Chowdhury and Dasgupta 2010, 15-22).

Homi Bhabha defied the will of his father, as he continued to be passionate about physics despite being enrolled in an undergraduate engineering programme at Cambridge. In a letter to his father, he wrote, "I seriously say to you that business or (a) job as an engineer is not the thing for me. Physics is my line. I know I shall do great things here. For, each man can do best and excel in only that thing of which he is passionately fond, in which he believes, as I do, that he has the ability to do it, that he is in fact born and destined to do it. Besides, India is not a land where science cannot be carried on...I am burning with a desire to do physics. I will and must do it sometime. It is my only ambition (Nath 2022, 21)'.

At Cambridge, Homi Bhabha's artistic skills were enhanced as he sketched organ players, and designed sets for plays like *Life is a Dream* and *Idomeneo* for the Cambridge Musical Society. He also was well-versed with Western classical music, listening to gramophone records and attempting a few musical compositions (Chowdhury and Dasgupta 2010, 26-28).

The revolution in the field of physics around that time was the propulsion that Homi Bhabha needed to advance into the world of physics. Bhabha earned his PhD degree in 1935 with R. H. Fowler as his thesis supervisor from the Cavendish Laboratory, where the electron was discovered by J. J. Thompson in 1897 and Ernest Rutherford, who proved, in 1910, the existence of a tiny nucleus in atoms and made the discovery that the positively charged nucleus occupies a small space around which electrons move.

In the next few years, Bhabha published research papers and collaborated with some brilliant physicists across the globe. The Rouse Ball Travelling studentship from 1932-34 allowed him to visit Enrico Fermi at the Institute of Physics in Rome when he wrote his first scientific paper. From 1934 to 1936, Bhabha held the Issac Newton studentship. In 1936, he was awarded a Senior Studentship of the Exhibition of 1851. He fell in love with physics in Bombay, which deepened in Cambridge. When he was offered the position of Director of the Indian Institute of Science (IISc) Bangalore, he accepted. Prof. C.V. Raman, highly impressed by his work, said at the Annual Meeting of the Indian Academy of Science in Nagpur (1941), "Bhabha is a great lover of music, a gifted artist, a brilliant engineer and an outstanding scientist... He is the modern equivalent of Leonardo da Vinci (Chowdhury and Dasgupta 2010, 69)". Bhabha gave 25 lectures on his work on cosmic rays during this period. Sir Dorab Tata Trust gave him a grant, with which Bhabha built his cosmic ray research unit (Nath 2022, 37).



During his five-year period in Bangalore, Bhabha realised the difficulty of conducting research activities in India and highlighted the need for a world-class research facility for original work in nuclear physics, cosmic ray physics, high energy physics and other frontiers of physics. At the advice of his friend J. R. D. Tata, he sent a proposal to the Sir Dorabji Tata Trust. In a letter to Sir Sorab Saklatvala, he wrote, “When nuclear energy has been successfully applied for power production in, say, a couple of decades from now, India will not have to look abroad for its experts but will find them ready at hand.”

In May 1945, the Tata Institute of Fundamental Research (TIFR) was established. It stood as a pillar of India’s scientific renaissance. Bhabha became the first Chairman of the institute and moved to south Bombay after six months to Kenilworth House. The institute rented half of the property for 200 rupees. Incidentally, Bhabha was born in this house, and the room where Bhabha was born became his office. It was inaugurated on 19th December 1945 by Sir John Colville, the then Governor of Bombay (Nath 2022, 52).

The Kenilworth House, which now housed the TIFR, nurtured India’s nuclear programme. The Atomic Energy Committee was formed in 1945, even before the first testing of the atomic bomb by the USA and the dropping of bombs on Japan. Since there was no Indian establishment devoted to nuclear studies at the time, a programme of research in this field was initiated at the TIFR, where the committee began to meet from 1946 onwards.

In less than a fortnight after independence, on 26 August 1947, the Board of Research on Atomic Energy was set up and within a year the Indian Atomic Energy Act was enacted in 1948. Prime Minister Pandit Jawaharlal Nehru took direct responsibility for the programme despite being 20 years older than Bhabha. He shared the same vision, leading to a great bond between them.

Bhabha’s clear-sightedness, versatility and tenacity led to the establishment of the Atomic Energy Commission (AEC) in the Department of Scientific Research. The AEC funded research on nuclear technology, conducting some practices at the old Kenilworth House. On 3rd January 1954, the Commission decided to build an atomic energy establishment at a sleepy fishing village, Turbhe, called Trombay when Anglicized. Using the authority of the Indian Atomic Energy Act of 1948, a separate Ministry, the Department of Atomic Energy (DAE), was created in August 1954. The same year, earlier, Bhabha was honoured with the Padma Bhushan award by the government of India. DAE was charged solely with the development of atomic energy for peaceful purposes and was in direct charge of the Prime Minister.

Bhabha was appointed Secretary to the Government of India in the Department. The headquarters of the Ministry were located in Bombay, which was a natural choice for Homi Bhabha, as in this way, he could supervise the scientific activities of the Trombay Establishment. A new authority named the Atomic Energy Establishment, Trombay (AEET), organised the activities there (Nath 2022, 78).

Homi Bhabha presided over the first United Nations Conference on the Peaceful Uses of Atomic Energy, a political event of great significance as the international tension of the Cold War gradually subsided. Scientists from the Soviet bloc and the West were encouraged by their governments to collaborate on a great technical peaceful enterprise under the auspices of the United Nations. Homi Bhabha reportedly passed away in a plane crash while flying to Vienna in the Boeing 707 in 1966. The news of his untimely demise was a profound shock for the nation.



Until 1966, Bhabha had continued the work of the International Atomic Energy (I.A.E.A.) as a member of the Scientific Advisory Committee and as the Indian spokesman at the General Assembly of the Agency (Penney 1967, 17-21). His work is carried forward in several research institutes closely associated with advancements in atomic energy, like the Tata Memorial Hospital, the Indian Cancer Research Centre, the Salia Institute of Nuclear Physics and the Physical Research Laboratory at Ahmedabad, institutions with which he had lasting associations.

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