

The man who made the buildings soar

The engineer associated with some of India's most iconic projects looks back at an illustrious career.

Written by [Shiny Varghese](#) | Updated: January 31, 2016 2:39:58 pm



Mahendra Raj in his office in Delhi

Engineers are the unsung heroes of architecture. They shape an architect's design vision, giving concrete shape to her blueprint. Ninety-two-year-old structural engineer Mahendra Raj is one such little-acclaimed craftsman, whose collaboration with legendary architects has given the country many firsts.

In his 60-year-long career, Raj has been associated with many iconic projects: from Le Corbusier's sculptural high court in Chandigarh to BV Doshi's Tagore Memorial Hall, Ahmedabad, and Raj Rewal's Hall of Nations, Pragati Maidan, Delhi. Be it the truncated pyramid-like concrete shell roof at the Salvacao Church in Mumbai, the NDMC building in Delhi that stretches like a concrete cat towards the skies, or the cutting-edge airports in Hyderabad and Jaisalmer, Raj's structural expertise can be seen across the country.

Lahore-born Raj came from a family of engineers. His father and two older brothers were engineers, and his love for math made engineering a natural choice. After his graduation, Raj was appointed assistant engineer in the Punjab Public Works Department (PWD) in 1946 in Chandigarh, around the time Pandit [Jawaharlal Nehru](#) had invited Corbusier to design the city. Raj, along with a senior engineer, assisted Corbusier in building the Punjab and Haryana High Court and Secretariat, as part of Chandigarh's Capitol Complex.

“Corbusier insisted on including French engineers in his team of architects for the project. But PL Varma, then chief engineer, PWD, was emphatic that Indian engineers do the job. This, of course, frustrated Corbusier, and every time something went wrong, he would remind Varma that the problems wouldn't

have risen if he had brought his team. However, the building was done and though we did not have expertise in building large-scale concrete structures, it's standing there for all to see," says Raj.

That Varma had the courage to stand up for Indian engineers would prove a valuable lesson for Raj. Years later he would speak his mind to Louis Kahn, while building the Indian Institute of Management in Ahmedabad in 1961. The National Institute of Design were consultants for the project and they brought architects Doshi and Raj on board. "Kahn insisted that the building be done in brick. He had the impression we didn't have the expertise in concrete. We told him there was Corbusier's Mill Owners' Association building in Ahmedabad and Chandigarh's entire Capitol complex. But he had his way. His dream was to create a brick building on stilts, but being an earthquake-prone area, we feared for the safety of the building. He liked a few suggestions we gave, and incorporated those in the design, which allowed for wide arches," says Raj.

Around that time, many architects, besides Doshi and Correa, were returning home after their education abroad — Achyut Kanvinde and Shaukat Rai, Rewal, Ram Sharma, Ranjit Sabiki, and Kuldip Singh. In an interview to Swiss curator and critic Hans Ulrich Obrist, Raj says, "Our common objective was to set up practices here, find our own roots and rise to the same stature that other countries had attained. We sought an Indian idiom that expressed our ancient culture but was in tune with modern times. For us engineers, there was exposure to new materials like concrete, steel and precast concrete. We were all idealists when we started out. Not that we aren't any more!"

He began Mahendra Raj Consultants in Mumbai in 1960. By then, he had met Correa, with whom he built the Unilever Pavilion in Pragati Maidan. Quite like a crumpled sheet of paper, it was a maze of ramps and platforms enclosed by walls, some caving in, some slanting out. Ten years later, the same venue would see another of Raj's engineering feat — Rewal's Hall of Nations. It was the world's first large-span space frame in reinforced concrete. "Raj is one of the most talented engineers of his generation and his contribution to Indian architecture is significant. He not only helped execute my vision, but enhanced it," says Rewal.

Raj's life in PWD gave him ample scope to explore new materials. "When I worked with Corbusier, I learnt that whatever project or drawings come, I have to give it strength. In my engineering career, I have worked despite the scarcity of materials. It is that need for invention that made us set the trend," says Raj.

While his contribution to the profession of consultancy merits mention — he helped set up the Consultancy Development Centre — his effort in framing a legislation for the regulation of the profession of engineers has been unending. It resulted in the government establishing the Engineering Council of India in 2002. An active member in the International Federation of Consulting Engineers, he has many awards and recognitions to his name.

A book, *The Structure: Works of Mahendra Raj* by Vandini Mehta, Rohit Raj Mehndiratta and Ariel Huber, will be released next month in Mumbai. The book features 28 of his landmark projects, which "narrates the energetic period of nation-building, post Independence".