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J.V. Narlikar: Visionary Cosmologist, Tireless Science Populariser, Beloved Mentor

Varun Sahni
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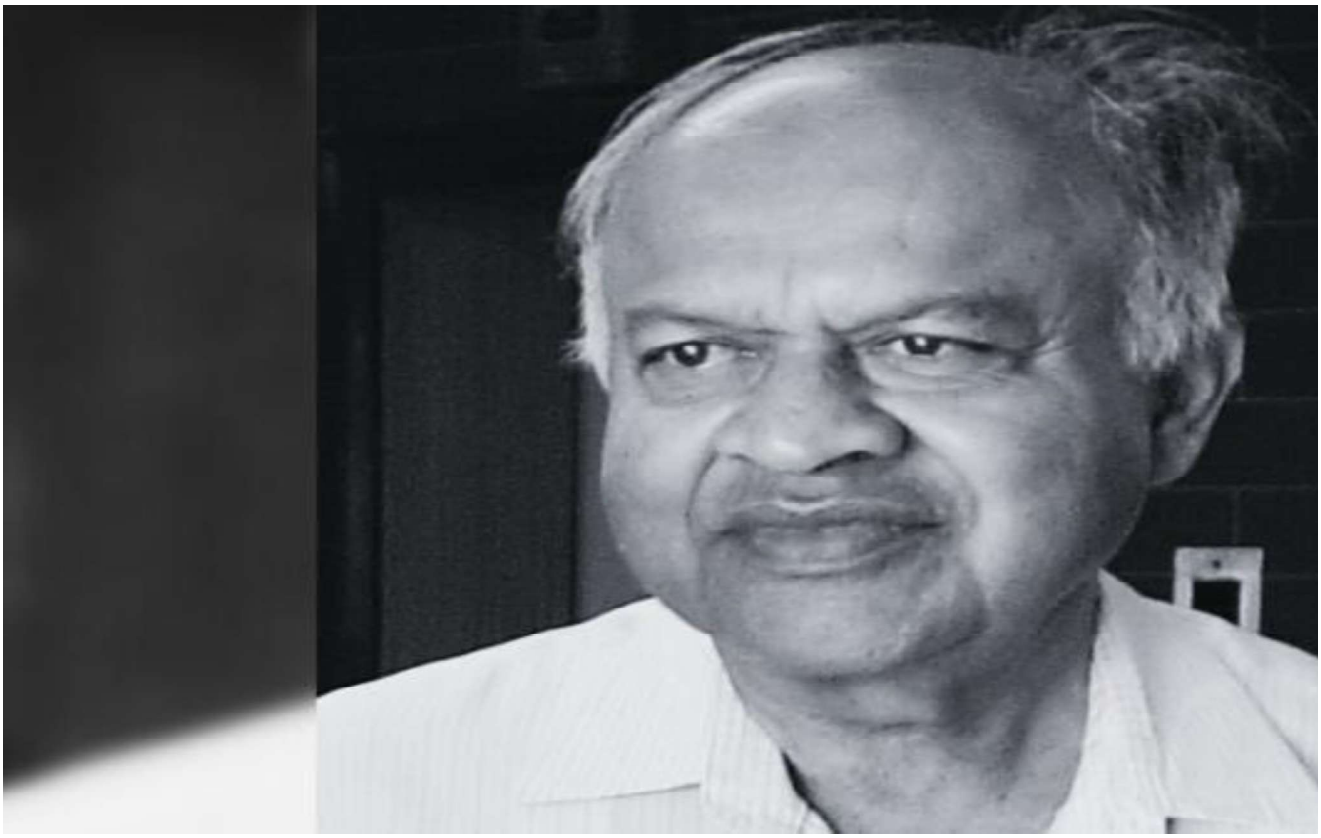
From reshaping cosmology with the Steady State theory to building IUCAA from scratch, Jayant Narlikar's career spanned scientific brilliance, fearless rationalism, and an unwavering commitment to public understanding of science.



Jayant Narlikar. Photo: Wikimedia Commons

Jayant Vishnu Narlikar (1938-2025) was an exceedingly versatile and talented scientist who was both an outstanding educationist and a dedicated science

populariser. He wrote extensively – in English, for scientific journals and textbooks, in Hindi as well as in his native Marathi. His writings, spanning over a dozen books on science, science fiction, and fiction, inspired and nurtured several generations of youngsters towards science and the development of a scientific and rational temperament. He disliked all manner of superstition and was particularly critical of astrology, which he strongly opposed both privately and publicly. His extensive science popularisation efforts – through books, as well as radio and television programmes – earned him the prestigious Kalinga Prize, awarded by UNESCO in 1996.

Jayant Narlikar came from a distinguished family. His father, Vishnu Vasudev Narlikar, was a theoretical physicist specialising in Einstein's theory of relativity and was head of department at Banaras Hindu University in Varanasi. His mother, Sumati Narlikar, was a Sanskrit scholar, and his maternal uncle, V.S. Huzurbazar, was a statistician who founded the Department of Statistics at the University of Pune.

Jayant initially studied at Banaras Hindu University and then went to Cambridge University, where he completed his PhD in 1963 under the eminent British cosmologist Sir Fred Hoyle. A famous outcome of this collaboration was the Hoyle–Narlikar *Steady State* theory of the universe (1963). This work propelled Narlikar to international fame, and he was awarded the Padma Bhushan in 1965 at the young age of 27. He left Cambridge and joined the Tata Institute of Fundamental Research in Bombay as a professor and head of the Theoretical Astrophysics Group in 1972.

The *Steady State* theory was radically different from its alternative, the *Big Bang* model, in that it suggested that the universe was not created from a single event (the Big Bang) that occurred at a finite time in the past, but instead was infinitely old and unchanging (in a statistical sense). As the universe expanded, it replenished itself through the continuous creation of matter, thereby always remaining in a steady state. The discovery of the cosmic microwave background radiation in 1964 tilted the scales in favour of Big Bang cosmology, but rather than give up on their idea, Hoyle and Narlikar, together with G. Burbidge, modified it into the *Quasi-Steady State* theory in 1993.

Also read: What Jayant Narlikar Wrote on Scientific Temper a Decade Ago Still Holds True

Jayant Narlikar was a staunch supporter of other radical ideas, including the notion of *Panspermia* – a hypothesis suggesting that life on Earth was seeded by bacterial cells which originated elsewhere in the universe and were transported to Earth by comets and asteroids. This idea is now gaining acceptance among the scientific community since complex organic molecules, including amino acids, have been detected in comets and in the environment between stars, known as the interstellar medium. However, when Hoyle originally proposed it, *panspermia* was considered too far-fetched to be published in a regular scientific journal. This led Hoyle to explore the idea in a fascinating science fiction novel called *The Black Cloud* (1957), in which a super-intelligent alien gas cloud approaches planet Earth in the distant future.

Aside from being a versatile scientist, Jayant Narlikar was also an institution builder par excellence. It was in this capacity that I first came under his wing when he founded the Inter-University Centre for Astronomy and Astrophysics (IUCAA) in Pune in 1989, and hired me as a young scientist in 1991. On arriving at IUCAA, I was surprised to see that not a single facility was up and running. Instead, the entire institute was housed in a single shed called *Aditi* in the lush green Pune University campus. Snakes and scorpions abounded on campus, and to my horror, I was once stung by a scorpion, and my wife by a snake – but luckily, we both survived!

Those were difficult times, but a sense of enthusiasm and exuberance permeated the atmosphere. Jayant was very keen that IUCAA be housed in aesthetically appealing surroundings, and for this purpose, he appointed the distinguished architect Charles Correa to design the entire IUCAA campus. He was also conscious of the adverse impact that construction can have on the environment and ensured that not a single existing tree was cut down when our buildings were made. Instead, trees were carefully removed and replanted elsewhere. These included dozens of grand old banyan trees which now embellish our institution.

The resulting beautifully designed buildings – intertwined with wide open spaces and an abundance of liberally distributed blackboards – greatly contributed to scientific discussion and debate.

I should add that Jayant not only created a new institution from scratch; he also infused it with sound democratic values. He democratised academic decision-making by ensuring that the apex decision-making body – the Academic Programmes Committee (APC) – consisted of all academic members, irrespective of their rank. As

one of the younger members of this committee, I had a great feeling of empowerment, since my voice too carried weight in all matters of academic importance at the institute.

Jayant laid a lot of emphasis on academic excellence at IUCAA. Since ours was an inter-university centre, we had visitors from all over the country and many from abroad as well. In my own case, I had done my PhD from Moscow in 1985, and Jayant, being fully aware of the strengths of Soviet science, greatly encouraged me to invite my former colleagues to IUCAA. Their visits resulted in numerous collaborations – many with IUCAA students – and a large number of influential papers being written in cosmology, which was my own area of expertise and also that of Prof. Narlikar.

I should add that although we worked in the same field, our approaches were very different. I enjoyed working on the Big Bang model, while he firmly opposed it (on scientific grounds). Remarkably, our disagreement in science never resulted in any kind of strain between us. On the contrary, he always encouraged me in my work, helped me to attract good PhD students, and frequently nominated me for academic honours and awards.

Jayant's remarkably open and democratic approach to science is exemplified in one incident. Decades ago, when I had just joined IUCAA, both of us participated in an international conference on cosmology organised by the Indian relativity community. An evening session at this meeting was devoted to a debate on Steady State vs Big Bang models. While Jayant defended Steady State theory, I was asked to poke holes in his argument. I reluctantly accepted this role. According to me, a central weakness of the Steady State approach had been explaining the thermal nature of the cosmic microwave background—the primeval light that is observed as faint 2.7-degree radiation today.

During the debate, Jayant mentioned that this radiation could be thermalised by extremely thin iron needles which permeate all of space. I asked him about the origin of these needles, and he said they had been seen in laboratories on Earth. I then humorously quipped that colour TV sets were also made in laboratories on Earth but one rarely found them in outer space.

There was some laughter in the audience, but after the meeting, an elderly member of our governing board came up to me and said (in Hindi), *"Bahut bahadur ho, Director*

saheb se jo panga liya. Ab aage dekhna kya hota hai." (You are very brave to have challenged your director. Now wait and see what happens.)

This caused a shiver to run up my spine, and I cursed myself for being so foolhardy. After all, I was the junior-most member of IUCAA's faculty and criticising the director's favourite model would surely put me in his bad books. So I immediately went up to Jayant and asked him, "Jayant, I hope you did not mind what I said on the stage." To my amazement, Jayant affectionately took my hand in his and as we walked together hand-in-hand said, "I don't mind what you said during the debate, but if you say this then I will mind."

I was immensely relieved. Far from being vindictive to those who did not share his views, Jayant welcomed debate and differences of opinion – the hallmark of a truly great scientist.

During the early years of IUCAA, Jayant was burdened with a lot of administrative responsibilities. As a result, he was meticulously conscious of the importance of time management and organised his day very precisely, taking into account all of the myriad issues that needed sorting out. The administration was aware of this and they were always kept on their toes, arriving at work at 9 AM sharp. But to my great satisfaction, the scientific personnel were given full freedom to organise their work schedules as they liked. I happen to enjoy working at night and was returning home after an all-night session at 7 AM one morning when I happened to meet Jayant on the steps of IUCAA.

Jayant used to come to work at 7 AM because this gave him a good two hours to focus on science before the responsibilities of the day took over at 9 AM. I said "Good night," and he replied, "Good morning." We then had a very pleasant chat. Jayant told me that half of Fred Hoyle's students were early risers while the others were 'owls' like me and worked late nights. As a result, Hoyle could never get his full group to meet together at any given time. After this incident, Jayant was considerate enough to remember that I was an "owl" and convened all meetings requiring my presence in the afternoon!

Jayant was very fond of literature. When my father's (Bhisham Sahni) novel *Tamas* was released as a teleserial in 1988, Jayant was quite impressed and wrote to me asking for the original Hindi novel. I was doing a postdoc in Canada at the time and requested my father to send Jayant a copy, which he immediately read.

Since he had been brought up in Banaras, Jayant's knowledge of Hindi was excellent. He later met my father and the two of them established a warm bond.

Jayant was also a close personal friend of the eminent Marathi writer and humorist P. L. Deshpande. Upon his demise, Deshpande's wife, Sunita Deshpande, gave Jayant a generous donation with which the Pu La Deshpande Science Popularisation Centre (also called *Muktangan*) was established at IUCAA. The centre now has a dedicated team of young science educators who teach telescope-making and travel to distant urban and rural centres giving science demonstrations to school students. Science popularisation has now become an integral part of IUCAA, and we hosted the well-known science toy maker Arvind Gupta on campus for several years. Arvind is renowned for making scientific toys from trash.

Jayant Narlikar was the recipient of numerous national and international awards. But what stands out the most in this remarkable individual is his sense of purpose, his eye for detail, his great kindness and empathy, and his amazing sense of humour. His presence will be sorely missed.

Varun Sahni is a theoretical physicist and an Emeritus Professor at the Inter-University Centre for Astronomy and Astrophysics. Known for his research on cosmology, Sahni is an elected fellow of all the three major Indian science academies and the World Academy of Science (TWAS). The Government of India awarded him the Shanti Swarup Bhatnagar Prize for Science and Technology, one of the highest Indian science awards, for his contributions to physical sciences in 2000.