UR Rao
A Life Dedicated to ISRO

R. Aravamudan

Professor Udupi Ramachandra Rao, or UR Rao as he was popularly known, passed away on 24 July, 2017 at Bangalore. He was 85. He was one of those who spent their lifetimes to turn India into a world class Space Power.

Hailing from a remote village in Karnataka, he finished his schooling and college education in small towns before completing his Masters in Physics from the Banaras Hindu University. He then registered under the illustrious Dr. Vikram Sarabhai, who had started his own scientific laboratory, the Physical Research Laboratory (PRL) in Ahmedabad. His field of research was Galactic Cosmic Rays in which he was awarded a PhD in 1960. Shortly thereafter he moved to MIT in USA where in association with the JPL group on cosmic ray studies he did considerable work in this field using the NASA, Pioneer and Explorer spacecraft data.

This was the time in 1963 that, in spite of a promising career in the US, he was motivated by Dr. Vikram Sarabhai to return to India and help him start the development of Space Research in India.

My personal association with Prof. Rao started at this time in 1963 when I had moved to Thumba near Trivandrum after spending a year at NASA training in the setting up and operating of a rocket launching facility. My expertise was in telemetry and tracking. At that time Prof. Rao was building sounding rocket payloads for studying X-ray stars in the sky and I was helping him with collecting the data by telemetry and processing them. He was collaborating with Japanese scientists from Tokyo University and was publishing the results in reputed journals.

Meanwhile, Dr. Sarabhai had started launch vehicle and satellite developmental activities at Thumba and around 1970 asked Prof. Rao to lead a group to take up the development of satellites. This activity was located initially at Trivandrum.

The end of 1971 saw the untimely demise of Dr. Sarabhai and a little later Prof. Rao shifted this activity to Bangalore which had better infrastructure for specialised electronic fabrication and testing. Thus was born the ISRO Satellite Centre which was temporarily housed in a couple of industrial sheds in Peenya, at the outskirts of Bangalore.

After Sarabhai, the task of steering ISRO was entrusted to Prof. Satish Dhawan, an aeronautical engineer, although Prof. MGK Menon held temporary charge until Dhawan could return from the US after a few months. This was a period of frenetic activity for Prof. Rao since with meagre facilities and relatively inexperienced engineers, he had committed to building India’s first ever satellite, later christened Aryabhata, to be launched by the erstwhile Soviet Union. Prof. Rao’s team worked round the clock to complete the satellite and transport it to Baikanour from where it was successfully launched on 19 April 1975.

The satellite building activity increased in momentum and a brand new campus was built for the ISRO Satellite Centre (ISAC) near the National Aeronautical Laboratory in Domlur. Over the decade, Prof. Rao oversaw the successful construction, launching and commissioning of a variety of spacecraft built at this Centre.

When Prof. Dhawan retired in 1984, the mantle fell on Prof. Rao to take over the Chairmanship of ISRO and he continued in this capacity till...
his retirement in 1994. This was a tumultuous period in the history of ISRO. There was a rapid growth in the organisation. Major ISRO Centres at different locations in India started functioning earnestly, engaged in developing various elements of Space Technology.

The Vikram Sarabhai Space Centre at Trivandrum, by far the largest centre of ISRO, was working on launch vehicle technology, while the ISRO Satellite Centre was building spacecraft. The Launch Centre at Sriharikota was gearing up for major satellite launches and the Space Application Centre at Ahmedabad was developing spacecraft payloads and applications. There were other Centres in Vallyamala, Nagercoil, Alwaye, etc. carrying out space related work, in addition to the Industry.

Spacecraft carrying communication, remote sensing and other payloads were built and successfully orbited during this period, using launch vehicles of other countries from locations like Baikanour, Kourou, etc. Many departments of the Government and other agencies made use of these satellites for Direct Television, communication, remote resource survey, meteorology, etc.

The most important challenge for Prof. Rao, as Chairman ISRO, was in the field of Launch Vehicle development. The initial launchings of ASLV and PSLV failed leading to a great deal of disappointment and distress among the staff and the general public. It was to his credit that the morale of the development teams and the funding agencies was kept high and the lessons learned from the failures were quickly turned into improvement of the systems and tightening of their reliability. The phenomenal reliability of the PSLV Launch Vehicle is a testimony to this spirit.

A tireless worker, he led by example and extracted the best from his colleagues. He brooked no nonsense from anyone but was always sensitive to the feelings of his associates. During his tenure he built a strong team of specialists who could carry forward the ambitious programmes of ISRO without break, even after his retirement.

Personally, it was he who appointed me the Director of the Sriharikota Launch Facility and moved me to Sriharikota after 25 years of work in launch vehicle technology at the Vikram Sarabhai Space Centre in Trivandrum and guided me in converting the launch base into a world class Space Port during its crucial years. Later when he retired in 1994, I moved to ISAC as its Director, but all through those years he was always around, advising and guiding whenever needed.

From 1994 to 2017, he could never be parted from ISRO. He continued as a member of the Space Commission and Chairman of PRL council with his office at the ISRO Head Quarters, Bangalore, where he was present without fail from early morning to evening on every working day, keeping himself abreast with all the happenings in the field of Space and other matters of scientific importance.

He was always available for consultation with the Chairman of the time, only a few steps away from the Chairman’s office. This habit, he kept alive till a few days before his passing away!

Many were the honours and accolades he received during his lifetime. Countless number of honorary doctorates, induction into halls of fame, awards, etc. Padma Vibhushan, and...the generations of scientists and engineers he had created and deeply motivated during his life would continue to carry forward his vision and ensure that ISRO remains the organisation of excellence that it has turned out to be.

International Astronautical Federation Hall of Fame Award are only a few of those received by him and it would need a number of pages to list them all over the years and the important scientific bodies he was a member of.

Indeed a huge void has been created in the field of Space Research because of his passing away. But the generations of scientists and engineers he had created and deeply motivated during his life would continue to carry forward his vision and ensure that ISRO remains the organisation of excellence that it has turned out to be.

Mr. R. Aravamudan is an ISRO pioneer who has been Director of the Satish Dhawan Space Centre at Sriharikota and the ISRO Satellite Centre Bangalore. He was the first of Dr. Vikram Sarabhai’s hand-picked engineers to join India’s space programme even before it started. He was one among the pioneers who made the Thumba Equatorial Rocket Launching Station (TERLS) operational, eventually taking over as its Director. He is author of the book ‘ISRO: A Personal History’ published by Harper Collins in 2017.