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The Nehru Era And Its Impact On Indian Space Research And Education

Dr. T. ASOKAN¹ , Dr. O. Kasinathan²

¹Assistant Professor, Department of History, Bharathidasan University, Tiruchirappalli
Tamil Nadu, India.

²Assistant Professor, Department of Education and Technology, Bharathidasan University, Tiruchirappalli. Tamil Nadu,
India.

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ABSTRACT

The Nehru era in India, led by Jawaharlal Nehru from 1947 to 1964, had a profound impact on Indian space research and education. Nehru's vision of scientific progress and his establishment of key institutions laid the foundation for India's achievements in these fields. The article highlights the establishment of the Indian Space Research Organization (ISRO), satellite launches and missions, and the creation of premier educational institutions like the Indian Institutes of Technology (IITs). Nehru's emphasis on education and scientific development during his tenure continues to shape India's scientific landscape and inspire future generations.

Introduction:

The Nehru era in India, spanning from 1947 to 1964 under the leadership of Jawaharlal Nehru, is considered a pivotal period in the country's history. During this time, India witnessed significant advancements in various sectors, including space research and education. Nehru's vision and emphasis on scientific progress laid the foundation for India's subsequent achievements in these fields. The prime objective of this article is to analyse the contributions of Nehru to the Indian Space Research and also highlights his efforts to promote education, very particularly the establishment of some of the major institutes which were considered as premier for higher education.

Nehru's Vision of Scientific Progress:

Jawaharlal Nehru, India's first Prime Minister, strongly believed in the power of science and technology to drive the nation's development. He envisioned an India that would harness scientific knowledge to overcome challenges and uplift the masses. Nehru's commitment to scientific progress led to the establishment of several research institutions and educational initiatives, laying the groundwork for future advancements.

When India finally attained independence and Nehru assumed office as the Prime Minister of India, there were a myriad of issues lying in front of him, seeking his attention. Some of them needed immediate attention. Nehru knew that it was high time that he prioritise things. For him, "First things must come first and the first thing is the security and stability of India".ⁱ In the words of eminent political scientist W.H. Morris-Jones, the imminent task was to "hold things together, to ensure survival, to get accustomed to the feel of being in the water, to see to it that the vessels keep afloat".ⁱⁱ

Nehru's "first things" included the territorial and administrative integration of the princely states in India, handling the consequences of the partition, restoration of law and order and political stability, and putting in place an administrative system. Nehru sought the help of political ideology to handle these issues.ⁱⁱⁱ

There were still other issues that warranted equal attention, though not immediately. He had to help the country come out of 200-year-old legacy of the British colonial rule. He had to ensure that poverty, illiteracy and inequality among the people are properly addressed. He had to raise his people from economic backwardness. Regionalism and tribal issues are other significant issues. Besides paying attention to these domestic issues, India had to build strong relationship with the international community and, to do this, had to design an effective independent foreign policy. However, these issues cannot be made perfect overnight. Nehru realised that he had to adopt a multi-pronged approach to address these issues. He firmly believed that science and technology could play a vital role as one of the strategies. His words reflected this conviction.

It was science alone that could solve these problems of hunger and poverty, of insanitation and illiteracy, of superstition and deadening custom and tradition, of vast running to waste, of a rich country inhabited by starving people.^{iv}

There were strong reasons for him to believe in science and technology to help address the issues. Primarily, he was a science graduate himself. He was a student of science first; politician only later. For him, "science is not a matter of merely looking at test tubes and mixing this and that and producing things big or small. Science ultimately is a way of training the minds and of the whole life functioning according to the ways and methods of science".^v

Nehru not just believed in science and technology, but actively involved himself in different capacities as Minister in-charge of scientific research (1947–1951) and president of Science Congresses held at different places across the country. He also continued to serve as the president of the Governing Council of the Council of Scientific and Industrial Research (CSIR).

Nehru was skilful at the art of delegating responsibilities. Although he was actively involved, he delegated specific responsibilities to people who specialised in their field. Dr. S. S. Bhatnagar became the First Director-General of CSIR;^{vi} Homi Jahangir Bhabha became the Chairman of Indian Atomic Energy Commission and Secretary of the Department of Atomic Energy.^{vii} Such effective was he in delegating responsibilities that these scientists were given complete freedom in transforming Nehru's vision into action.

In the meantime, India started its space research as a part of atomic energy. A renowned journalist Amiritha Shaw rightly presents the actual scenario of the time in her book *Vikram Sarabhai: A Life*. "In August 1961, for instance, more than a year before the Chinese invasion and at a time when Nehru was still very much at the helm of the country's affairs, the Union Government, urged by Bhabha, identified an area known as 'space research and the peaceful uses of outer space' and placed it within the jurisdiction of the DAE. As part of the move, PRL [Physical Research Laboratory] was recognised as the 'appropriate centre' for research and development in space sciences. And Vikram Sarabhai was co-opted into the board of the AEC

More interestingly, in February 1962, the DAE created the Indian National Committee for Space Research (INCOSPAR) under Vikram's chairmanship to oversee all of aspects space research in the country".^{viii}

The Indian space programme started off with a modest budget and a low profile. In contrast to this, the atomic energy programme had busted into the scene. But Nehru's virgin efforts to Indian s research cannot be underestimated, for his government was responsible for the creation of Thumba Equatorial Rocket Launching Station. In fact, the decision to establish the sounding rocket launching station at Thumba was made known to Parliament on 21 January 1963, by Lakshmi N. Menon, Minister of the State for External Affairs and herself from Kerala, on behalf of the Prime Minister.

India, meanwhile, was framing its own foreign policy. This is significant because after the Second World War, the world countries started to polarise under USSR and USA. However, Nehru thought there was no the two superpowers necessity to be on either side of the superpower league. He was convinced that decisions should be made on a case-by-case basis. Nehru conceived the idea of non- aligned movement. One of the basic tenets of this movement was peaceful coexistence with neighbouring countries.^{ix} Till early 1960s, India had maintained peaceful relationships with its neighbours - except with Pakistan.

However, 1962 witnessed a major damage to this principle and an irreconcilable blow to India's self - respect. China launched a massive attack and overran Indian posts in the Eastern sector in NEFA, which would later be called Arunachal Pradesh. Soon, India realised the necessity to strengthen its defence base.^x There was panic and public outcry over the incident. At the same time, there was a widespread belief that defence and development were vitally linked. "After the attack on our borders, we were compelled to take certain measures which we did not like. The military expenditure has to be increased."^{xi} The increased defence allocation in the 1963–64 Union Budget was a result of this outcry and belief. There was a 33% increase in defence allocation, Rs.108.44 crore increased to Rs.451.81 crore.^{xii} Not only was there a revision in the 1963-64 Budget, the 1964–65 Budget was also considerably increased the defence allocation. It was proposed to provide Rs.867 crore for defence as against the revised estimate of Rs.505 crore.^{xiii}

Most of this money was spent either to purchase defence equipment or to strengthen research and development in defence. India was purchasing military equipment from countries such as France, United Kingdom, Soviet Russia and USA.^{xiv} India also purchased licence from some countries to produce equipment in India. It made efforts to establish a defence production base as well. When all of this was happening, Nehru was, in a parallel vein, envisioning indigenoussness and self- sustainment in technology needed to make his vision true.

We could assert with high degree of confidence that the budgetary allocation was judiciously spent along two major directions. There were efforts to develop technology to meet the defence needs that would strengthen the country and to effect positive changes in the lives of common people. The various organisations under DRDO and those set up at various points of time spend their time and energy keeping this two-pronged goal.

With this backdrop, the attention paid to space research was not particularly intended, but came as a natural outgrowth of research and development overall. That said, the research and development for strengthening defence and benefits for the civilian population are not two different things With minor variations, the equipment used in defence can be made useful for peaceful purposes.

To explain a little further, launching vehicles are used for injecting satellites into appropriate orbits. However, its technology is more relevant to missiles programme. In fact, there are three different kinds of rockets. Sounding rockets are normally used for probing the near-earth environment. A launch vehicle is designed to inject a satellite into the orbit. Though missiles belong to the same family, their application is totally different.^{xv}

While the missiles program strengthens the defence base, the launching vehicles technology is civilian in nature. The Indian space programme can be thought of as application driven. Two major constituents of the space programme are communication satellites and remote sensing satellites. The former concentrates on telecommunication, television broadcasting, and meteorology. The latter focuses mainly on resource survey management, agriculture and soils, forest and ecology, wasteland mapping, ocean studies, drinking water, snow and glacier investigations, archaeological application, national geographic information system, and natural disaster management.^{xvi} These domains played prominent role in developing the economic condition of India and its infrastructure. Thus, development in Indian space research came as a natural outgrowth of the steps taken to strengthen the country and to address the issues that prevailed common man. Nehru in his calibre as the Prime minister of India relied among the on science and technology to address these issues.

Setting Up Key Institutions:

During the Nehru era, several crucial institutions were established, which became the pillars of Indian space research and education. One of the most notable among them was the Indian Institute of Technology (IIT) system. Nehru championed the establishment of the first IIT in Kharagpur in 1951, followed by IIT Bombay, IIT Madras, and IIT Kanpur. These premier engineering institutions continue to produce top-tier talent and contribute significantly to the field of space research and technology.

Inception of Indian Space Programme:

Nehru's vision of harnessing space technology for national development materialized with the establishment of the Indian National Committee for Space Research in 1962. Although it was founded shortly after Nehru's tenure, his vision and support laid the foundation for India's space program. Nehru recognized the potential of space research and its applications in areas such as communication, meteorology, and national security.

Satellite Launches and Missions:

ISRO's early years were marked by significant milestones in satellite launches and missions. In 1975, under the leadership of Dr. Vikram Sarabhai, ISRO successfully launched its first satellite, Aryabhata, into orbit. This achievement showcased India's capabilities in space research and provided a platform for further exploration. Subsequent missions like the Chandrayaan and Mars Orbiter Mission have propelled India's space program to new heights, solidifying its position as a global space player.

Education Initiatives:

Nehru's emphasis on education extended beyond scientific research. He prioritized educational reforms and aimed to provide quality education to all Indians. The establishment of premier educational institutes, such as the Indian Institutes of Technology and the Indian Institutes of Management, transformed the landscape of higher education in India. These institutions have nurtured generations of scientists, engineers, and leaders, contributing significantly to space research and related disciplines.

Jawaharlal Nehru, as India's first Prime Minister, made significant developments in the field of Indian space research and higher education. His vision and initiatives laid the foundation for India's progress in these areas. Here are some important developments during the Nehru era:

Focus on Space Research and Applications:

Nehru recognized the potential of space research for national development. He encouraged the utilization of space technology for various applications, including communication, meteorology, and national security. This emphasis on space research paved the way for subsequent advancements, enabling India to become a leading player in the global space arena.

Establishment of Premier Educational Institutions:

Nehru placed great importance on higher education and the creation of premier institutions. During his tenure, he played a key role in establishing institutions like the Indian Institutes of Technology (IITs) and the Indian Institutes of Management (IIMs). These institutions have been instrumental in nurturing talented individuals and producing skilled professionals in the fields of science, engineering, and management, including those involved in space research.

Emphasis on Scientific Temper and Research:

Nehru believed in fostering a scientific temper among the population. He recognized the importance of critical thinking, curiosity, and rationality. Nehru's emphasis on scientific research laid the groundwork for the establishment of research centers and laboratories across the country. These institutions facilitated scientific inquiry, innovation, and advancements in various fields, including space research.

International Collaborations and Partnerships:

Nehru actively sought collaborations and partnerships with other nations in the field of space research and higher education. He understood the value of international cooperation for knowledge sharing, technology transfer, and overall progress. Collaborative initiatives with countries like the Soviet Union (now Russia) and the United States helped India gain valuable expertise and resources in space research and education.

Focus on Science Education and Outreach:

Nehru emphasized the importance of science education and popularizing scientific knowledge among the masses. He promoted the establishment of science centers, museums, and science clubs to engage and inspire the younger generation. These initiatives helped in cultivating a scientific culture and generating interest in space research and higher education.

Nehru's contributions during his tenure have had a lasting impact on Indian space research and higher education. His vision, establishment of key institutions, emphasis on scientific temper, and international collaborations laid the foundation for India's remarkable progress in these fields. The developments initiated during the Nehru era continue to shape India's scientific landscape and inspire future generations in their pursuit of knowledge and innovation.

Conclusion:

The Nehru era laid the groundwork for India's remarkable progress in space research and education. Nehru's vision of scientific progress, coupled with the establishment of key institutions like ISRO and the IITs, provided the necessary impetus for India's journey into space exploration. The country's subsequent achievements, including satellite launches and missions, are a testament to Nehru's foresight and commitment to scientific advancement. Furthermore, the emphasis on education during the Nehru era continues to produce skilled professionals who contribute to India's space research endeavors. The Nehru era's impact on Indian space research and education remains a crucial chapter in the nation's scientific history, inspiring future generations to push the boundaries of knowledge and innovation.

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