



India's policy for outer space



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ABSTRACT

This article discusses the basic philosophy behind India's space strategy based on ideological, sociological, political, economic, geostrategic and legal constructs. The paper uses the metaphor of “deconstruction” made famous by the French philosopher Jacques Derrida's (1930–2004) to understand various transitions (if any) in India's space policy over the years and the philosophy behind them. The paper follows a ‘narrative based scrutiny’ approach to recognise Indian attitude for investments into space technologies.

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“India will be a fulcrum of twenty-first-century order: an indispensable element, based on its geography, resources, and tradition of sophisticated leadership, in the strategic and ideological evolution of the regions and the concepts of order at whose intersection it stands.”

Henry Kissinger [1].

It is option argued by some that India's extra-terrestrial ambitions is an irrational national agenda and India is actually wasting of money on space missions when many other important problems are required to be addressed for the betterment of its population [2]. This debate has its origins way back to the period of early 1960s when India decided to invest in space technologies. Ordinarily, since India began its space programme the basic argument has mostly been that how a third-world and developing state could spend money on the elitist scientific endeavours like outer space. The similar argument was vented even during 2013/2014 when India undertook its mission to Mars. It was debated that why a state with around 30% of its population below poverty limit including significant number of malnourished children and with half of the population lacking basic clean drinking water facilities and toilet facilities should undertake space projects like missions to Mars. In spite of Indian Mars mission being much low-cost by American (even European or Chinese) standards, at around US\$75 million this criticism still continues to persist. To ‘check the veracity’ of the

‘irrationality argument’ about India's space investments this article attempts to ‘deconstruct’ such views/opinions by undertaking a broad assessment of India's space policies and programme.

The philosopher Jacques Derrida (1930–2004) introduced the concept of “deconstruction” in the mid-1960s. Various social scientists have variously interpreted this seminal concept [3]. Broadly, “to deconstruct” is seen as a synonym for criticizing or demonstrating the incoherence of a position. It seeks to expose, and then to challenge, the various binary oppositions that undergird our dominant ways of thinking—presence/absence, speech/writing, and so forth. Deconstruction has minimum two facets: literary and philosophical. The literary aspect is about the textual interpretation, where invention is essential to finding hidden alternative meanings in the text. The philosophical aspect concerns the main target of deconstruction: the “metaphysics of presence”, or simply metaphysics.

Debating the basic philosophy behind India's space strategy could involve interpretations of various ideological, sociological, political, economic, geostrategic and legal constructs. This paper uses the metaphor of Derrida's philosophy in a very narrow (or broad) scene to highlight the thinking about the obvious and against the obvious. The purpose over here is to attempt to understand various transitions (if any) in India's space policy over the years and the philosophy behind them. The paper follows a ‘narrative based scrutiny’ and also critically looks at possible inconsistencies in policies and economic investments. The purpose of this paper is twofold: one, to present the process of evolution of India's investments in space and two, to understand the rationality behind these investments from time to time.

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1. Development is critical ... literary and philosophical facets

For any state it is important to ensure the welfare of all sections of its populace. Particularly, for developing countries the main objective should be the eradication of poverty. Growth and poverty are interrelated and the economic policy of the state needs to ensure that the benefits of growth are passed on to all sections of the society. It is important for the state to ensure that the basic needs for the survival of its population like shelter, food, water, healthcare etc are accessible. India got independence from the British Raj in 1947 and since then it is known as one of the biggest and successful democracies in the world. However, India has its own shares of problems since inception in regards to over population, lack of shelter, food, water, education, healthcare etc and to a certain degree they still stand unresolved even today.

There are various reasons for India's backwardness. Historically, India is not known to be a poor state however, internal conflicts and exploitation by the various rulers has been the main reason for its backwardness. Before independence India was ruled by the British rulers for a period of about 200 years and they left a socially and economically grieving country.

There are different studies available presenting the nature and rate of poverty in India. Broadly, all the studies indicate that since Independence, poverty rates in have declined substantially. For example during 1973–4 around 55% people were living in poverty [4] and now this figure has approximately halved during the second decade of the 21st century. The percentage of persons below the Poverty Line [5] in 2011–12 has been estimated as 25.7% in rural areas, 13.7% in urban areas and 21.9% for the country as a whole. The respective ratios for the rural and urban areas were 41.8% and 25.7% and 37.2% for the country as a whole in 2004–05. It was 50.1% in rural areas, 31.8% in urban areas and 45.3% for the country as a whole in 1993–94. In 2011–12, India had 270 million persons below the Poverty Line as compared to 407 million in 2004–05, that is a reduction of 137 million persons over the seven year period [6].

India's record in health sector is also not very encouraging. As per the official government report (2013) around 48% children of the country, under age of five years, have stunted growth, indicating that half of the children are chronically malnourished in India [7]. Apart from this there are issues regarding sanitation, clean drinking water, hygiene [8] etc. Naturally, all such information makes a strong case for the state to invest more to address the issues relating to the basic survival of its population. Indian space programme gets criticized because of the perception that the money spent on this programme could be more use for addressing more pressing requirements like the poverty eradication. It is about the age-old "guns or butter" debate. Before deliberating on the likely reason for India to invest in space technologies it could be of some interest to understand the traditional character of India in regards to the financial status and also about the nature of technological developments made within the country.

Poverty has been the reality for India for last few centuries however, there has been gradual decline observed in the 'extent' of poverty. India was under the rule of the British Empire during 1858–1947 and almost for a century before this East India Company had a significant presence in India. For many centuries Indian civilization was known for its cultural and economic strengths particularly before British came to rule. There is an interesting debate revolving around how Indian prosperity slowly got diminished during the British rule [9]. Most of such analysis presents a factual assessment giving indications that how systematically Indian economy got eroded during this period. Democracy, rule of law, welfare of the society, scientific attitude has been the tenets of mainstream Indian political and social ethos for many centuries.

Even in the period of prosperity generally the Indian polity focussed on social developmental issues and the technological and economic investments were directed essentially for fulfil this objective.

Rocket science has a long history in India. In 1792, the Indian armies of Tipu Sultan launched rocket barrages against invading British forces during the Mysore Wars, which understandably piqued British interest in rocketry [10]. Against this backdrop India's traditional character establishes that it was natural for India to invest in space technologies as a medium for socioeconomic development.

Developing space capabilities offers both short-term and long-term socioeconomic and strategic benefits. It may be noted that the US had a 17% poverty rate in 1969, but still proceeded with the first moon landing. Also, the inclusion of space policy is increasingly important to many developing countries for the purposes of economic and social development. Science and technology in the developing world are socially, politically, and culturally constructed, just as in the developed world [11].

India has a rich and diverse philosophical tradition for many centuries and references to the philosophical thought is found even during medieval age as per the old scriptures. Various earliest philosophical compositions (like The Upanishads) of the world have their origins in India [12]. "Science & Technology (S&T) has always been an integral part of the Indian culture. Natural Philosophy as it was termed ancient times was pursued vigorously at institutions of higher learning. The contributions made by the scholar-scientists Aryabhata, Bhaskara (India's first and second satellite are named after them), Brahmagupta, Dhanvantari and Nagarjuna, to name a few, to the fields of mathematics, astronomy, medicine and chemistry during the prehistoric period are legendary and invaluable not only to Indian S&T but also to the knowledge base of the humanity at large. The astronomical observations at Jaipur and New Delhi [13] and the Ashoka Pillar in New Delhi stand as living testimonies to the high standards of Indian capabilities. The dawn of the present century witnessed great strides made by Indian scientists like Srinivasa Ramanujan, J.C. Bose, P.C. Ray, Meghnad Saha, C.V. Raman, S.N. Bose, Birbal Sahni, P.C. Mahalanobis and M. Visvesvaraya, who have left indelible imprints on the world S&T scene" [14]. All this indicates that there were obvious signs of the innate ability to perform creatively in the field of science in general and space science in particular.

2. Spatial-temporal reasoning

Post-independence (1947) India's first Prime Minister Pandit Jawaharlal Nehru gave a special focus for the promotion of Science and Technology (S & T) in the country. This began the process for the establishment of various laboratories to undertake scientific research in India. Since independence, India is found using S & T as a tool for socioeconomic development. India's Scientific Policy Resolution (SPR) of 1958, asserts that India views investments in S & T as an instrument "to foster, promote and sustain the cultivation of sciences and scientific research in the country and to secure for the people all the benefits that can accrue from the acquisition and application of scientific knowledge" [15].

The story of development of science in the independent India could be said to have begun with the establishment of Department of Scientific Research during June 1948. Within few months the Indian Atomic Energy Commission got setup as a part of the Department of Science during August 1948 [16]. Few years before the Tata Institute of Fundamental Research (TIFR) got founded on 1st June 1945 by Dr Homi Bhabha, who remained the director of this institute till his death (died in aircraft accident, 1966). Subsequently, this institute has come under the purview of the Department of Atomic Energy. TIFR began functioning in arena of Cosmic

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