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India and China:

Marking Paths on the Space Highways

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Abstract

India's ongoing mission to Mars and China's project of placing a rover on the Moon's surface by mid-December 2013 have raised speculation about an emerging space race between these two Asian neighbours. In reality, the space programmes of the two increasingly science-savvy countries have had different trajectories. However, both New Delhi and Beijing have often spoken against militarisation of space and sought to harness space-related applications for economic or social development at home. These commonalities may influence not only the discourse but also the actions of these two countries in the longer term, depending on the future course of global politics.

Beyond Earth's Zone of Influence

Mars Orbiter Spacecraft, India's latest and most ambitious high-tech mascot, "has traversed beyond the Sphere of Influence of Earth"² at about 1:14 hrs Indian Standard Time (IST) on 4

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December 2013. Earth's Sphere of Influence has a radius of about 925,000 km. The announcement about the Orbiter's great escape, bordering on a proclamation by the Indian Space Research Organisation (ISRO), is matched by an equally significant message which the Beijing Aerospace Control Center purveyed on 6 December.

It was disclosed that "China's Chang'e-3 probe entered a circular lunar orbit at 5:53 p.m. Friday Beijing Time, after about 112 hours on an Earth-Moon transfer orbit".³ As this is written, China's first Moon-rover is programmed for deployment on the lunar surface after an anticipated soft-landing there by the Change'e-3 spacecraft in mid-December. The rover is being carried by the Change'e-3 spacecraft.

While Chang'e-3 skyrocketed from Xichang Satellite Center in Southwest China on 2 December, the Mars Orbiter was hurled into space from Sriharikota in India's Andhra Pradesh state on 5 November. The flight paths of these two spacecraft make for some interesting extra-terrestrial delight.

The Moon-bound Chang'e-3 was launched at 1:30 a.m. on 2 December Beijing Time.⁴ Almost 18 hours later real-time, at 17:00 hrs IST on the same day, the Mars Orbiter "crossed the distance to Moon's orbit around Earth".⁵ This meant that India's Mars-bound orbiter had steered clear of the Moon several days before China's latest lunar spacecraft approached Earth's natural satellite. Moreover, ISRO had successfully completed in the early hours of 1 December itself "the critical manoeuvre to place India's Mars Orbiter Spacecraft in the Mars Transfer Trajectory". Annotating this in some earthy language, ISRO said "the spacecraft is now on a course to encounter Mars after a journey of about 10 months around the Sun"⁶ from December 2013.

² Indian Space Research Organisation, Latest Updates on Mars Orbiter Mission, <http://www.isro.org/mars/updates.aspx>; accessed on 9 December 2013.

³ Xinhua (China's state news agency), Chang'e-3 enters lunar orbit, http://news.xinhuanet.com/english/china/2013-12/06/c_132947629.htm; accessed on 9 December 2013.

⁴ Ibid.

⁵ Source is the same as that cited in N.2 above.

⁶ Indian Space Research Organisation, Mars Orbiter Spacecraft Successfully placed in Mars Transfer Trajectory, <http://www.isro.org/pressrelease/contents/PrintConfirmation.aspx?ReleasedDate=Dece...>; accessed on 9 December 2013.

Politics of Space Frontier

At first glance, these scientific snippets may seem like a holiday-season pastime in taking note of some space trivia. But that certainly is not true. It is no longer just a hypothesis in international politics that space-faring powers will be able to determine the future global orders on Planet Earth (maybe, in the distant-term) in much the same way as sea-faring countries had fashioned and reshaped world orders in the past. The relevant reason is not far to seek. The militarisation of space – not only the extra-terrestrial deployment of weapons but also the placement of dual-use scientific facilities in outer space – is already a hotly debated issue in today's international relations.

Surely, maritime control, which had given countries greater access to the material and human resources on Planet Earth in the past, will continue to be absolutely important today and into the future. However, space has clearly emerged as the really new frontier for this kind of access. In novel ways now, countries can either vie or cooperate for potential access to the uncharted resources of the worlds beyond Earth. Besides the cosmic science of this kind, space can also serve as a platform for positioning what may be described as military-eyes in the sky for the purposes of international affairs on Planet Earth.

Relevant to and significant in the present context of transparently scientific forays into space by both India and China are their relentless pledges **against** using their extraterrestrial reach and capabilities for military purposes. Equally illuminating is the fact that these pledges relating to space are as important to the global peace discourse as the stated policies of both Beijing and New Delhi that they would not be the first to use nuclear weapons to settle disputes with states and non-state actors. On paper, it is possible to argue that India and China can aspire for a robust bilateral relationship based on their shared commitment to these two principles – the no-first-use of nuclear weapons and non-militarisation of space. However, certain reservations and realities come in the way.

China's reservations and reluctance to accept India as a *de jure* nuclear-weapon-state, under the prevailing international law known as the Nuclear Non-Proliferation Treaty, preclude substantive policy coordination by the two countries in this field. Another factor hampering Sino-Indian coordination in the nuclear as also space domains is the absence of a globally-crafted and credible system of verification of national pledges of no-first-use and extra-terrestrial non-militarisation.

Extra-Terrestrial S&T Capabilities

In these circumstances, the latest space forays by India and China are not near-Earth missions that could have easily raised suspicion about their real nature and scope as to whether they are indeed military-projects-in-disguise for either the present or the future. Viewed in this perspective, it is possible to see these missions as science-and-technology projects which might eventually demonstrate the extraterrestrial capabilities of China or India or in fact both.

In India's Mars mission, the spacecraft will orbit the Red Planet without soft-landing on it or 'crashing' onto the planetary surface in a programmed fashion. The mission has been projected as a pure-science project. And, this has hardly been disputed by any of the other 'stakeholder'-countries and entities on Earth.

China's objectives, as spelt out by its official news agency in a commentary on the country's latest lunar mission, are as follows: "China's space exploration does not aim at competition [with other countries]. The country is open in its lunar program and willing to cooperate with other nations. China hopes to explore and use space for more resources to promote human development. Crucial technologies [for space exploration], however, cannot be bought. China should rely on itself to build an innovative country. ... [In fact] Reaching for the Moon has been a long cherished wish for the Chinese nation since ancient times. The [latest] lunar probe mission therefore carries the space dreams of the Chinese nation and its people. This deep aspiration, which pursues peaceful use of space to benefit humankind, will not only serve China's own population but also contribute to space exploration for the human race".⁷

The new "Chinese dream", often articulated interchangeably with "China's Dream", is a gigantic national rejuvenation project enunciated by the relatively-new Chinese President, Xi Jinping, as an attainable aspiration. In this context, speculation is agog in some international media and other circles that India has entered into a space race with China. Also bandied about is the fact that India's Mars mission is very much on course as this is written while China's parallel but earlier Mars mission, in some collaboration with Russia, had failed.

⁷ Xinhua (China's state news agency), Commentary: Lunar probe boosts "Chinese dream", http://news.xinhuanet.com/english/china/2013-12/02/c_132935597.htm; accessed on 9 December 2013.

Different Trajectories into Space

Objectively, India and China have had different trajectories into space, though, with the same general aim. The idea has been one of harnessing the extra-terrestrial regions for the well-being and security of the citizens of China and India, as the case might be, in an evolving global ambience of gradual international cooperation. Directly relevant to this context are some of the expert opinions on these issues.

Writing on Beijing's "long march into space", Michael Sheehan, citing several sources, weaves the story of China's start on these lines: "China, like India, began to construct a programme very early on in the space age. ... In some ways, the motivations of China's space programme are similar to those of India, but in others they differ markedly. ... In 1956 [Chinese leader] Mao Zedong launched a programme to develop China's scientific base and the space programme has its origins in this development. Following the dramatic launch of [the Soviet Union's] *Sputnik* in 1957, Mao declared that 'we also want to make artificial satellites'. ... Initially the Chinese space programme benefited from the support of the Soviet Union. ... Ironically, the Chinese [missile and space] programme also benefited from unintended American support during this period [i.e. the McCarthy era in the USA]. Two of the leading figures in the subsequent Chinese rocket programme, Chien Wei-Chang and Chien Hsue-Shen, returned [to China] from the California Institute of Technology in 1947 and 1955 respectively, as a result of anti-communist pressure brought against them during the McCarthy era in the USA. ... The Chinese space programme has had strong ties to the military from its inception, when it was placed under the Fifth Academy of the Ministry of Defence".⁸

There is also considerable focus on the launch of China's civilian space programme in 1960 and the emergence of "techno-nationalism" in the country. Michael Sheehan narrates how China's first successful satellite, *Dong Fang Hong*, or 'The East is Red', broadcast a revolutionary song by the same name during the entire orbital duration of 26 days. Gradually, with Deng Xiaoping's political ascendance, a linkage between China's economic and social priorities, at one level, and the Chinese space programme, at another, has been established since the late-1970s.⁹

⁸ Michael Sheehan, *The International Politics of Space*, Routledge, London and New York, 2007, pp. 158-160.

⁹ Ibid; pp. 161-162.

Making dramatic progress since then, China has even sent *taikonauts* (astronauts) into space. Describing the China National Space Administration's White Paper of 2006 as "a broad-gauged space program",¹⁰ Sinologist David Shambaugh cites the country's focus on exploration of the Moon for a variety of scientific purposes.

No Mission-for-Mission Space Race Now

There is no hard empirical evidence to argue that India and China are now engaged in a mission-for-mission space race. United States President Barack Obama had, during his visit to New Delhi in November 2010, praised India for its lunar mission, *Chandrayaan-1*. In a brief fact sheet on ISRO's international cooperation, the Indian space agency states: "ISRO's maiden mission to Moon, the *Chandrayaan-1*, has been an exemplary example of international cooperation with its international payloads. [The mission] has also earned several national and international laurels and was instrumental in the ISRO-NASA joint discovery of water molecules on the Moon surface, unattained by any of the previous missions of such nature".¹¹

The economic dimension of India's space programme is generally recognised internationally. Writing on New Delhi's sense of "security through space", Michael Sheehan is of the view that "India's space programme is in some ways the most cost-effective and successful space programme in the world".¹² Amplifying this as a success story, he writes that "the technological feats achieved by the Indian Space Research Organisation (ISRO) are dramatic achievements for a developing country that at the end of the Cold War was still one of the poorest in the world. Even more impressive than that, however, is the consistent way in which India has sought to use space as a crucial mechanism for lifting India's people out of poverty through education and social and economic programmes".¹³

Obviously, there is a debate in India over how far the country could go in pursuit of pure scientific research in space without at least some spin-off in the form of tangible economic or social benefits for the people and a sense of national security. Interesting indeed, in this context, is Michael Sheehan's conclusion about India: "it is unlikely that the new pursuit of

¹⁰ David Shambaugh, *China Goes Global The Partial Power*, Oxford University Press, 2013, p. 296.

¹¹ Indian Space Research Organisation, International Cooperation, <http://www.isro.org/scripts/internationalcooperations.aspx>; accessed on 9 December 2013.

¹² Michael Sheehan, *The International Politics of Space*, Routledge, London and New York, 2007. P. 142.

¹³ Ibid.

prestige through the space programme will come to dominate it at the expense of the development rationale [in India]”. In his overall view, New Delhi’s relatively new “scientific and prestige goals”, when seen in the context of the country’s long-standing “development and military rationales”, have now brought India’s space programme into line with “the rationales typical of the other major space powers”.¹⁴

India’s ongoing Mars Orbiter Mission can be finally judged only in 2014, perhaps, towards the end of the coming year. The cost-benefit quotient of this mission will be known in terms of the scientific spin-off, rather than any immediate economic or social or security benefits to the people of India. In this sense, India’s first Mars mission is somewhat similar to China’s ongoing Moon mission with a huge scientific dimension.

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¹⁴ Ibid; p. 157