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India-China Outer Space Competition: Implications for Strategic Stability

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SYNOPSIS

There is a growing asymmetry between Indian and Chinese military capabilities in outer space. The Chinese military maintains a far more extensive portfolio of offensive capabilities while continuing to invest in defensive capabilities. India's more modest capabilities are struggling to keep pace. This growing gap will negatively impact strategic stability in the bilateral relationship, particularly during a crisis or conflict.

COMMENTARY

In the 21st century, outer space has grown significantly as a theatre of human activity. There were around 800 satellites in space in 2002. That number rose to over 7,000 satellites in orbit by 2022, with more than 80 countries owning satellites. The outer space economy is expected to reach nearly US$1.8 trillion in value by 2035. However, this accelerating commercialisation of outer space is occurring parallelly with its militarisation. Amidst great power rivalry, outer space has emerged as a new frontier of competition.

This trend is evident in the India-China military competition. The Indian military has invested considerable time and resources acquiring and deploying platforms based on emerging technologies. It has perhaps made the most progress in adopting space capabilities, with a military space programme that dates back to the early 2000s and built off the back of India's ballistic missile defence programme. In March 2019, India successfully conducted an anti-satellite weapons test (ASAT test), a capability held only by the United States, Russia, and China.

India's military space programme and its efforts to acquire and integrate military space capabilities may negatively impact strategic stability in the Indo-Pacific. Given the

growing disparity in capabilities between the Indian and Chinese militaries' space programmes, stability in the competitive dyad will likely decline going forward.

In March 2019, India successfully conducted an anti-satellite (ASAT) test, named Mission Shakti.
Image source: Wikimedia Commons

India and China in Outer Space

In the 21st century, anti-satellite capabilities have proliferated alongside the growth of satellites. This has moved outer space away from the notion of a sanctuary and more towards a traditional warfighting domain.

The People's Liberation Army (PLA) has moved aggressively to develop and integrate both kinetic and non-kinetic anti-satellite capabilities into its organisation. China conducted a kinetic ASAT test in 2007 striking a satellite orbiting at more than 800 kilometres above the Earth. By 2013, the US Department of Defense estimated that the PLA had the ability to target satellites in geostationary orbit as well. On non-kinetic capabilities, the PLA has focused on jamming and direct energy attacks to disrupt satellite operations. China has deployed jammers to block space-based capabilities on the disputed islands of the South China Sea and four anti-satellite jammers near the Arunachal Pradesh border in October 2020 during the India-China border standoff in Ladakh.

The most recent innovation in non-kinetic capabilities involves the use of cyber capabilities. Cyberattacks can be used to target ground stations and terminals, taking them offline during military operations. This was the case when Russia, through a cyberattack on the Viasat network, targeted broadband satellite internet access in Ukraine. Ukraine was able to replace the affected systems with Starlink terminals and mitigate the damage. China is also known to harbour sophisticated cyber capabilities that can be deployed for cyberattacks.

Despite these proliferating capabilities, defensive measures have also parallelly improved. For the time being, these measures focus more on improving resilience and redundancy rather than active defence measures. Satellites have gotten smaller and

more numerous, making it challenging to attack an entire mega constellation of satellites. Starlink for instance, already has a constellation of thousands of small satellites with an aim to put nearly a total of 12,000 in orbit. This resilience helps sustain space operations even if individual satellites are attacked. To this end, China is rapidly expanding the size of its satellite fleet. In the latest development, China plans to deploy nearly 38,000 satellites to provide internet connectivity.

India has traditionally advocated for the use of outer space for civilian and peaceful purposes. The growing threat from China is pushing India to increasingly adopt a military posture in outer space. For nearly two decades prior to 2019, India has been launching advanced military satellites to assist military operations. Around 2001, the Indian government approved the Space Based Surveillance (SBS) programme which launched the CARTOSAT and RISAT series of satellites. The first phase, which began in 2001, involved the launch of four satellites, while the second phase in 2013 saw the launch of six more satellites. Most recently, India has begun implementing the third phase of the SBS programme that aims to launch 52 satellites over the next 10 years for surveillance and reconnaissance. India began deploying dedicated communications satellites for its armed forces in 2013. The Indian Navy and Air Force already have dedicated communications satellites with the Indian Army's satellite expected to be launched in 2026.

But in 2019, India conducted its own ASAT test under Mission Shakti targeting a satellite at an altitude of 300 kilometres. Dr G. Satheesh Reddy, Chairman of the Defence Research and Development Organisation (DRDO), separately stated that India is "working on a number of technologies like DEWs (Directed Energy Weapons), lasers, electromagnetic pulse (EMP), and co-orbital weapons etc". While the Indian military does have electronic warfare and jamming capabilities, their effectiveness against satellite systems is not known. India has also been working on DEWs although their induction and deployment are still some time away. Overall, however, India's development of anti-satellite weapons is in its nascent stages.

Outer Space Competition and Impact on Strategic Stability

The preceding section demonstrates an asymmetry in Indian and Chinese military outer space capabilities. China has invested extensively in both kinetic and non-kinetic means to target satellites. Indian development, on the other hand, is uneven. While India has demonstrated some kinetic capabilities, it is still lacking in non-kinetic capabilities.

Thus, China has far more options to escalate into outer space. The lack of Indian counterspace capabilities means that India has few options to retaliate if indeed China does attack Indian space assets. China can use non-kinetic capabilities to target Indian satellites. If India retaliates with kinetic means, it will be highly escalatory. But without non-kinetic capabilities, India has few options to retaliate. While India's space programme has been growing, it still operates relatively few space assets compared with China. Heavy reliance on a few large satellites puts India in a precarious position. If these are disabled, there is little resilience in India's military space architecture. China, on the other hand, is rapidly expanding the size of its satellite fleet. Even with offensive capabilities, it is impossible for India to target so many satellites. Thus, while India remains vulnerable, China has increased its resilience. In a border standoff or a

military conflict, the incentive to escalate a conflict into the outer space domain appears attractive for China.

If China were to escalate a territorial conflict into the outer space domain, India will feel pressured to respond. But it may choose to respond in a domain or through means it feels advantageous. This may very well be the naval domain. India activated its naval forces during the 2020 border standoff in Ladakh, with naval vessels aggressively patrolling the Indian Ocean. Thus, it would be a further escalation as a previously localised conflict would now occur on multiple fronts.

Finally, an outer space competition could extend to conflict with other countries of the Indian Ocean Region. India maintains several space monitoring stations in Vietnam, Indonesia, and Mauritius. China may well perceive these to be legitimate targets, given their dual-use potential, and may choose to target them through non-kinetic means. Similarly, India may find it legitimate to target any Chinese assets in Pakistan through non-kinetic means if it believes they are assisting the Chinese military. Either move will mark an expansion of the conflict.

Strategic stability is based upon the deterrence created by the mutual vulnerability of one and another's forces. Given the asymmetry between the two countries capabilities, mutual vulnerability does not exist. India is far more vulnerable to China than vice versa. Any move by either side to escalate the conflict into outer space may spark reactions that will further increase the likelihood of expansion of the conflict on terrestrial frontiers through different pathways. Such escalation would have grave consequences for the entire region.

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