# China's Anti-Satellite Warfare Programme:
## Implications and Lessons

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On July 20, 2013, China launched three satellites named Chuangxin-3 (Innovation-3), Shiyan-7 (Experiment-7) and Shijian-15 (Practice-15) into orbit which, according to US reports, were part of the People's Republic of China's (PRC's) secretive Anti-Satellite (ASAT) warfare programme. Launched by a Long March-4C launcher from Taiyuan Satellite Launch Centre in north-central China, one of the satellites is equipped with a robotic mechanical arm capable of extending and attacking orbiting satellites in space. Denying the speculation, Space News, China, stated that the three satellites are to be used for observation of space debris and conducting scientific experiments in space. A prominent Chinese military affairs specialist with the International Assessment and Strategy Centre, Washington, observed that the robotic arm is a clear dual-use, military civilian satellite.[1] Notable events took place when China carried out a surprise operation in January 2007 of firing a ballistic missile that destroyed an obsolete Chinese weather satellite in orbital space and conducted a similar satellite test in August 2010 when two small satellites manoeuvred several hundred miles above the earth, both of which were deemed as ASAT operations. A recent Chinese defence paper reveals that a US software programme called Satellite Tool Kit (STK) was being used for the PRC's ASAT programme to support research on information flow in kinetic energy anti-satellite warfare weapons.[2] The report details bring forth the reality that the People's Liberation Army (PLA)

is rigorously developing and acquiring technologies to improve China's space capabilities. The ability to have an advantage in the "final frontier" would be crucial to bridging the gap between the war-fighting capabilities of China and the advanced Western nations.

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On January 11, 2007, the PRC had launched a ballistic missile armed with a kinetic kill vehicle to destroy the PRC's Fengyun-1C weather satellite at about 530 miles in Low Earth Orbit (LEO) in space.[3] The destruction resulted in around 3,000 debris pieces and tens of thousands of smaller pieces in space endangering human spaceflight and hundreds of satellites. In LEO, reconnaissance and weather satellites and manned mission spaces are vulnerable to the increase in space debris, resulting in a compounded hazardous operating space environment. Consequently, the experiment has been highly condemned by the US, Australia, Canada, United Kingdom, South Korea, Japan, Taiwan and European Union among others. China could be held responsible for the destruction of the tiny Russian BLITS satellite by the debris created by the 2007 tests under the 1972 Convention on International Liability for Damage Caused by Space Objects.[4] China issued a public statement on January 23, 2007, stating that the country calls for the peaceful use of space and that the test was not aimed at any country. After China's kinetic test in 2007, the United States carried out Operation Burnt Frost in retaliation in 2008, in which it used missile technology to destroy one of its own spy satellites, the USA 193. The US destroyed the satellite at an altitude of 250 km which is quite low, so most of the debris was burned up and consumed as it entered the Earth's atmosphere. Operation Burnt Frost was neither highlighted in the media nor was it condemned by the international community as the test did not cause increase in space debris. The operation was carried out with a dual motive of tit-for-tat demonstration of US ASAT capabilities and showcasing of US hegemony in space.

China's manual docking of the Shenzhou-9 spacecraft in 2012 is a noteworthy step in its pursuit to match up to the US space and technology programme, in addition to its quest to build an indigenous space station. GlobalSecurity.org, a Washington-based intelligence provider indicates that China has spent more than $5 billion in 2012 on its space programme.[5] While China may be behind the US in terms of developing high end technology for its space programme, its gains over the last decade have been impressive, including, but not limited to, sending a manned mission into space, completing a spacewalk and launching lunar orbiters. The burgeoning space race between the US

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and China is undergoing accelerated evolution and portends similarities to a second Cuban missile crisis in the offing. The world's increasing economic and military dependence on space creates a vulnerability that is an attractive target for adversaries. For instance, the world is so dependent on the Global Positioning System (GPS) for a variety of tasks that if an ASAT attack brings down or disrupts the GPS, it will bring the world economy to a near standstill. Loss or degradation of GPS timing could disable the majority of pager and cellular telephone networks around the world, disrupt the global banking and financial system, and interrupt the operation of electric power distribution systems.

Since 2006, India has also been developing its indigenous capabilities by conducting missile defence-cum-ASAT intercept tests on a regular basis. Dr. VK Saraswat, former DRDO Chief said that India is putting together building blocks of technology that could be used to neutralise enemy satellites and that work is being carried out to protect Indian satellites and ensure space security.[6] One of the reasons for India's interest in the ASAT programme is the vulnerability of Indian satellites to ASAT weapon systems. Currently, India's focus, however, is on developing its indigenous missile defence system and an ASAT programme would be a technology demonstrator for this system.[7] However, a major challenge in the programme is that India does not have the indigenous space situational awareness capability needed for an ASAT system. Hence, the need of the hour is to develop core and dedicated in-house expertise, cutting edge technical knowhow, large scale reactive manufacturing capacity and optimum investments to achieve success in a time-bound manner. China's advances in ASAT-based technology have profound implications for India. China's assertive nature along with its rapid ASAT build-up and lingering issues with neighbouring countries pose a serious challenge to the world and particularly, to India at the regional level. The situation has been worsened by the growing China-Pakistan nexus in recent years. In order to protect its vulnerable space assets, India needs to engage itself in rigorous missile and ASAT development for the purpose of credible deterrence.

The Cold War period is testimony to the US-Soviet Union space race when ASAT capabilities were first tested and deployed. The 21st century is again witnessing a similar space race with the rise of China's "Star Wars" programme. Michael Krepon, co-founder of the Washington DC- based Stimson Centre and Director of its South Asia and Space Security programmes, says, "Beijing and Washington have a choice to make, the same choice that Moscow and Washington faced during the Cold War. Major powers can ramp up the competition to damage satellites, or they can arrive at tacit agreements to dampen this competition.... "The United States and the Soviet Union chose wisely. China has yet to choose."[8] It remains to be seen how the US responds to the 2013 Chinese launch of the three satellites with ASAT capabilities – whether the Obama Administration chooses to ignore the operation considering its own ongoing ASAT operations or it reciprocates *á la* 2007. The fragile nature of the space domain requires a mutual understanding among the nations to cooperate in maintaining harmony in space and utilise the domain peacefully and fruitfully for the progress of mankind in the 21st century.

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## Notes

1. http://freebeacon.com/china-launches-three-asat-satellites/
2. Ibid.
3. Shirley Kan, "China's Anti-Satellite Weapon Test", April 2007, https://www.fas.org/sgp/crs/row/RS22652.pdf
4. http://www.space.com/20173-china-space-junk-crash-lawsuit.html
5. http://www.globalpost.com/dispatch/news/regions/asia-pacific/china/120620/space-race-science-technology
6. Sagar Kulkarni Thiruvananthapuram, "India Readying Weapon to Destroy Enemy Satellites: Saraswat," Press Trust of India, January 3, 2010.
7. Victoria Samson, "India's Missile Defense/Anti-Satellite Nexus", *The Space Review*, May 2010
8. http://www.nbcnews.com/science/mysterious-actions-satellites-have-experts-guessing-chinas-intentions-8C11122565