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Shenzou-17 and China's Space Dream

By

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Space has become a critical enabling domain for militaries since the First Gulf War. China's Military Strategic Guidelines for the New Period present the People's Liberation Army's (PLA) need to include new science and technology elements in the strategy to face the war of the new millennium. The strategy of the civil-military aspect of the space program is a benchmark for China to become a space power. The development of China's space program started slowly before the year 2000. In the Mao era, the space exploration program faced challenges when the Cultural Revolution occurred. During the Cultural Revolution, many scientists in the country were arrested and killed. Later, during the era of Deng Xiaoping and Jiang Zemin, China created a technology innovation policy focused on high-tech industries. After Xi Jinping was appointed as President, he introduced the vision "Space Dream to Make China Stronger," which has encouraged people, especially the young generation, to make efforts to build the country into a powerhouse of technology. China's second ranking after the U.S. in Government Expenditure on Space Programs in 2020 and 2022 is a signal of change in geopolitical dynamics.

On Thursday, October 26 October 2023, at 11.14 a.m. Beijing time, a Long March 2F rocket lifted off from the Jiuquan Satellite Launch Center in the Gobi Desert. The rocket, carrying the Shenzhou 17 spacecraft and its three-person crew, headed to Tiangong space station for a six-month stay. Two of the Shenzhou-17 crew members are the youngest in Chinese history since the launch of the space station construction mission. The crews are Tang Shengjie, 33, Jiang Xinlin, 35, and Senior Colonel Tang Hongbo, a veteran astronaut, who was launched into orbit on the Shenzhou-12 mission in June 2021. China is sending young astronauts in their 30s so they have the experience to train more young would-be astronauts as China prepares to become a space power by 2030.

The Shenzhou-17 astronauts' tasks are to conduct science experiments such as biotechnology experiments for space protein molecular. Space gravity will provide a stable environment for scientists to produce more accurate results on the functions of protein molecules. They will also carry out very challenging tasks, which include installing extravehicular payloads and conducting space station maintenance before returning to Earth in May 2024.

Chinese Space Dream: Keep Going

Once Shenzhou-17 arrived at Tiangong space station after 6.5 hours of liftoff from Earth station, China National Space Administration (CNSA) declared the launch a 'complete success'. Shenzhou-17 was another Chinese success story in the space program; up-to-date, a total of 20 astronauts have been successfully sent.

In 2003, history was made for China as the third country after the former Soviet Union and the U.S. when its space program successfully sent a manned crew to the space station. The astronaut Yang Liwei entered space with Shenzhou-5 in October and became China's first space traveler or "taikonaut".

China built its own space station Tiangong after it was excluded from the International Space Station (ISS) because the U.S. was concerned about the relationship between the Chinese space program and the PLA's increasing military power. Tiangong, which means 'Heavenly Palace' orbits Earth at an altitude between 340 to 450 kilometers approximately the same orbital height as the ISS.

Tiangong is much smaller than the International Space Station, with only three core modules: Tianhe, Wentian and Mengtian compared with the 16 modules on the ISS, which has hosted astronaut crews continuously since November 2000. However, China has unveiled its plan for Tiangong to expand from three to six modules in several years. From three to six modules, it is intended to provide an alternative platform for near-Earth missions for astronauts from other countries.

Tiangong is presently able to host a maximum of three astronauts, compared to the ISS, which can host a maximum of seven crews. The ISS is expected to be decommissioned after 2030, approximately during which year China expects to become a major space power. As Tiangong became fully operational at the end of November 2022, several countries planned to send their crews to Tiangon. However, due to budget constraints, the European Space Agency (ESA) confirmed that it would not be able to participate in the Chinese space program. Europe's action to delay its participation in China's space program is a confrontation between the U.S. and its allies against China as a new strategy for the space program race, according to a Chinese Global Times journalist.

China is striving toward space superiority through soft power diplomacy. Xi's leadership increased the China National Space Administration's (CNSA) efforts to strengthen relationships with more than 100 countries worldwide to cooperate on space issues. Among those high-profile partnership countries are African nations, Belarus, Pakistan, Azerbaijan, Switzerland, Mexico, India and BRI partner countries. China is also strengthening its space program relationship with the Gulf nations including Saudi Arabia and the United Arab Emirates (UAE). The UAE released its National Space Strategy 2030 in 2019, and China also aims to become a space power in 2030. China announced its intentions to partner with Saudi Arabia and the UAE during the China-Gulf Cooperation Council (GCC) Summit in December 2022.

Once the 'One Belt, One Road' (OBOR) was rebranded as the Belt and Road Initiative (BRI), China expanded its socio-economic multi-trillion-dollar project from Earth to space. The term 'Information Silk Road' in the 2015 White Paper is specified in Section IV, 'Cooperation Priorities', which states that countries along the Belt and Road have their own resource advantages and their economies are mutually complementary. Therefore, there is great potential and space for cooperation.

Although China welcomes countries for cooperation in the civil space program, it also prioritises the military element for itself. The U.S. Department of Defence (DoD) 2023 Military Report stated that Beijing continues to develop counter-space capabilities, including direct-ascent anti-satellite missiles, co-orbital satellites, electronic warfare, and directed-energy systems that are able to contest or deny an adversary's access to and operations in the space domain. The responsibility of the space military domain is borne by the Strategic Support Force's (SSF) Network Systems Department (NSD), also referred to as the Cyberspace Force.

China insists that space superiority is the ability to control the space-enabled information sphere and to deny adversaries their own space-based information gathering and communication capabilities as the critical components to conduct modern "informatised warfare." Therefore, China increased spending to keep improving the PLA's capabilities in space-based intelligence, surveillance, and reconnaissance (ISR), satellite communication, satellite navigation, and meteorology, as well as human spaceflight and robotic space exploration. It is believed that the ISR program is important for the PLA to carry out counter-intervention operations employing anti-access and area denial (A2/AD) capabilities in local informatised warfare, for example, in the event of a Taiwan crisis and a South China Sea dispute. Counter-space operations employing a range of offensive and defensive space capabilities will be executed by the People's Liberation Army Strategic Support Force (PLASSF).

China has made progress in the ISR system but not in its space transport system. A report in "China's Space Program: A 2021 Perspective" highlighted that for the next five years, China will continue to improve the capacity and performance of its space transport system and also move faster to upgrade launch vehicles. China will develop new rocket engine technologies to improve its capacity to enter and return from space and make space entry and exit more efficient to meet the growing needs for regular launches in the mission to achieve space power status in 2030 plus 'national rejuvenation' status in 2049.

As China grows its civil-military capabilities, its space program is likely to pose a threat to the environment in outer space. The threat that can happen is a collision of the ISS satellite with other objects. The ISS can avoid speeding debris, but sometimes the risk of being hit remains. The space station also needs to focus on challenges in terms of mega-constellations. For example, the Starlink satellite operated by the American aerospace company SpaceX has been confirmed to have had close encounters and has engaged in collision avoidance with the Tiangong space station. China and the U.S. prioritise space programs despite both being embroiled in strained relations, but their space competition remains. China and the U.S. must figure out a way to cooperate on some issues in the use of space. One issue that must be considered is the safety of space infrastructure, where a lack of communication could be damaging and possibly even deadly.

For China, space power is a tool to project its power to deny its major rival, the U.S. military, access in the Indo-Pacific region or, increasingly, to hold at-risk U.S. access in the broader Indo-Pacific region. China also wants to overcome the U.S. hegemony and restrict the U.S. ability to move freely in the Indo-Pacific region. But for the U.S., China's ambition to achieve the goal of great power status and national security interests will create instability in the space domain. While NASA expanded its public-private partnership, the CNSA is a state-owned enterprise, which is CCP's close relations to PLA. The lack of transparency in China's dual objective of the space program is said to be closely related to the development of the military program of the PLA. Every activity that China does in outer space raises concerns about threats to the U.S. The geopolitics dynamics perspective in the 21st century clearly reflects the strategic confrontation between the rising Chinese powers and the declining U.S. hegemony.

Now, the space program has become an arena for several countries to demonstrate their capabilities in the space domain. Geopolitics is increasingly changing from unipolar to multipolar. Every country actively uses the field of science and technology to achieve political and economic power at the global level. Although the U.S. dominated the space domain after the Cold War, the emergence of space programs by China, India, Japan, South Korea, Germany and Canada each has advanced space technology. Some countries want to achieve prestige, status and national image, while others are aligned with the fields of science and human exploration into outer space. In the future, the space domain will be dominated by the U.S., China and European countries.

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