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Space Warfare and Strategic Competition: China-Russia Collaboration in Space and its Impacts on US Security (Post-2015)

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Abstract

The Sino- Russian bilateral relationship has grown closer in numerous ways since the end of the Cold War. The growing political ties between Russia and China are reflected in their space cooperation. Regarding space technology, exercising China- Russian space cooperation passed a dramatic shift from shallow to deep, with the 2014 Ukraine extremity serving as the tilting point. In terms of space tactfulness, the two nations work together to stop the weaponization of space and an arms race in space. China- Russia space cooperation is a palpable incarnation of the two nations' all- encompassing strategic cooperation and a response to the United States' space weaponization policy. The two nations' space cooperation also ineluctably influences space geopolitics, which limits China- Russia space technology cooperation to some degree and significantly affects the Sino- Russian strategic collaborative cooperation. Maintaining the multipolarity of space and the general stability of the China- United States- Russia triangular space relationship, upholding the status and characteristics of the" global commons" in space, and developing indifferent and just space governance regulations in the future are all pivotal for the stability of the space order. China-Russia space cooperation is the ineluctable outgrowth of addressing the geopolitical challenges in space. A palpable attempt to put the two global governance generalities of concession, common construction, and participating into practice and produce a community of mortal fortune in space is China- Russia space cooperation, particularly the establishment of a common lunar exploration station. It's also a means for China to offer Chinese results and Chinese wisdom for transubstantiating space governance. The strategic cooperation between China and Russia will advance to a new position as a result of the expansion and strengthening of their space cooperation. The strengthening and modernization of Sino- Russian relations has been a significant shift in global geopolitics since the end of the Cold War. Since 1991, when they inked a border agreement to settle their border controversies, the two nations' relationship has steadily gotten closer, evolving from a" formative cooperation" in 1994 and a " strategic cooperation" in 1996. As a result, at the launch of the twenty-first century, a" formative strategic cooperation of collective

trust and equivalency" was established. Space technology breakthroughs since the turn of the twenty-first century have sped up space exploration and use, resulting in notable changes across a range of spheres of human society. But this development has also accelerated the militarization and weaponization of space, intensifying the arms race and adding to space pollution. China and Russia have made progress in working together on outer space arms control to stop further militarization and arms races, despite resistance from the US and other nations. There are

more and more significant security risks to outer space in this new era of century-old changes. China and Russia must keep enhancing their cooperation within the framework of multilateral institutions like the United Nations, guided by the idea of a global community of shared future. To advance international discussions in the area of space arms control and produce international legal documents on outer space security, they must cooperate. They must also contribute appropriately to the advancement of human society's peaceful development and global security governance. The two nations further developed their bilateral relationship into a" comprehensive strategic cooperation of collaboration" during the first two decades of the twenty-first century. In light of this general environment, bilateral space cooperation has steadily increased and represents a palpable incarnation of the two nations' advanced and upgraded relationship. China and Russia continue to work nearly together on space tactfulness with the thing of establishing an external terrain that supports public development in order to maintain space security, public security, and the stability of the global strategic geography. Geopolitical considerations are pivotal when it comes to space technology collaboration. The main factors impacting space technology cooperation between China and Russia are the two countries' space development dynamics and the U.S. strategy of space ascendance, which includes space weaponization programs and practices. The growth and strengthening of China- Russia space cooperation both influences how space geopolitics is shaped and coincides with the elaboration of the two nations' political ties in response to shifts in space geopolitics.

Applying the theory of Realism and Security dilemma in this research for the better understanding of this cooperation and its effects.

Introduction

Cooperation on outer space arms control has been placed on the agenda of global security governance since the end of the Cold War, against the backdrop of the US-Soviet arms race and pressured by the US's ongoing development of military technology in outer space, accelerating the weaponization of outer space, and pursuing absolute superiority in outer space. Although they clearly have their own interests and strategic preferences, China and Russia have also cooperatively engaged in bilateral and multilateral exchanges and practices aimed at preventing the weaponization of space, preserving space security, and developing rules for outer space order. Space technology has advanced quickly since the turn of the twenty-first century, speeding up outer space exploration and use. This has significantly aided in the advancement of human society in many areas, but it has also accelerated the militarization and weaponization of space, intensified the arms race in space, and exacerbated environmental pollution. These factors present security risks to the peaceful development and logical exploration of space resources for nations worldwide. In this regard, China and Russia, as space powers and strategic partners, have started to step up their cooperation in the area of outer space arms control. They have also contributed Chinese and Russian ideas to the global governance in the area of outer space security

and put forth proposals to thwart the militarization and weaponization of outer space. A more severe "governance deficit crisis" has resulted from the 2022 outbreak of the Russia-Ukraine conflict, which has further heightened the great power competition in space and the outer space security crisis. China-Russia cooperation on outer space arms control faces more difficult obstacles that call for strategic changes. However, the China-Russia comprehensive strategic partnership of coordination for a new era also includes cooperation in space as a key element. (He Qisong, 2021)
The significance of this relationship is reflected in the two sides' cooperation in the field of outer space arms control. A useful model for the international community to address the risks of weaponization and an arms race in space will be provided by China and Russia working together effectively. The signing of the 1992 agreement on intergovernmental space cooperation and the 1994 cooperation agreement between the two nations' space ministries marked the beginning of China-Russia cooperation in space.
The foundation for the two nations' regular cooperation and exchanges in the field of space is the China–Russia Space Cooperation Subcommittee, which was formed in 2000 with the intention of holding regular meetings between the Russian and Chinese prime ministers. In general, there are two main facets of China-Russia cooperation in outer space: technology and security. China-Russia cooperation in space technology prior to the 2014 Ukraine crisis was defined by a "buyer–seller relationship." Following 2014, the two nations' cooperation grew even more, developing a broad and all-encompassing relationship entwined with space science, technology, and equipment.
Preventing an arms race and the weaponization of space is the primary objective of China-Russia cooperation in the field of outer space security, which primarily focuses on outer space arms control cooperation. This essay's definition of the "new era" primarily refers to the last ten years, when China-Russia cooperation in outer space arms control has advanced somewhat significantly.

Research Questions

1. What are the key developments in space warfare technologies between China and Russia after 2015?
2. How China-Russia collaboration in space does affects U.S. national security?

Theoretical Framework

Applying the theory of Realism and Security dilemma on this research.

Key assumptions of Realism:

- States are primary actors in this anarchic international system
- States seek to maximize their power in order to their survival

- Military power and survival is above all

Key assumptions of Security dilemma:

Actions are taken by states to enhance their security cause reactions from other states. This can result in an arm race and increasing own security.

Realism, more especially, the idea of the Security Dilemma is the theoretical foundation for the analysis of "Space Warfare and Strategic Competition: Russia-China Collaboration in Space & its Impacts on US Security (Post 2015 Era)". According to realism, states function in anarchic international systems where gaining power is the main means of surviving. Given this, it is possible to interpret China and Russia's growing space cooperation as a calculated attempt to offset American space dominance by strengthening their security through superior military and technological advancements. However, this collaboration exacerbates the Security Dilemma, in which an arms race in space is sparked when defensive actions by one state such as China and Russia's space technology advancements are viewed as threats by another (the United States). Tensions rise as the U.S. responds by stepping up its own space defense efforts. The realist perspective that security is a zero-sum game, where a state's increase in security frequently leads to others' increased insecurity, resulting in ongoing strategic competition and possible conflict, is emphasized by this cyclical dynamic.

Literature Review

China and Russia's cooperation in outer space arms control has primarily advanced through two stages: jointly proposing the mechanism for outer space arms control and jointly proposing working documents and proposals with other nations.

China and Russia first aligned their positions on pertinent issues in order to preserve national security, stability, and global strategic balance. The leaders of the two nations signed a Joint Statement on Anti-Ballistic Missile in Beijing in July 2000, highlighting the importance of the treaty as the cornerstone of global strategic stability and the detrimental effects that the US national missile defense system's development will have on international arms control treaties, non-proliferation mechanisms, and global strategic stability (Gov.cn. 2000). The leaders of China and Russia jointly issued a statement during former Chinese President Jiang Zemin's July 2001 visit to Russia, stressing that "an international legal document must be concluded to prohibit the deployment of weapons in outer space and the deployment of weapons in outer space must be strongly prevented." In order to achieve this, China and Russia established a special adhoc committee on the prevention of the arms race in space, urged multilateral discussions on the subject at the Committee on Disarmament, and gave the committee the authority to hold talks (Gov.cn.2001). And to assign such a committee the responsibility of conducting discussions (Gov.cn. 2001). In order to jointly present their regulatory proposals and principles for outer space arms control to the UN and other nations, China and Russia have begun exchanging working documents, holding meetings, and taking other actions based on their coordinated positions. Their main demands are for the international community to define terms like "space weapons" and

"space objects" precisely within the framework of the Conference on Disarmament and to abide by Article IV of the 1967 Outer Space Treaty.

A joint working paper (CD/1679) titled "Possible Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, The Threat or Use of Force against Outer Space Objects" was submitted to the Conference on Disarmament (CD) in June 2002 by China, Russia, Belarus, Indonesia, Syria, Vietnam, and Zimbabwe. The primary focus of the paper is based on a number of draft legal documents that China submitted to the Conference on Disarmament between 2000 and 2001. These documents center on preventing an arms race in space. The three main responsibilities of relevant nations for outer space security are outlined in detail in the document: not to rely on the threat or use of force against outer space objects; not to assist or encourage other States, groups of States, and international organizations to engage in activities forbidden by this Treaty; and not to place any objects carrying weapons in orbit around the Earth, install them on celestial bodies, or station them in outer space in any other way (CD/1679 2002). China and Russia jointly submitted proposals (58/36 and 59/65) to stop an arms race in space at the 71st plenary meeting of the 58th session of the UN General Assembly in 2003 and the 66th plenary meeting of the 59th session of the China International Strategy Review of the UN General Assembly in 2004. An international conference on averting an arms race in space was held in August 2005 in China and Russia. They sent two papers to the UN, "Preventing an Arms Race in Outer Space" and "Transparency and Confidence-Building Measures in Outer Space," along with thirty-three other nations. (Ying Liu, 2024)

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The main points of the 2002 submission, "Potential Elements for a Future International Legal Agreement on the Prevention of the Deployment of Weapons in Outer Space, The Threat or Use of Force against Outer Space Objects," were compiled by China and Russia in February 2006. They compiled different viewpoints and sent the Compilation of Comments and Suggestions to the Conference on Disarmament's CD PAROS (Proposed Prevention of an Arms Race in Space) Working Paper (CD/1769 2006). A working paper titled "Definition Issues Regarding Legal Instruments on the Prevention of the Weaponization of Outer Space" (CD/1779 2006), which was jointly distributed by the Chinese and Russian delegations to other attendees of the Conference on Disarmament in May, clarified at least four contentious ideas and suggested additional conceptual discussions. China and Russia also disseminated working papers titled "Verification Aspects of PAROS" (CD/1781 2006) and "Existing International Legal Instruments and Prevention of the Weaponization of Outer Space" (CD/1780 2006) during this time, which called for the enhancement of pertinent provisions as well as a review and feasibility study of potential verification mechanisms. In December, the UN General Assembly adopted two documents that

China and Russia jointly proposed: "Preventing an Arms Race in Outer Space" and "Transparency and Confidence-Building Measures in Outer Space". Two significant developments in the development of outer space arms control mechanisms have resulted from China and Russia's cooperation: the joint proposal in May 2006 of "Transparency and Confidence-building Measures in Outer Space Activities and the Prevention of Placement of Weapons in Outer Space" (CD/1778),

and the February 2008 submission of a draft treaty on the Prevention of the Placement of Weapons in Outer Space and of the Threat or Use of Force against Outer Space Objects (PPWT) to the United Nations Conference on Disarmament (see CD/1839 2008). In April 2008, the Conference on Disarmament formed a working group to prevent an arms race in space during the same time frame. A resolution (65/68) proposing the creation of a Group of Governmental Experts (CGE) on Transparency and Confidence-Building Measures in Outer Space Activities was approved by the UN General Assembly in 2010 after being proposed by China and Russia. Formally created in 2011, the GGE met for the first time in July 2012 in New York (Wang 2012). The United Nations agencies nearly always adopt resolutions on "Preventing an Arms Race in Outer Space," thanks to the combined efforts of the international community represented by China and Russia. This is a favorable outcome of China and Russia's unrelenting efforts in the field of outer space arms control. (Ying Liu, 2024)

The Conference on Disarmament received a revised draft of the PPWT from China and Russia in 2014. The two nations modified some of its provisions while upholding fundamental principles, such as updating pertinent definitions and modifying the fourth article on the right to self-defense (CD/1985 2014). However, US resistance prevented the draft from being adopted. The US brought up related issues in September of that year (CD/1998), primarily ground-based anti-satellite weapons and verification (CD/1998 2014). A resolution on "Prevention of an Arms Race in Outer Space" was also adopted by the UN General Assembly's First Committee in 2014 (69/32), thanks to the combined efforts of China, Russia, and other pertinent nations. In 2017, the UN General Assembly adopted a resolution to create a government expert group on "Prevention of an Arms Race in Outer Space" to hold in-depth discussions on international legal tools, such as the PPWT, to stop the weaponization of space. But this endeavor was also hindered. China and Russia simultaneously supported the resolution draft on "Prevention of the Placement of Weapons in Outer Space," which Russia had started in 2014. This traditional resolution of the UN General Assembly's First Committee has been adopted annually since 2014 with the active participation of China and Russia; beginning in 2017, the idea of "a community of shared future for mankind" was added to the resolution. (Ying Liu, 2024)

It can be stated that China and Russia are primarily committed to actively promoting the negotiation and conclusion of legal documents to prevent the weaponization of outer space and the arms race in outer space at the United Nations Conference on Disarmament, whether through bilateral cooperation or joint efforts with other nations. However, some nations, like the US, have opposed this cooperation process on outer space arms control, which has resulted in a more complicated and dire outer space security situation. The competition between the major powers to take the lead in creating international space regulations is getting sharper and more intense (Xu et al. 2022, 107–129).

The United States' nuclear deterrent and long-range strike capabilities may be significantly impacted by China-Russia cooperation on ballistic missile defense (BMD). Confidence-building

exercises, technology development, arms transfers, and joint exercises are all part of China-Russia missile defense cooperation. When Russian President Vladimir Putin declared on October 3, 2019, that the two nations were talking about working together on ballistic missile defense, China-Russia cooperation gained prominence. "I don't think I will reveal a big secret, this will become evident after all," Putin said. At this time, we are assisting our Chinese partners in developing a missile warning system. This is a very serious matter that will significantly improve the People's Republic of China's defensive capabilities. (Carlson, 2022)

Since the 1960s, China has been interested in creating defense systems against ballistic missiles. Mao Zedong approved the creation of a ballistic missile defense system in 1963, and work on it started in 1964. The project was canceled in 1982 due to the technological complexity of missile defense. Evidence points to a resumption of BMD research in China in the mid-1990s. The Department of Defense claims that China has stated "the intent to develop both land-based and sea-based missile defense systems" and is "working to develop ballistic missile defenses consisting of exo-atmospheric and endo-atmospheric kinetic-energy interceptors." China declared that a land-based mid-course missile defense test had been carried out in January 2010, stating that the test was "defensive in nature" and "not targeted at any country."
The PRC government has opposed national ballistic missile defense since at least the late 1990s, claiming that American missile defense systems would jeopardize global strategic stability. The deployment of space-based missile defense systems that can fend off intercontinental ballistic missiles (ICBMs) and worldwide missile defense systems were both opposed by the PRC government in 2020. The PRC's belief that American missile defense systems are inferior was strengthened in 2002 when the US withdrew from the Antiballistic Missile Defense Treaty might make China's nuclear deterrent ineffective. Additionally, PRC government officials contended that missile defenses would encourage the spread of nuclear weapons by compelling nations to create more advanced missiles in order to get past defenses. Additionally, PRC government officials contended that missile defenses would encourage the spread of nuclear weapons by compelling nations to create more advanced missiles in order to get past defenses. Concerns have also been raised by PRC subject matter experts that American missile defense initiatives may encourage the United States and its allies—particularly Japan—to create a regional missile defense system. Lastly, the PRC government fears that space could become a weapon as a result of the installation of space-based missile defenses. (Pollpeter, Barrett, Edmonds, Kerrigan, & Taffer, 2023) However, PRC opposition to missile defense is not unqualified. China declared in 1999 that it had no problem with lower-tier missile defense systems, like the American Patriot system, which offers point defense against tactical ballistic missiles.

The four main pillars of China-Russia cooperation in ballistic missile defense are technology development, combined exercises, arms transfers, and confidence-boosting initiatives. These are covered in the section that follows.

"The PRC has used Russian-developed missile defense systems while indigenously producing its own increasingly capable missile defenses and radars," the Department of Defense claims. China first acquired the S-400 air defense system in 2014, with a second shipment scheduled for 2020, after purchasing the Russian S-300 system in 2010. The S-400 has "some capability to engage ballistic missiles, depending on the interceptors and supporting infrastructure," according to the Department of Defense.

Additionally, China has used its in-house HQ-9 and HQ-19 air and missile defense systems, which the DOD says have "a limited capability against ballistic missiles." The U.S. THAAD system and the HQ-19 look alike, and it might have started activities in the western part of the nation. The system "has undergone tests to verify its capability against 3,000-km class ballistic missiles," according to the Department of Defense. According to some reports, Russian designs served as the basis for both the HQ-9 and HQ-19 air defense systems. For instance, Janes observes that the HQ-9 is similar to the Russian S-300, albeit shorter. Additionally, it is said that Russia and China collaborated on the development of the the Russian S-400 missile defense system is thought to be the basis for the HQ-19 theater defense missile system. The U.S. Department of Defense claims that the HQ-19 "looks a lot like the S-400." 163 The Russian S-400's missiles, sensors, combat management, and launch vehicles seem to be used by the HQ-19 system, according to Janes.

The U.S. Department of Defense says the following about Russian President Vladimir Putin's 2019 declaration of missile defense cooperation:

Russia declared its intention to support China's missile-attack early warning system, which would involve helping to build ground-based radars and possibly expanding to space-based sensors. A number of ground-based large phase array radars that resemble the PAVE PAWS radars in the United States are currently in place in China and might be used for missile early warning.

The two nations are expected to work together to manage an integrated missile defense system that uses sensors in China and Russia, according to Putin's 2019 announcement of missile defense cooperation. Russian sensors would alert people to missiles approaching from China's north and west, while Chinese sensors might alert people to missiles approaching from China's east and south. A more comprehensive early warning system would be created by combining the two systems than either nation could do on its own. "Strategic missile defense technology are a country's essential secret and all countries are apprehensive about cooperation," reads commentary on the Chinese news website The Paper. However, there is room for collaboration in the area of strategic early warning. It is impossible to rule out further China-Russian missile defense collaboration as long as the US keeps pushing the global missile defense system. An combined China-Russia missile early warning system would probably be a major step forward in the relationship, bordering on an alliance, but no evidence was discovered to support this theory.

China and Russia conducted "Air and Space Security-2016," their first joint air and missile defense training exercise, in May 2016. The Russian Defense Ministry's Aerospace Defense Force hosted the computer-assisted command and staff exercise.

Institute for Central Research. The exercise, according to a press release from the Russian Defense Ministry, was not intended against a third nation and was intended "to train coordinated operations of Russian and Chinese air and missile defense task forces to provide protection from inadvertent and provocative strikes of ballistic and cruise missiles." A similar statement was released by the PRC MND. The exercise included a combination of command posts and missile early warning systems, missile defense systems, space-based sensors, launch, and target tracking, according to PRC media, which cited Russian media. The second exercise in this series, called "Air and Space Security-2017," was conducted by China and Russia in December 2017. The news release from PRC MND detailing the event was the same as the one detailing the exercise in 2016. Coordination of air and missile defense fires against ballistic and cruise missiles, as well as integrated air and missile defense planning, were the exercises' main objectives. One article claims that field exercises were added to this second drill. The exercise was not aimed at any third party, according to a PRC MND spokeswoman, who also stated that "China and Russia both oppose creating global missile defense systems."

In order to jointly safeguard Russian and Chinese security interests as well as regional strategic stability, the two forces are enhancing their practical missile defense cooperation. It appears that the exercises have not been carried out since 2017. Planning for Air and Space Security-2019 reportedly took place in April 2019, according to Chinese and Russian media reports, although there is no proof that the exercise actually took place.

The Russian RD-180 rocket engine is the focus of the proposed China-Russia rocket technology collaboration. The Russian business NPO Energomash produces the RD-180, a staged combustion liquid oxygen-kerosene engine with a thrust output of 860,000 pounds. Soviet engineers created the RD-170 in the 1970s, and the RD-180 is a scaled-down version of that aircraft. At the time, U.S. engineers were aware of the RD-170's staged closed-cycle combustion technique, but it was thought to be unfeasible to engineer well. The design was substantially more likely to explode even though it provided noticeably better performance. Soviet engineers were able to create a dependable engine that was far more powerful and efficient than engines because of their superior engineering abilities and the substantial budget available for Cold War-era projects. Since 2002, American Atlas V rockets have been equipped with the RD-180. The Atlas's reliability increased from 0.9876 to 0.9955 when the RD-180 was incorporated into the design, allowing for a reduction in the number of first-stage rocket engines from six to one and a reduction in the number of parts by fifteen thousand. The Atlas V has only seen one partial failure and no total failures in its 85 launches. Despite the RD-180's shown dependability and performance, Congress ordered that procurement of the aircraft stop on December 31, 2022, due to political pressure to utilize American rocket engines, particularly following Russia's invasion of Crimea in 2014. It seems that PRC interest in the RD-180 began in 2015. "We and our Chinese colleagues consider the provision

of rocket engines themselves as part of broader cooperation, for example, in the sphere of future heavy rocket design, in space stations, and in long-range spaceflight," stated Dmitry Rogozin, the chairman of Roscosmos. The development of engines for the Long March-9 (LM-9) super-heavy-lift launch vehicle, which is anticipated to go into service by 2030, seems to be the reason behind China's interest in the RD-180. With a length of 93 meters, a core with a diameter of 10 meters, and a mass of 4,140 metric tons upon launch, the LM-9 will resemble the Apollo program's Saturn V in size. The LM-9, like the Saturn V, is meant to be utilized in further deep space and Mars exploration missions in addition to a possible Chinese manned lunar program. Four YF-130 kerosene-liquid oxygen rocket engines, produced in China, are expected to power the LM-9's first stage. With a combined thrust of more than 1.1 million pounds, the engines will be able to lift 50 tons into translunar injection or 140 tons into low Earth orbit. It was announced in March 2021 that the YF-130's initial test went well.

Russian support might be extremely beneficial in lowering costs and expediting the development of the YF-130 engines for the LM-9. Additionally, China might build the LM-9 engine on parallel tracks, giving the YF-130 engine priority but keeping the RD-180 as a backup plan in case the YF-130 design doesn't work out. The use of the RD-180 engine in the LM-9 was not mentioned in a June 2021 presentation by Long Lehao, main designer of the Long March family of rockets, raising questions about whether the intended transaction had actually been completed.

Energomash and the Sixth Academy of the China Aerospace Science and Technology Corporation (CASC) reportedly inked a deal in 2018 to work together on the development and production of liquid rocket propellants. The two businesses would work together to produce liquid rocket propellants using "oxygen-kerosene, oxygen-hydrogen, and oxygen-methane propellant components," per a news release from Energomash. It was decided that in order to complete the collaboration, the Sixth Academy would meet with Energomash in January 2019 and provide technical work needs to them. 225 Whether this meeting took place or not is uncertain.

In order to push for talks on Prevention of an Arms Race in Outer Space (PAROS) at the UN Conference on Disarmament (CD), the primary multilateral disarmament negotiating platform of the international community, China and Russia have worked closely together over the past 20 years. China and Russia presented the first draft of the "Treaty on Prevention of the Placement of Weapons in Outer Space and the Threat or Use of Force against Outer Space Objects (PPWT)" in 2008, following several years of collaborating on working papers and holding conferences on PAROS-related topics in the early 2000s. A mixed response was given to the draft pact; while some nations, primarily in the developing world, welcomed its introduction, others, including the US and EU, said it had serious flaws and would require revisions to be effective.

2014 draft, "Treaty on the Prevention of the Threat or Use of Force against Outer Space Objects and the Placement of Weapons in Outer Space".
Based on comments on the 2008 version, China and Russia presented the CD with an updated

second draft of the treaty in 2014. The following is stated in Article II, the 2014 version's primary treaty obligation:

The following are the commitments made by the States Parties to this Treaty:

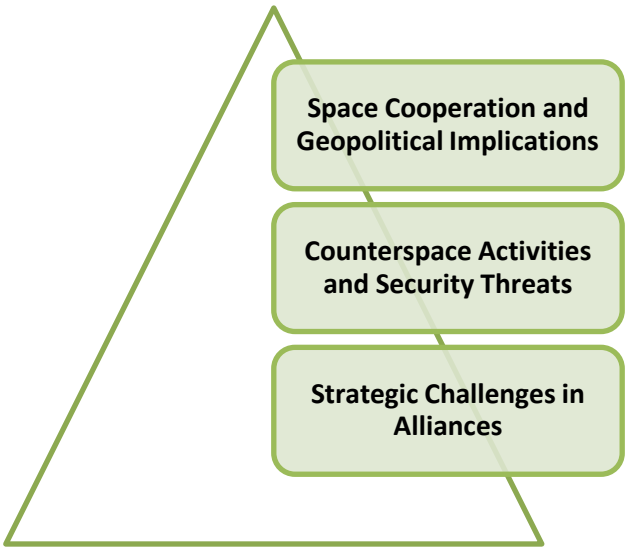
- refrain from deploying any weapons into space;
- refrain from threatening or using force against the Treaty's object in space;
- refrain from participating in space-related activities as part of international cooperation that conflict with the goals and objectives of this Treaty;
- Not to assist or induce other States, groups of States, international, intergovernmental or non-governmental organizations, including nongovernmental legal entities established, registered, or located in territory under their jurisdiction and/or their control, to participate in activities inconsistent with the object and purpose of this Treaty;

The expanding strategic collaboration between China and Russia is reflected in the developing space partnership between the two countries. Russia, which was formerly in charge of the space relationship, now seems to be playing a supporting role. China's increasing space competence and financial capacity to support a sizable and expanding space sector indicate not only the country's ascent to prominence in space but also the geopolitical shift between the US, Russia, and China.

Analysis

How Russia-China Cooperation in Space impacts U.S. Security?

The same factors that drive the entire strategic partnership also drive China-Russian space cooperation. The two nations have a strong ambition to challenge U.S. leadership, notably in space, even though their security concerns do not entirely overlap. They both express concerns about how the United States' space activities are interpreted and believe that their strategic nuclear arsenals are in danger from American space-based dominance and capabilities, particularly those pertaining to missile defense. "Our technical alliance should be focused at the countries who are near to us in mentality and which in general comprise an rising geopolitical power that we may rely on in resisting a unipolar world," stated Dmitry Rogozin, the deputy prime minister at the time and current director of Roscosmos.



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Space ties between China and Russia show an attempt to militarily oppose and deter the United States.

National defense-related operations are part of China-Russia space cooperation. These consist of collaborative efforts on satellite navigation, space debris, and BMD.

Discussing Ballistic Missile Defense;

Chinese sources have connected the US withdrawal from the INF and the US development of long-range missile capabilities to their desire to create more sophisticated BMD capabilities. Russia and

China have both expressed opposition to international missile defense systems. To what degree BMD cooperation will be restricted to tactical and regional capabilities is unknown, though,

• With Russian help, China could create missile warning systems based on the ground and space, increasing the efficiency of its current missile defense systems and accelerating the creation of new ones.

• Joint PRC-Russian air and missile defense drills show the growing intimacy of the two countries and show an attempt to strengthen defenses against ballistic and cruise missile attacks. The degree to which the combined drills demonstrate a desire to create a real combined air and missile defense capability is uncertain.

• Regarding the creation of a cooperative missile early warning system, we could find no evidence to back up the conjectures of subject matter experts and the media. The two nations' relationship would advance significantly with such an agreement, which would resemble an alliance. In addition to giving each nation more capabilities, cooperation in this sector could forge beneficial partnerships that impose shared responsibilities that raise the possibility of escalation by drawing both states into conflict with the U.S.

It seems that the goal of the China-Russia lunar exploration MOU is to create a framework for space cooperation separate from US-led initiatives. Though not recognized by China or

Russia's cooperation on lunar exploration seems to be a reaction to the U.S.-led Artemis Accords, which established a set of guidelines for space exploration and commercial use, as well as the U.S.-led Artemis Program, which aims to send humans back to the moon. The establishment of a joint exploration program and its openness to new participants imply that China and Russia are developing an alternative framework to explore and use space, even though neither nation has independently or jointly introduced a similar set of principles. By positioning China and Russia as alternate leaders in space exploration, this endeavor is probably meant to strengthen their influence in global space diplomacy. By portraying their plans as inclusive and peaceful, the United Nations' association of joint China-Russia lunar exploration seems to be an attempt to further set them apart from the Artemis Accords.

While doing little to prevent China and Russia from acquiring and using terrestrial-based space weapons, their cooperation on space arms control seems to be aimed at projecting the two nations as pursuing the peaceful use of space. The idea that the US is a destabilizing global force while China and Russia are attempting to attain arms control in space may also be strengthened by such initiatives.

As a reaction to the U.S. space weaponization policy, China-Russia space cooperation is a tangible manifestation of the two nations' all-encompassing strategic partnership.

However, space cooperation between the two nations invariably shapes space geopolitics, which in turn has a significant impact on the Sino-Russian strategic cooperative partnership and limits China-Russia space technology cooperation to some degree. Maintaining the multipolarity of space and the general stability of the China-United States-Russia triangular space relationship, upholding the status and characteristics of the "global commons" in space, and developing equitable and just space governance regulations in the future are all made possible by China-Russia space cooperation, which is the inevitable outcome of addressing the geopolitical challenges in space. The main factors influencing space technology cooperation between China and Russia are the two countries' space development dynamics and the U.S. strategy of space hegemony, which includes space weaponization policies and practices. The development of political ties between China and Russia in response to shifts in space geopolitics is closely linked to the growth and strengthening of China-Russia space cooperation, which also influences how space geopolitics is shaped.

According to the head of U.S. space command, cooperation of China and Russia along with Iran and North Korea in space is raising concern for them. He Said;
“Gen. Stephen N. Whiting of Space Command cautioned during a visit to AFA's Mitchell Institute for Aerospace Studies on June 24 that "it does appear there is a growing sense of cooperation in the space sphere between these four countries, at least bilaterally within these four countries." "We're keeping a close eye on that."

Officials and analysts are concerned about the growing alignment of the four nations' interests, with some warning that the authoritarian states are forming an "axis" against the United States. Others argue that these worries are exaggerated.
There are no chances for SPACECOM. "Those relationships are of great interest to us," he stated. "It seems that Russia has turned to these other nations in search of aid as we've watched them struggle on the battlefield in Ukraine, and perhaps they're open to sharing or working together more in the space sector. Yes, we are concerned about that.
An Iranian satellite was launched into orbit by a Russian rocket in February. China and Russia declared in March that they would construct a nuclear power plant on the moon in the 2030s. Most recently, following reports that Russia has already aided North Korea's fledgling space program, Russian President Vladimir Putin and North Korean leader Kim Jong Un signed a defense pact. Whiting pointed out that Russia's experience in launching spacecraft and ballistic missiles could be advantageous to North Korea.

According to U.S. officials, China has helped Russia increase its arms production and it has used North Korean and Iranian weapons in Ukraine. Furthermore, Whiting pointed out that although the four nations primarily collaborate bilaterally, the complexity is increased by their expanding connections.

Russia launched a counter space weapon into the same low-Earth orbit as a U.S. government satellite, according to U.S. officials in late May. In response to a question about how his command determined that the Russian launch posed a threat, Whiting referenced a combination of intelligence and data from earlier Russian launches.

Whiting remarked, "We have been tracking objects in orbit for decades and decades and decades." Therefore, we can examine those orbital parameters and compare the mid-May launch to Russian launches in 2017, 2019, and 2022 that appear to be of the same type of counterspace weapon that they have tested in the past. They seem to have launched into orbit in an operational capacity at this time.

When we look at the launch location, we see that they launched it in a way that is known as co-planar to a national security satellite. They have done that several times in a row now, and since they are coplanar, they have a brief operational response time to possibly put one of our satellites in danger, so it doesn't appear to be an accident.

At the time of the launch, Pentagon press secretary Maj. Gen. Patrick S. Ryder pointed out the parallels to earlier tests in 2019 and 2022. The Russians launched a satellite in late 2019, followed by the release of another satellite. A National Reconnaissance Office satellite was then followed by both satellites. A few months later, U.S. officials reported that the sub-satellite had ejected another object, seemingly a fast-moving projectile. Gen. John W. “Jay” Raymond, who was then Chief of Space Operations, likened them to Russian “nesting dolls” in the years that followed.

Prior to that test in 2017, a nesting satellite was said to have followed a U.S. satellite and launched a projectile into space in a test that was similar.

In February 2022, the Russians launched a satellite to test parts for a nuclear antisatellite weapon, according to the Wall Street Journal.

According to Whiting, China is also rapidly expanding in space, even as Russia continues to test its antisatellite capabilities.

Whiting clarified, "I mean, it really is something to behold, and you can kind of bucket that into two aspects." One is the speed at which they have transitioned to field counter space capabilities, ranging from offensive cyber capabilities to SATCOM and GPS [and] jammers, high energy lasers, direct ascent ASATs, and on-orbit capabilities. We have witnessed them move swiftly across the spectrum of capabilities from reversible to nonreversible. In order to support their terrestrial forces, they have also acted swiftly to develop their own space capabilities.

Whiting called, China's growth in space "breathtakingly fast". China is also rapidly expanding in space, even as Russia continues to test its antisatellite capabilities. Whiting clarified, "I mean, it really is something to behold, and you can kind of bucket that into two aspects." One is the speed at which they have transitioned to field counter space capabilities, ranging from offensive cyber capabilities to SATCOM and GPS [and] jammers, high energy lasers, direct ascent ASATs, and on-orbit capabilities. We have witnessed them move swiftly across the spectrum of capabilities from reversible to nonreversible. In order to support their terrestrial forces, they have also acted swiftly to develop their own space capabilities. (Hadley, 2024)

Conclusion

The evolution of China-Russia relations from good neighborliness to a comprehensive strategic partnership of coordination has led to space cooperation between the two nations, which is a tangible example of their growing political intimacy. However, it is indisputable that geopolitical shifts have also contributed to the growth and strengthening of China-Russian space relations.

Under the guise that American businesses had assisted China in identifying the reason behind its launch vehicle malfunctions, thereby improving Chinese ballistic missile technology, the United States terminated hard-won space cooperation with China in the 1990s. The United States has imposed a multifaceted technology blockade on China in an effort to slow its technological advancement in recent years, positioning the U.S.-China relationship as one of full-scale competition and confrontation. U.S.-China space cooperation was virtually shut down when the Wolf Amendment, which was passed during the Obama administration, forbade the United States from working with China in the space sector. The Innovation and Competition Act, passed by the US Senate in June 2021, forbids the US from engaging in any space exchanges with China and imposes penalties on almost all state-owned space companies. Despite China's cooperation with European nations, the United States has placed considerable restrictions on Sino-European space cooperation. The United States, on the other hand, promotes the weaponization of space, aims to prevent the decline of its space hegemony, and wants to turn space into a battlefield with its powerful space power (including private space companies). These actions present serious threats to China's national security as well as space security. The United States is also relying on its might and attempting to replace the Moon Agreement with the Artemis Agreement in order to gain covert sovereignty over celestial bodies. Due to the disparity in space power between the US, China, and Russia, neither country can prevent the US from implementing its declared plans and policies. Maintaining the multipolarity of space and the general stability of the China-United States-Russia triangular space relationship, upholding the status and characteristics of the "global commons" in space, and developing equitable and just space governance regulations in the future are all crucial for the stability of the space order. China-Russia space cooperation is the inevitable outcome of

resolving the aforementioned geopolitical issues. A tangible attempt to put the idea of global governance of "negotiation, joint construction, and sharing" into practice and to create a community of human destiny in space is China-Russia space cooperation, particularly the establishment of a joint lunar research station. It is also a means for China to offer Chinese solutions and Chinese wisdom for transforming space governance. To a certain degree, Russia determines whether the aforementioned objectives can be met or if the United States will lead one pole in space and China and Russia will jointly lead another. Russia's perception of China-Russia space cooperation, or how much it stands to gain politically, militarily, and economically, is one factor that determines this. This directly relates to another factor, which is whether Russia is sincere about carrying out the contracts it has signed and the agreements it has made with China on space cooperation. Russia's space cooperation with other nations has been impacted by its inability to rigorously implement its own space program for a variety of reasons. For instance, President Putin harshly criticized Dmitry Rogozin, the head of the Russian Federal Space Agency, for the sluggish development of Russia's Yenisei super-heavy launch vehicle. Russia recently declared its intention to replace the Yenisei rocket with the Angara rocket. The sharing of rocket data between the two nations will be significantly impacted if the Ankara rocket is used to travel to the moon. The sluggish construction of the Yenisei will restrict the two nations' ability to collaborate on rocket technology, even if it is retained. All of these elements will have an impact on the international lunar research station's construction, which will have an impact on the global space environment and the development of equitable and just space governance regulations. In conclusion, the Russian side's mindset and practical actions will determine whether or not deep cooperation between China and Russia in space can succeed.

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