International Space Strategy

OFFENSIVE DEFENSE

PEOPLE'S LIBERATION ARMY LOGIC OF PREEMPTION IN SPACE

Jiemin Hou

The People's Liberation Army has incentives to strike preemptively against US space assets in a Taiwan invasion scenario. Doing so would cripple the US Joint Force's ability to project power into the theater before the fight. Denying and degrading US military space capabilities increases the probability of victory and lowers the costs of war for the Chinese Communist Party. But the military advantage gained by striking first does not necessarily translate into a strategic advantage for the Party. This analysis examines the costs and benefits calculi at the operational and strategic levels to understand China's preemption motives. It also evaluates three alternative options to preemption in space to derive a US deterrence strategy. Denying a military benefit while raising the strategic cost to China provides a basic guiding principle to deter and hedge against Beijing's potential decision to preempt in space.

According to a Chinese 2019 defense white paper, achieving complete reunification with Taiwan is in "the fundamental interests of the Chinese nation and essential to realizing national rejuvenation."[1] Chinese Communist Party (CCP) leader Xi Jinping stated in his 20th Party Congress speech that the "wheels of history are rolling on toward China's reunification and the rejuvenation of the Chinese nation. Complete reunification of our country must be realized, and it can, without doubt, be realized!"[2] As an instrument of CCP policy, the People's Liberation Army (PLA) will be tasked to reunify Taiwan if and when necessary.

The PLA will increase its chance of success if it prevents the United States from intervening. Due to the US military dependence on space, the PLA is developing and fielding a full spectrum of counterspace capabilities designed to exploit US vulnerabilities.[3] The common perception suggests space is an offense-dominant domain, which

Lieutenant Colonel Jiemin Hou, USAF, is a student at the School of Advanced Air and Space Studies, Maxwell AFB, Alabama.

1. People's Republic of China (PRC) Ministry of National Defense (MoD), "China's National Defense in the New Era," 2019 White Paper (Beijing: PRC MoD, 2019), http://eng.mod.gov.cn/.

2. Low De Wei, "Full Text of Xi Jinping's Speech at China's Party Congress," Bloomberg, October 18, 2022, https://www.bloomberg.com/.

3. Office of the Secretary of Defense (OSD), *Defense Space Strategy Summary* (Washington, DC: Department of Defense (DoD), June 2020), 3, https://media.defense.gov.

increases the incentive for the PLA to attack in space preemptively.[4] Preemptive attacks against US space capabilities could potentially paralyze the US miliary in coming to Taiwan's aid.

Without the US mounting an effective intervention, the PLA increases its probability of victory in reunifying the island and lowers the costs of war for Beijing. But the operational advantages of preemption in space do not necessarily translate into strategic gains. Examining the costs and benefits calculi at the operational and strategic levels will clarify reasons behind a future decision by China to act preemptively in space.

This article makes two assumptions to reduce the number of variables influencing China's decisions. 1) The PLA will be militarily ready or highly confident in its ability to forcefully reunify Taiwan if and when given the order to execute; and 2) China will have unambiguous indications and warnings of the United States committing to intervention before China decides to strike preemptively in space.

Although a US military intervention is contingent on clear CCP intention to reunify Taiwan by force, the United States has reasons to develop and maintain an ongoing capability to intervene due to the critical factor of time. When Washington discovers the true intentions of the Chinese Communist Party, it may be too late to deny the PLA from landing on Taiwan and establishing a foothold.

Conversely, it would also be wise for PLA planners to assume the United States will intervene because failing to account for such a scenario could jeopardize its chance of success.[5] These assumptions thus remove PLA readiness and the uncertainty of US intervention from the CCP decision calculus. This article analyzes the remaining key variables and examines how they contribute to preemption motives.

Why Preempt?

When an adversary attack is imminent, striking first is preferable to absorbing the first blow. Preemption can make the subsequent conflict less damaging and may lead to a quick victory by shifting the balance of force in favor of the attacker.[6] In some cases, it can be the difference between victory and defeat.[7] Preemption can be

4. China Aerospace Studies Institute (CASI), "Webinar for ACC on PRC Counter Space 2020 08 11," Youtube, video, 1:26:29, https://www.youtube.com/; Brad Townsend, "Strategic Choice and the Orbital Security Dilemma," *Strategic Studies Quarterly* 14, no. 1 (Spring 2020): 64, https://www.airuniversity.af.edu/; and M. V. Smith, "Spacepower and the Strategist," in *Strategy: Context and Adaption from Archidamus to Airpower*, ed. Richard J. Bailey Jr., James W. Forsyth Jr., and Mark O. Yeisley (Annapolis, MD: Naval Institute Press, 2016), 171.

5. M. Taylor Fravel and Christopher P. Twomey, "Projecting Strategy: The Myth of Chinese Counter-intervention," *Washington Quarterly* 37, no. 4 (Winter 2015): 182, https://www.taylorfravel.com/.

6. Williamson Murray, "Preemptive Strike or Preventive War?," Strategika, August 29, 2017, https://www.hoover.org/.

7. Karl P. Mueller et al., *Striking First: Preemptive and Preventive Attack in U.S. National Security Policy* (Arlington, VA: RAND Corporation, 2006), xi–xii.

justified as self-defense, and it is accepted as a legitimate use of force when the threat is imminent.[8]

In addition to a greater chance of victory, preemption allows the attacker to seize the initiative in choosing the time, place, and scope of the attack. Nevertheless, preemption bears significant strategic costs. Striking the first blow can damage a nation's reputation in the international community, especially when the imminence of the threat is dubious or there are other options to neutralize the threat without using force. In these instances, the attacker incurs global political costs.[9]

Attacking preemptively may also weaken international norms and set a precedent that may come back to haunt the attacker; for example, the aggressor may become the victim of preemption in the future. Furthermore, preemption may deepen the victim's enmity toward the attacker, resulting in a more bloody and protracted conflict. Given these disadvantages, operational successes from preemption can translate into a strategic disaster.

Two variables contribute to the preemptive decision: the degree of certainty of the threat and the first-strike advantage.[10] Greater certainty of the imminent threat and first-strike advantage make preemptive attacks more attractive. The assumption of China having unambiguous indications and warnings regarding a US intervention removes one of these two variables from consideration. The first-strike advantage becomes the dominant contributing factor, one that depends on the net changes in the probability of victory and the costs of war. Preemption is appealing when it increases the probability of victory, reduces war costs, or both.

Preemption motives can also emerge from the prevailing conditions, particularly when the state of military affairs and technology favor the offense.[11] Offense is dominant when it is easier to attack than to defend or when it is more costly to defend than to attack. Preemptive attacks are less costly to execute in an offense-dominant environment. Nevertheless, the decision to strike first depends not on the actual but the perceived offense dominance, first-strike advantage, and reduction in the costs of war. Understanding the value of space to the Party and the People's Liberation Army capabilities provides key insights to China's perceptions.

Space and PLA Capabilities

Space is key to developing China's comprehensive national power. The Chinese dream of national rejuvenation envisions China becoming a global leader with

8. Matthew J. Flynn, *First Strike: Preemptive War in Modern History* (New York: Routledge, 2008), 1–2.

9. Alan M. Dershowitz, *Preemption: A Knife That Cuts Both Ways* (New York: W. W. Norton & Co., 2006), chap. 3; and Mueller, *Striking First*, xiii, 42.

10. Mueller, *Striking First*, xiii.

11. Mueller, 27.

national strength by 2049.[12] China competes for space resources for economic development by focusing on Moon mining, space-based solar power, and asteroid mining.[13]

Space also serves as a platform for China to pursue technological innovations. Over the past two decades, China's space programs grew rapidly, and it became one of the most capable spacefaring nations. China has built constellations of communication, remote-sensing, and navigation satellites. China now operates five spaceports and launch sites with various launch vehicles to access space. China is also constructing a manned space laboratory and engaging in lunar, Mars, and deep-space explorations. Furthermore, space allows China to gain national prestige and international influence as a leading actor in charting the international governance for space.[14] In short, space is essential to national rejuvenation in making China "rich, strong, and proud."[15]

China develops its counterspace capabilities to protect its own interests in space and to win wars against the United States. China sees space as critical for its national and social development in strategic competition.[16] China also understands the military advantage of space from observing how the US military wages war. The 2020 *Science of Military Strategy* argues "Western countries headed by the United States have clearly gained unprecedented war advantages from space."[17] To achieve space dominance, the PLA has developed a wide variety of kinetic and nonkinetic counterspace capabilities.

The PLA puts antisatellite weapons in three broad categories: kinetic, directed energy, and electronic warfare. These weapons can produce permanent nonreversible "hard kills" or temporary reversible "soft kills."[18] Space weapons can be co-orbital or terrestrial-based (air, land, and sea). The PLA is developing space weapons across

12. Xi Jinping, "Secure a Decisive Victory in Building a Moderately Prosperous Society in All Respects and Strive for the Great Success of Socialism with Chinese Characteristics for a New Era" (address, 19th Communist Party Congress, Beijing China, October 18, 2017), 5–6.

13. Kevin Pollpeter et al., *China's Space Narrative: Examining the Portrayal of the US-China Space Relationship in Chinese Sources and Its Implications for the United States* (Maxwell AFB, AL: China Aerospace Studies Institute, 2020), 48; and Namrata Goswami and Peter A. Garretson, *Scramble for the Skies: The Great Power Competition to Control the Resources of Outer Space* (New York: Lexington Books, 2020), 21–22.

14. State Council of the People's Republic of China (PRC), "China's Space Program: A 2021 Perspective," State Council 2021 Space White Paper, accessed October 21, 2022, http://english.www.gov.cn/; and Defense Intelligence Agency (DIA), *2022 Challenges to Security in Space: Space Reliance in an Era of Competition and Expansion* (Washington, DC: DIA, March 2022), 8–18.

15. Pollpeter et al., *China's Space Narrative*, 8.

16. PRC MoD, 2019 White Paper.

17. PLA Academy of Military Science, *In Their Own Words: Science of Military Strategy 2020* (Maxwell AFB, AL: China Aerospace Studies Institute, January 2022), 145, https://www.airuniversity.af.edu/.

18. PLA Academy of Military Science, *In Their Own Words: Lectures on the Science of Space Operations, Foreign Military Thought* [2012](Maxwell AFB, AL: China Aerospace Studies Institute, August 12, 2022), 137–38, https://www.airuniversity.af.edu/.

these categories.[19] For instance, China demonstrated its direct-ascent antisatellite capability by destroying satellites in low Earth orbit (LEO) in January 2007. This test created more than 3,000 pieces of space debris.[20]

China is also developing an array of ground-based, directed-energy and electronic warfare weapons that can produce both destructive and reversible effects on satellites ranging from temporary blinding to physical destruction. The PLA possesses sophisticated jammers and routinely exercises jamming against communication and Global Positioning System (GPS) signals.[21]

Furthermore, China is actively testing co-orbital technology that can translate into antisatellite capabilities. In January 2022, China tested the Shijian-21 satellite in maneuvering and conducting a rendezvous and proximity operation and tugged a Compass G2 satellite into the geosynchronous graveyard orbit. Another Shijian satellite, the SJ-17, is reported to have a robotic arm capable of grabbing another satellite.[22]

These capabilities can be used for satellite inspection and maintenance missions, but they can also perform antisatellite missions because the technology and knowledge are transferrable. In 2021, the annual US Department of Defense report to Congress on China's military and security highlighted Beijing's continuing intent to develop antisatellite weapons capable of destroying satellites up to geosynchronous orbit.[23] If the United States does not match this full spectrum of counterspace capabilities, China will likely have escalation dominance in space.

PLA Perceptions

Active Defense

Attacking first in space is consistent with PLA's Active Defense strategy. At its core, active defense is offensive defense and decisive defense, "combining offense with defense, insisting on the unity of strategic defense and offensive in battle."[24] In other words, operational and tactical offensives, such as preemption in space, can be justified and considered as strategic defense.[25]

---

19. DIA, *Security in Space*; Todd Harrison et al., *Space Threat Assessment 2022* (Washington, DC: Center for International & Strategic Studies, April 2022), 8–10, https://csis-website-prod.s3.amazonaws.com/; and Brian Weeden and Victoria Samson, *Global Counterspace Capabilities: An Open Source Assessment* (Washington, DC: Secure World Foundation, April 2022), 03-01–03-24.

20. Weeden and Samson, *Global Counterspace Capabilities*, 03-15.

21. DIA, *Security in Space*, 17.

22. Harrison et al., *Space Threat Assessment*, 24, 28.

23. OSD, Military and Security Developments involving the People's Republic of China, 2021 (Washington, DC: DoD, November 2021), 85–86, https://media.defense.gov/.

24. PLA, *Military Strategy 2020*, 31; and M. Taylor Fravel, *Active Defense: China's Military Strategy since 1949* (Princeton, NJ: Princeton University Press, 2019), 61.

25. Joe McReynolds, ed., *China's Evolving Military Strategy* (Washington DC: Brookings Institute Press, 2016), 21, https://www.jstor.org/.

The 2013 *Science of Military Strategy* links active defense to the space domain. It states China "pursues a defensive national defense policy and a military strategy of active defense, advocates peaceful use of outer space, and persists in holding that each nation has an equal right to open-up develop and exploit outer space."[26] The 2012 *Lectures on the Science of Space Operations* states this linkage more explicitly by stating that space operations in wars should follow the guiding thought of "active defense, full-spectrum integration, and a focus on control of space."[27] In sum, under the framework of Active Defense, the CCP will most likely justify a preemption in space as strategic self-defense.

Winning Informatized Local War

PLA strategy also centers around winning informatized local war as directed by the 2015 Chinese Communist Party strategic guideline to the People's Liberation Army.[28] The PLA sees information capabilities such as cyber warfare and psychological operations as important factors in influencing the outcome of war. The targets for these capabilities are the adversary's "information detection sources, information channels, and information processing and decision-making centers."[29] War will manifest in a systems-versus-systems confrontation across multiple domains.

Another key tenet of winning informatized local war is building capabilities that deny the ability of a powerful state to gain and maintain access to operating areas that hold Chinese interests at risk.[30] As China's most capable adversary, the threat posed by the US military inevitably drives PLA resource allocation and organizational structures.

In late 2015, the PLA began implementing major reforms to promote joint effectiveness in winning informatized local wars. The PLA consolidated seven military regions into five theater commands, each consisting of ground, naval, air, and missile forces.[31] Additionally, the Strategic Support Force (SSF) was established to support the theater commands. The SSF consolidated PLA's intelligence, space, cyber, and electronic warfare capabilities under one organization.[32]

The Strategic Support Force's responsibilities include managing PLA space assets for intelligence, global positioning, and defense against electronic warfare and other hostile activities.[33] The SSF is an operational force and an essential component in securing China's access to space and contributing to the overall anti-access capabilities.

---

26. PLA Academy of Military Science, *In Their Own Words: Foreign Military Thought, Science of Military Strategy (2013)* (Maxwell AFB, AL: China Aerospace Studies Institute, 2021), 232, https://www.airuniversity.af.edu/.

27. PLA, *Lectures*, 50.

28. Andrew Scobell et al., *China's Grand Strategy: Trends, Trajectories, and Long-Term Competition* (Arlington, VA: RAND Corporation, 2020), 74; and PLA, *Military Strategy 2020*, 109–10, 182.

29. PLA, *Military Strategy 2020*, 183.

30. Scobell et al., *China's Grand Strategy*, 77.

31. Scobell et al., 84; and PRC MoD, 2019 White Paper.

32. Scobell et al., 88; and PRC MoD 2019 White Paper.

33. Scobell et al., 95.

Military Value of Space

The PLA likely perceives space as an offense-dominant domain with significant first-strike advantage. Consequently, it is making substantial investments in a variety of offensive capabilities to contest the command of space.[34] The PLA recognizes space as an independent domain with strategic values as the "commanding height" in influencing the outcome of the war.[35]

First, space contributes to strategic deterrence.[36] Due to the US reliance on space for warfighting, PLA counterspace capabilities act as a part of an overall strategic deterrence to prevent the United States from interfering with its "peaceful rise."[37] Second, space is essential for the PLA to develop a modern fighting force to defend China's expanding global interests around the world. These capabilities include space-based intelligence to support long-range precision strikes. Finally, the PLA recognizes the strategic value of space to warfighting, as discussed above.[38]

The 2013 *Science of Military Strategy* assesses outer space as an essential element of modern war and that "future wars may begin in outer space and cyberspace."[39] Therefore, the PLA must develop space offensive and defensive capabilities for these reasons.[40] By building strong military capabilities in space, the PLA possesses the ability to hold any nation with space dependence at risk.

The importance of space to military operations is again emphasized in the 2020 *Science of Military Strategy*. "The dominance of space has been inseparable from the outcome of the war, which determines that the military conflict in space will revolve around the dominance of the space [domain]."[41] To achieve space dominance, the PLA is developing and fielding a multitude of electronic warfare, directed-energy weapons, and terrestrial-based and orbital antisatellite capabilities.[42] These capabilities also allow the PLA to exercise deterrence by controlling the escalation dominance in the domain.

Escalation in space may result in the Kessler Syndrome rendering space unusable for all, which also harms Chinese interests. China is becoming increasingly dependent on space to advance its political, economic, military, and technological goals. Yet there are three asymmetries favoring China.

The first asymmetry comes from America's economic reliance on space. For example, GPS enables a wide variety of economic activities from finance and logistics to farming. Furthermore, US companies such as SpaceX and Blue Origin are forming an

34. OSD, *Space Strategy Summary*, 3.
35. McReynolds, *Military Strategy*, 265; and PLA, *Military Strategy (2013)*, 226.
36. PLA, 234–35.
37. PLA, 139, 200, 234–35.
38. McReynolds, *Military Strategy*, 266; and PLA, *Military Strategy (2013)*, 226, 229.
39. McReynolds, 285; and PLA, 118.
40. PLA, 229.
41. PLA, *Military Strategy (2020)*, 145.
42. DIA, *Security in Space*, 17–18.

innovative space industry—a distinct US competitive advantage over China. The second asymmetry is the US military's dependence on space, discussed further in the next section. The third asymmetry is America's network of alliances and partners. The most advanced spacefaring nations, including Britain, Japan, Australia, France, and India, are US Allies or partners. Escalation in space disproportionally and negatively impacts the US alliance network and partnership compared to China.

Due to these asymmetries, the comparative cost-benefits analysis of space becoming unusable likely favors China—it ultimately impacts China less negatively due to their relative level of investment in space compared to the United States, its Allies, and its partners. Therefore, the PLA can achieve escalation dominance by exploiting these asymmetries and the resulting advantages by possessing a full spectrum of counterspace capabilities. People's Liberation Army military writings and the manifested counterspace capabilities suggest the PLA perceives an offense dominance and significant first-strike advantage in space. The PLA has the incentives and capability to conduct preemptive attacks against the United States in space.

Operational Alternatives to Preemption in Space

Preemption in space is attractive because it degrades the US ability to project power to interfere with the armed reunification with Taiwan. Without a credible US intervention, the PLA has a higher probability of victory in occupying Taiwan by force. It also renders the US military less effective in inflicting damages on the PLA, thus lowering the costs of war. For this discussion, PLA preemptive attacks in space involve destroying or degrading US space-based capabilities resulting in the US military being unable to intervene in an invasion of Taiwan.

The intended effects on US assets would be nonreversible through the use of kinetic or nonkinetic weapons. The GPS constellation is an obvious choice for preemptive attacks, but such an attack would result in wide-ranging impacts and unintended consequences because of the global economic and civil dependence on GPS.

US military communications satellites on geosynchronous and geostationary orbits are better targets for preemptive attacks. These satellites enable tactical force employment and command and control functions. They are few in number and with fixed coverage over a specific region of the globe. The PLA only needs to target a few to degrade the US military communication networks in the Pacific region. China's Shijian satellites may able to perform the targeting function. With its robotic arms, the Shijian satellites can produce a range of damaging effects such as destroying key components or sending a satellite tumbling.

Another set of potential targets are communications and intelligence, surveillance, and reconnaissance (ISR) satellites in low Earth orbit. The PLA has multiple options for targeting them such as high-power lasers that can damage the sensors and direct-ascent antisatellite to destroy the spacecraft.

A decision matrix helps visualize the preemptive attack option and potential outcomes for the PLA. Taking US intervention into account, the following decision matrix looks at two alternative options for the PLA: preempt in space or not preempt. The

aim of preemption in space is to render the US military ineffective in threatening PLA military objectives and inflicting costs. The PLA would expect the following outcomes:

1. If the United States is willing and able to intervene, preemption will degrade or deny US intervention. Preemption increases PLA's probability of victory while reducing its costs of war. The expected outcome is an increased likelihood the PLA will take Taiwan.
2. If the United States is unwilling to intervene, preemption will provoke an undesirable US retaliatory response. But the United States will be unable to intervene in a consequential way, thus increasing the probability of victory and reducing the costs of war for the PLA. The expected outcome is an increased likelihood the PLA will take Taiwan.
3. If the United States is willing and able to intervene, not preempting will not hinder the US intervention. So, the PLA is uncertain about its probability of victory and expects high costs of war. The prospect of the PLA taking Taiwan becomes questionable.
4. If the United States is unwilling to intervene, not preempting will not provoke a US response. The PLA expects a high probability of victory with low costs of war. The expected outcome is an increased likelihood the PLA will take Taiwan.

Table 1. Operational alternatives for preemption in space

	US willing and able to intervene	US unwilling to intervene
Preempt	Outcome 1 Degrade or deny US intervention Increases probability of victory Reduces costs of war PLA likely takes Taiwan	Outcome 2 Provokes a US response Increases probability of victory Reduces costs of war PLA likely takes Taiwan
Not preempt	Outcome 3 US intervenes Uncertain probability of victory Expects high costs of war PLA takes Taiwan questionable	Outcome 4 No US response–lacks political will High probability of victory Expects low costs of war PLA likely takes Taiwan

The PLA would rank these outcomes in the following order from most preferred to least preferred: Outcome 4 > Outcome 2 > Outcome 1 > Outcome 3. With the assumption China will have reliable intelligence regarding the US commitment to intervention, the PLA is left with a choice between Outcome 1 and Outcome 3. The perception of offense dominance in space and first-strike advantage would increase the preference for a preemptive attack.

Even without taking US intervention as a given, the PLA has several reasons and the capability to degrade US space capabilities before a conflict. First, the US military relies on space to project power. Space assets enable military command and control, ISR, precision weapons employment, navigation, missile warning, and weather fore-

cast. These capabilities have given the US military an asymmetric advantage in war. Moreover, they allow the United States to project power globally and will remain a critical dependence moving forward.

Indeed, space is indispensable to Joint all-domain command and control by connecting sensors and operators across multiple domains over vast distances.[43] When space-based capabilities are degraded or denied, the US military will be a less effective fighting force. On the other hand, the PLA enjoys the homefield advantage with less reliance on space-based capabilities to project military power. Once US intention is known, the PLA has the incentives to strike first according to the preemption logic discussed above.

Second, assessing the US willingness to intervene is difficult. Judging the adversary's intentions is challenging; the opponent has the incentive to mislead, and one can never be certain of what the opponent thinks.[44] Intentions may be clarified through communication. But these messages may not be believed. Intentions can also change. It is easier and more practical for the PLA to focus on the US military's ability rather than intention to intervene.

With evidence of US mobilizations and force flow into the Pacific, the PLA will likely interpret these actions as signals of "imminent" threat, and it then becomes "necessary" to strike first to avoid the expected harm. Thus, the PLA will likely justify preemptive attacks in space as anticipatory self-defense.[45] The PLA would focus on Outcome 1 and Outcome 3, with preemption as the more preferable option.

Third, Xi's pessimistic worldview of the United States likely permeates the PLA. Xi sees US actions in Asia as aimed at containing China.[46] Several US behaviors reinforce this perception including alliances with Japan and South Korea and the provision of defensive arms to Taiwan. Additionally, Beijing perceives the Australia, United Kingdom, and United States (AUKUS) security pact and the Quadrilateral Security Dialogue (Quad) as attempts to contain China and interfere with its rise.

The alignment between India and the United States is particularly concerning to Beijing.[47] China's Foreign Minister Wang Yi said in a press conference that "Anyone attempting to isolate China with some framework will only isolate themselves."[48] China's

43. Tim Ryan, "The Indispensable Domain: The Critical Role of Space in JADC2," Policy Paper Vol. 39 (Arlington, VA: Mitchell Institute, October 2022): 2; and Amy Walker, "Space Provides Key to Joint All Domain Command and Control," Army Public Affairs, June 14, 2022, https://www.army.mil/.

44. James D. Fearon, "Rationalist Explanations for War," *International Organization* 49, no. 3 (Summer 1995): 381.

45. Flynn, *First Strike*, 2.

46. Jude Blanchette, "Xi Jinping's Faltering Foreign Policy: The War in Ukraine and the Perils of Strongman Rule," *Foreign Affairs*, March 16, 2022, https://www.foreignaffairs.com/.

47. C. Raja Mohan, "Why China Is Paranoid about the Quad," *Foreign Policy*, May 17, 2022, https://foreignpolicy.com/.

48. Wang Yi **王毅**, "Yaodui Meiguo 'Yintai jingji kuangjia' huayige dadade wenhao **要对美国的"印太经济框架"划一个大大的**问**号**" [There is a big question mark on the US "Indo-Pacific economic framework"], PRC Ministry of Foreign Affairs, accessed October 21, 2022, https://www.mfa.gov.cn/.

Ministry of National Defense accused the United States of "clinging to the Cold War mentality" and the Quad as a mechanism targeted at China.[49] These negative views could lead to the assumption of hostile US intentions toward China. Thus, the PLA judges a US intervention in an armed conflict with Taiwan is more likely.

Finally, the PLA likely holds the advantage in dominating escalation in space. The PLA possesses and is developing more nonkinetic and kinetic counterspace options. If the United States cannot match the escalating actions with proportional responses in the space domain, the PLA can escalate vertically without worrying about the United States responding in kind. Cross-domain responses from the US military are possible options to keep vertical escalation in check. But they would inevitably escalate the conflict horizontally and less credibly without the enabling space capabilities.

There is also a danger of escalating to the use of nuclear weapons. Nevertheless, it will be difficult for the United States to justify using nuclear weapons in responding to a PLA preemptive attack in space because preemption could be justified as a legitimate use of force for self-defense.[50]

A positive trend in favor of the United States is the proliferation of small satellites and cubesats replacing the larger expensive overhead assets. This trend makes it harder for the PLA to gain a decisive outcome in a preemptive attack in space by shifting the offense-defense balance toward the defense because it becomes more costly to target multiple redundant space assets. Even so, underlying asymmetries of economic reliance, military dependence, and maintaining US alliances remain. Overall, escalation dominance in space lowers the PLA's risks of taking aggressive actions in the domain.

Strategic Calculus

Given the operational advantages, it is more rational for the PLA to preempt in space to achieve its object of taking Taiwan. The analysis above suggests the PLA will preemptively attack US space capabilities in the armed reunification with Taiwan. Yet a preemption against the United States in space is not a foregone conclusion.

Preemption is a rational choice at the operational level, but it can also be strategically costly. Strategic costs are higher when preemption faces severe international uproar or jeopardizes China's grand strategic goals of national rejuvenation. Preemptive attacks in space set the precedent for a terrestrial conflict extending into space and could cause wide condemnation. Therefore, China would suffer political costs and detract from its progress in making China a preeminent global power. Furthermore, debris-generating attacks can catalyze the Kessler Syndrome and threaten China's development goals in space, hindering its economic activities in exploiting natural space resources. Therefore, an effective deterrence strategy against the CCP should focus on cost imposition at the strategic level.

---

49. Senior Colonel Tan Kefei, "Regular Press Conference of the Ministry of National Defense on June 30, 2022," PRC Ministry of National Defense, accessed October 21, 2022, http://eng.mod.gov.cn/.

50. Flynn, *First Strike*, 1–2.

Strategic Alternatives to Preemptions in Space

A decision matrix again helps to illustrate the CCP's strategic options. A key factor influencing the decision outcome is the level of international opposition to conflicts in space. Each outcome in the matrix also assesses the impact of preemption on the military object, political costs, and costs to the CCP's grand strategy.

Table 2. CCP strategic alternative decision matrix

	Strong international opposition to conflicts in space	**Weak international opposition to conflicts in space**
Preempt	Outcome A Higher chance of victory: PLA likely takes Taiwan Incurs higher political cost for preempting More harms to national rejuvenation (political costs + economic costs)	Outcome B Higher chance of victory: PLA likely takes Taiwan Incurs lower political cost for preempting Some harms to national rejuvenation (economic costs)
Not preempt	Outcome C Lower chance of victory: PLA takes Taiwan questionable Incurs little political cost from not preempting Suffers little setback to national rejuvenation	Outcome D Lower chance of victory: PLA takes Taiwan questionable Incurs little political cost from not preempting Suffers little setback to national rejuvenation

The decision matrix above provides four outcomes with the assumption of US intervention. The CCP's preference ordering depends on whether reunifying Taiwan is more strategically important than national rejuvenation. If Taiwan is more important, then Outcome B > Outcome A > Outcome C = Outcome D. This preference order would also apply to the situation when the CCP sees reunification as an inseparable and necessary component in achieving national rejuvenation. Therefore, it is willing to suffer economic and political costs for strategic territorial gain.

On the other hand, if national rejuvenation is more important, then Outcome C = Outcome D > Outcome B > Outcome A. This situational preference ordering presents some opportunities for the United States to influence the CCP calculus.

First, the United States could shape an international norm that strongly opposes military conflicts in space. This approach attempts to make Outcome B and Outcome D inaccessible to the CCP. Second, the United States could render a successful invasion of Taiwan by China questionable even with a PLA preemption in space, thus denying the operational benefits. Doing so would deter the PLA from attacking preemptively, which restricts the CCP's option to Outcome C.

With the US denying PLA military benefits and raising strategic costs, attacking preemptively in space would result in a lose-lose scenario for the Chinese Communist Party. It is a lose-lose option because attacking preemptively in space does not produce operational benefits, incurs strategic costs, and calls into question the prospect of a successful armed reunification. This strategy has the best chance of preserving the current status quo across the Taiwan Strait and preventing conflict from starting or

extending to outer space. Combining the two opportunities forms the basis of a "denial of military benefits of preemption in space, impose strategic costs" strategy for the United States.

Options to Maneuver Out of a Lose-Lose Situation

The CCP has options to think outside of the decision matrices presented here. Three possible scenarios will be discussed—two operational and one strategic. These scenarios reduce the need for the PLA to conduct preemptive strikes in space because they either increase the probability of victory or reduce the costs of war. Nevertheless, they have their own benefits and disadvantages.

The first option, at the operational level of war, primarily focuses on increasing the probability of victory. The PLA may delay, degrade, or deny US intervention using other ways and means. In addition to counterspace capabilities, the PLA has other offensive and defensive means to increase the costs of intervention for the United States. In a full-scale armed reunification scenario, the PLA will likely conduct a joint firepower strike campaign with missiles and long-range artillery strikes to soften Taiwan's defenses preceding the Joint Island Landing Campaign.[51]

To deal with or resist US intervention in a Taiwan invasion scenario, the PLA could extend its targeting to strike key US military bases and naval assets in the region. The PLA has a broad range of offensive capabilities, including ballistic missiles, antiship cruise missiles, fighters, and long-range bombers. These actions will inflict costs on intervention, thus possibly compelling the United States to stand down. But striking the US military bases and killing American troops could produce the opposite result—strengthening US resolve and making the conflict more intense, protracted, and costly for the PLA.

A second alternative option is taking a more defensive approach. The PLA's counter intervention capabilities could also delay American responses when the United States is committed to coming to Taiwan's aid. The US military would need to roll back PLA anti-access and area-denial capabilities. Therefore, the PLA could go hard and fast to achieve its objectives before the United States and its Allies and partners could mount an effective intervention.[52]

Slowing down the US military with a counterintervention campaign would increase the PLA's probability of success, creating a fait accompli. It would be more difficult and costly for the US military to reverse PLA gains and restore the status quo. Yet accomplishing a fait accompli is also a function of Taiwan's ability to resist until the United States joins the fight.

---

51. Phillip C. Saunders, "Crossing the Strait? PLA Modernization and Taiwan," (address, Hoover Institution, Stanford, CA, April 6, 2022), https://www.hoover.org/.

52. Brad Roberts, "On Theories of Victory, Red and Blue," Livermore Papers on Global Security no. 7 (Livermore, CA: Lawrence Livermore National Laboratory Center for Global Security Research, June 2020): 42–43, https://cgsr.llnl.gov/.

The February 2022 Russian invasion of Ukraine demonstrates another model of US intervention. The United States could provide weapons, training, and intelligence to Taiwan instead of direct military involvement. Going hard and fast does not guarantee success, especially when facing a determined defender, as the Russian invasion of Ukraine has shown. The PLA will undoubtedly study the implications of the Russian invasion of Ukraine.

In additional to the US military, commercial space actors can also play an important role. For example, SpaceX donated close to 2,000 Starlink units to Kiev, providing a vital communication capability to the Ukrainian military. But SpaceX is now saying that it can no longer pay the bill.[53] Another downside to relying on commercial space is that companies are susceptible to economic and physical coercion through various means, including cyberattacks and physical threats to their assets in space. Without a security guarantee and revenue stream, it is difficult for companies to sustain support to military operations.

Nevertheless, implications from Russia's invasion of Ukraine could potentially change the CCP calculus. Beijing will no doubt investigate the effectiveness of an indirect US intervention in Taiwan and the roles of commercial space to derive applicable lessons on how best to increase the PLA's probability of military success and lower strategic costs.

Third, at the strategic level of war, the Chinese Communist Party could modify its political objective and extend the time horizon to reap a long-term strategic benefit. Even with a comprehensive joint island landing campaign, complete reunification with Taiwan does not have to be the overarching political object of the CCP.

The CCP could use a short and intense armed invasion to "teach Taiwan a lesson" and show the United States to be an unreliable or incapable partner. The intent would not be to capture the island by force but to extinguish Taiwan's hope of an external actor coming to its aid. Beijing will likely seize a window of opportunity when American political will is low or the US military is least ready to intervene. With US acquiescence, the CCP diminishes American influence in the region and shapes a more favorable environment toward eventual reunification. A seemingly short-term, lose-lose outcome (not being able to take Taiwan and suffering political costs in international opposition) can still translate into a long-term strategic win for the CCP.

Toward an Effective US Strategy

The multitude of options available to the Chinese Communist Party highlights the complexity of trying to understand the CCP and PLA's decision calculi. Many variables and possible scenarios are at play, and the strategic context also matters a great deal. Nevertheless, having an organizing principle will guide the United States in making strategic choices.

53. Alex Marquardt, "Musk's SpaceX Says It Can No Longer Pay for Critical Satellite Services in Ukraine, Asks Pentagon to Pick Up the Tab," CNN, October 14, 2022, https://www.cnn.com/.

Denial of the military benefits of preemption in space and imposing strategic costs provide a good chance for success. Denying the PLA military benefits means the CCP does not increase its probability of victory in reunifying Taiwan by force even with a preemptive attack against US space assets. Accomplishing a denial of benefits strategy not only requires the United States to build a more resilient space architecture, but also addresses the US asymmetric dependence on space.

As mentioned previously, the proliferation of smaller satellites and a more resilient architecture are shifting the offense-defense balance toward the defense, but they do not address the underlying asymmetries favoring China. Addressing these asymmetries, along with matching China's ability to escalate, will reduce China's escalation dominance in space. The US military should also work to reduce the first-strike advantage in space by reducing the probability of a PLA victory in taking Taiwan in a degraded space environment.

Another key component of the costs and benefits equation is imposing strategic costs on the Party. The United States should shape a strategic environment in which preemption in space will have severe negative impacts on the CCP's goals of technological advancement, economic development, and international influence.

The CCP must understand that preemptive attacks in space harm their interests focused on national rejuvenation. Therefore, the United States should strengthen international norms of freedom of access and peaceful use of space, making it more costly for Beijing to initiate a conflict in the domain. Additionally, the potential strategic costs have to be clearly communicated to the CCP. Strategic cost imposition exerts a deterrent force on the Party, but it is the denial-of-benefit side of the ledger that makes deterrence more credible and renders it less damaging to the United States when deterrence fails.

Conclusion

The People's Liberation Army has the incentives and capabilities to conduct preemptive attacks against US space assets. In doing so, the PLA expects significant first-strike advantage due to asymmetric reliance of the United States on space. Without space-based capabilities, the US military will be less effective in reducing the PLA's chance of success in capturing Taiwan.

A less capable US military will be less able to inflict damage on the PLA, thus reducing the CCP's costs of war. The perception of first-strike advantage, in combination with offense dominance and the latitude to escalate, will incentivize preemption. Moreover, the CCP will most likely justify a preemptive attack in space as self-defense. An effective US deterrence strategy should deny PLA military benefits of preemption in space while imposing strategic costs on Beijing.

The logic of denial of military benefits and imposing strategic costs is simple. Simplicity makes it easier to translate the strategy into concrete actions. These approaches are applicable to China when it thinks strategically and rationally. A dual-track strategy allows the United States to hedge against uncertain CCP decisions at both the operational and strategic levels of war.

Denying military benefits and imposing strategic costs of preemption in space can force China into a lose-lose situation. If the PLA preemptively attacks the United States in space, this action could potentially derail the CCP's grand strategy of national rejuvenation. But without preemptive attacks against US space assets, the PLA could fail to unify Taiwan. The United States could, however, create the conditions where a preemptive PLA attack in space does not increase a CCP victory and causes Beijing to incur strategic costs. To accomplish this, the United States needs to address asymmetries between US and Chinese dependence on space, shifting the offense-defense balance in favor of defense while reducing the PLA's escalation dominance in the space domain. *Æ*