Project Atom 2023

A Competitive Strategies Approach for U.S. Nuclear Posture through 2035

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China’s Nuclear Enterprise

*Trends, Developments, and Implications for the United States and Its Allies*

By Oriana Skylar Mastro

The focus of this volume is how the United States should respond to deterring two peer competitors: Russia and China. This paper’s main contention is that the nature of U.S.-China military competition from 2035 to 2050 will exhibit some unique characteristics compared to the U.S.-Russian nuclear relationship that require new thinking on these topics. As such, this paper differs from others in this volume by focusing on what changes in Chinese military posture, doctrine, and modernization mean for U.S. nuclear deterrence strategy, modernization, reassurance of allies, and arms control efforts. The reason for focusing on China is to challenge the premise that the United States should treat Russia and China as similar peers, and because assumptions among nuclear experts about what modernization efforts in China mean for Chinese nuclear policy are limiting thinking on ideal policy responses. The details of force modernization are consistent with the idea that China is maintaining the same nuclear policy it has had since 1964. This is advantageous for the United States, and thus most of this paper’s recommendations revolve around discouraging deviations. Admittedly, this piece raises more questions than it answers, but understanding which components of U.S. thinking will also serve the United States well in the future, and which require additional consideration, is the first step to devising any useful responses. Each section lays out relevant Chinese approaches, U.S. assumptions, and key issues that color best responses. While this paper focuses on Chinese nuclear modernization, what it means for U.S. strategy, and how the United States should respond, it should not be interpreted as dismissing the challenges of responding to Russian nuclear aggression and expansion. Rather, it focuses on challenging the premise that the United States needs to make significant changes in posture or policy to deter China.

The advisable U.S. approaches to force modernization, deterrence, and arms control depend on understanding Chinese nuclear modernization. While there are recent indications from the U.S. Department...
of Defense that China will increase its nuclear arsenal, these changes are insufficient to suggest that China has abandoned core aspects of its nuclear policy such as no-first-use, no tactical nuclear weapons, and not striving for parity with the United States in terms of the size of its arsenal.\textsuperscript{24} China’s modernization efforts are compatible with maintaining its policy, but it is adjusting its posture given advancements in U.S. missile defense and increased tensions in U.S.-China relations. These points have important implications for ideal U.S. modernization plans, deterrence of China, reassurance of allies, and arms control. One of the most important takeaways is that the United States should avoid relying on nuclear weapons to deter China’s conventional threats, as this might encourage China to threaten nuclear use in response to the United States’ conventional activities.

This paper first outlines fundamental principles of China’s nuclear policy, to include limited assured retaliation. It then explores the implications of China’s nuclear policy for U.S. force posture, modernization, extended deterrence, and arms control.

**China’s Nuclear Policy**

**CHINA’S MINIMAL RETALIATION CAPABILITY AND NO-FIRST-USE PLEDGE**

The expansion of and improvements in China’s nuclear arsenal by 2050 do not necessarily mean that China is abandoning its limited assured retaliation strategy. The buildup in numbers is consistent with China’s traditional nuclear policy of a minimal retaliation capability with a no-first-use pledge.

First, the Chinese strategy of assured retaliation requires that Beijing develop enough weapons to absorb a strike and still impose unacceptable damage from the adversary’s perspective. In the strategic doctrine of the Second Artillery, the predecessor of the People’s Liberation Army Rocket Force, China’s strategic nuclear forces focus on “effective and limited nuclear counterattack” as the core of nuclear deterrence. As China makes a no-first-use promise regarding nuclear weapons and only has a limited number of nuclear weapons, this doctrine emphasizes the need for the preservation of nuclear forces as a prerequisite to carry out “focused strikes,” as well as “scientific use of nuclear firepower, and carefully crafted strike plans” in order to “achieve the greatest political and military benefits at a relatively small cost.”\textsuperscript{25} Although China’s nuclear weapons are limited, the nuclear forces that survive a surprise attack by a nuclear adversary are still sufficient to carry out a nuclear counterattack, and a few nuclear weapons attacking important targets in the adversary’s territory could destroy its industry, society, and mentality and paralyze its state apparatus.\textsuperscript{26} This posture leaves some flexibility in terms of specific numbers; Chinese strategists want sufficient forces but are careful not to fall into the track of building “excessive” ones.\textsuperscript{27}

Second, the contours of Chinese nuclear modernization are consistent with the view that nuclear weapons are only useful for deterring nuclear use and do not have a warfighting component. Although the United States has assessed that China may be moving toward a launch-on-warning posture, which means they would launch a nuclear strike upon detecting an incoming attack, this policy is compatible with China’s no-first-use policy.\textsuperscript{28} Chinese leaders have also increasingly focused on growing regional nuclear options such as the DF-26 and DF-21A/C missiles, but these are attractive mainly because they are regional weapons lower on the escalation ladder and thus their use is more strategically feasible in the event of a conflict.\textsuperscript{29}

Lastly, the “sudden” change in nuclear policy around 2018 and 2019 can be explained within the context of China’s traditional nuclear policy. China’s level of concern regarding U.S. nuclear capabilities “suddenly” surged around this time period, consequently accelerating its nuclear force development. Advancements in
missile defense which reduced the retaliatory capacity of a smaller arsenal further supported the need. The Pentagon notes in its 2022 report to Congress that China’s “long-term concerns about United States missile defense capabilities” have likely spurred investments in hypersonic glide vehicles and fractional orbital bombardment systems (FOBS).\textsuperscript{20}

Additionally, Chinese leaders likely aspired to strengthen their nuclear deterrent long before 2018 given U.S. dominance.\textsuperscript{30} Chinese leaders have multi-stage plans in their military modernization; in the conventional domains of competition, the strategy was to modernize the force first (i.e., increase the proportion of modern equipment) and then to expand the numbers of certain platforms. Notably, Xi Jinping explicitly directed the military in 2012 to “accelerate the construction of advanced strategic deterrent”\textsuperscript{32} capabilities; this has been the strongest and most unambiguous public statement on the matter. Coupled with recent investments in strategic nuclear submarines, China’s emphasis on quality has expanded to include a growing willingness to invest in quantity long before 2018.\textsuperscript{31}

\textbf{CHINA IS NOT SEEKING PARITY}

China is not striving for parity with the United States. Chinese leaders have long understood, since 1964, that they cannot compete with the United States in the quantity of nuclear weapons, and thus they have needed to embrace a different approach.\textsuperscript{34} As Mao Zedong stated in December 1963, China needed to have the atomic bomb but could not afford to compete for parity in numbers.\textsuperscript{35}

Recent reporting has caused heightened concern that China is building up its nuclear arsenal. In 2021, anxiety amassed over China’s nuclear modernization: satellite imagery showed that approximately 360 silos were under construction at facilities in Gansu, Inner Mongolia, and eastern Xinjiang.\textsuperscript{36} In a worst-case scenario, with DF-41s carrying three warheads in each silo, Chinese intercontinental ballistic missiles (ICBMs) could “carry more than 875 warheads.”\textsuperscript{37} The Pentagon’s annual report to Congress estimated that the the People’s Liberation Army (PLA) now has over 400 nuclear warheads; if current production trends continue, China could have as many as 1,500 by 2035. The report also estimated that China currently has at least 300 ICBMs.\textsuperscript{38}

But it would be a mistake to take these projections at face value or to conclude that such an uptick signifies that China is now striving for parity, as some experts have posited.\textsuperscript{39} Admittedly, China’s avoidance of direct competition in nuclear power was starker in the early 1990s, when the United States had 47 times more nuclear weapons than China.\textsuperscript{40} But even the worst-case projections of 1,000 weapons puts the Chinese arsenal at less than a quarter of the current U.S. level of 5,244 nuclear weapons.\textsuperscript{41} Additionally, the fact that China has more land-based launchers than the United States is more a testament to the differences in nuclear posture than heightened threat; about three-fourths of China’s arsenal is land based, compared to one-fifth for the United States.\textsuperscript{42}

One critique of these numerical comparisons is that the most strategically relevant metric is not total numbers; instead, strategists need to consider deployed nuclear weapons versus stockpiled weapons. The United States has 1,770 deployed in accordance with the New START (technically 1,550 are allowed, but bombers count as “one” even though they can carry multiple nuclear weapons). In other words, when comparing arsenals, some might use the 1,770 deployed number instead of the 5,244 that quantifies the United States’ total inventory.\textsuperscript{43}

But even here, the evidence for a China striving for parity is weak. Under the New START conception of “deployable” nuclear weapons—carried by ICBMs on alert, submarines out on patrols, and bombers—China’s nuclear weapons are not deployable; they are in fixed locations and cannot be deployed to the Western Pacific or the South China Sea.\textsuperscript{44} But there is evidence that China might want some “deployable” nuclear weapons
in the future; solid-fueled missiles such as the DF-41 and DF-31AG have much faster fueling times and require fewer support vehicles, and China’s Jin-class submarines have fueled the nuclear-armed JL-2 submarine-launched ballistic missile (SLBM) since 2015.\textsuperscript{45} In total, China has six Jin-class ballistic missile submarines (SSBNs), and the Pentagon has confirmed that they are “conducting continuous at-sea deterrence patrols” as of February 2023.\textsuperscript{46}

**CHINA’S SECOND-STRIKE CAPABILITY**

Chinese modernization is driven by concerns about maintaining a second-strike capability needed for deterrence.

From China’s perspective, the strategic environment has changed in ways that call for a larger, more survivable arsenal even under its current nuclear policy. The United States has intensified the construction of a missile defense system in the East Asian region: the Aegis system. This is deployed on 17 U.S. Navy destroyers and cruisers in the region to detect, target, and engage ballistic missiles. These Aegis ballistic missile defense (BMD) ships have the capability to intercept short-, medium-, and intermediate-range ballistic missiles during their midcourse or terminal flight phases. They also play a role in defending the United States by detecting and tracking ICBMs and relaying this information to Ground-Based Interceptors in Alaska and California. As of December 2018, the system had a success rate of 40 out of 49 attempts in intercepting ballistic missile targets.\textsuperscript{47} China believes this poses a serious threat to the reliability and effectiveness of China’s nuclear counterattack capability.\textsuperscript{48} Second, the nuclear arsenals of neighboring countries like India, Pakistan, and North Korea have increased in recent years.\textsuperscript{49} Possibly as part of a move toward a launch-on-warning posture, China has been increasing its inventory of regional nuclear-capable systems, such as the DF-26 and DF-21A/C missiles. These are designed to target various assets, including naval vessels and land-based targets, enhancing China’s strategic capabilities and potentially altering the regional balance of power.\textsuperscript{50} Additionally, major countries are vigorously developing new types of conventional military capabilities that could be used against its nuclear capabilities.\textsuperscript{51}

China has also built up and tested its own missile defense program in recent years. Specifically, China has focused on developing a ground-based mid-course missile defense systems capable of intercepting short- and medium-range ICBMs, including the HQ9 and HQ19 missile defense systems.\textsuperscript{52} Despite increased ground-based interception capabilities, it is unlikely that China would deploy this technology at scale. Rather, these missile defense systems would be deployed at fixed sites including command and control (C2) facilities and missile silos. In April 2023, China’s defense ministry announced that it successfully conducted a ground-based mid-course missile interception test. Details of the target of the test and the number of interceptors launched were not provided by state officials.\textsuperscript{53} Despite progress in interception capabilities for short- and medium-range missiles, China has not announced the development of a long-range system as of 2022.\textsuperscript{54}

Thus, the likely explanation is that China is developing capabilities to ensure that it has a second-strike capability. In the 1980s, China began making significant advances in ICBM development and deployment, and from the mid-1990s onwards, China’s rocket force has moved from fixed silos to mobile launchers, shifted from liquid to solid fuel, and modestly expanded the number of warheads and ICBMs that include multiple independent reentry vehicles (MIRVs).\textsuperscript{55} Now with an arsenal of at least 60 DF-5s, 78 DF-31s, and 54 DF-41s coming online, China can deliver 90 missiles with 130 warheads to the continental United States.\textsuperscript{56} The number of warheads on China’s land-based ICBMs capable of threatening the United States is expected to grow to roughly 200 by 2025.\textsuperscript{57} The United States does not consider ICBMs second-strike systems, but that is because the United States puts them on high-readiness, maintains a launch-on-warning posture, and relies much more on its sea and air legs of the triad than on its land-based systems (while about three-fourths of Chinese forces are land-based).
This could signal a shift to a launch-on-attack posture, but it is also consistent with the need to take measures such as deploying mobile defenses to key sites including fixed silos and C2 facilities to reduce the impact of a first strike in order to maintain a second strike. Moreover, China has been making significant advancements in its early warning radar and satellite capabilities. These developments aim to enhance its ability to detect and track incoming threats, such as ballistic missiles, and improve its overall situational awareness. The deployment of advanced early warning radars, such as the JY-26 and JY-27A, demonstrates China’s commitment to strengthening its air defense capabilities. Additionally, China’s growing network of reconnaissance and early warning satellites, including the Yaogan and Gaofen series, contribute to its ability to monitor regional and global activities more effectively. These advancements in early warning systems not only bolster China’s defense capabilities but also have a positive impact on stability, as they contribute to China’s confidence in its second-strike capabilities.

China has also been developing hypersonic weapons, which pose particular challenges to missile defense systems because of features such as their long range, low altitude, high maneuverability, and adjustability. The Chinese military has also increased the number of ballistic missile brigades by around a third in the past three years both to enhance its nuclear-strike capabilities amid escalating tensions with the United States and to prepare for a possible war against Taiwan (which includes the need to deter U.S. nuclear coercion). One Beijing-based military source said that China has deployed its most advanced hypersonic missile, the DF-17, to the area. In this way, it is possible that technological developments, in particular China’s ability to defeat U.S. missile defense systems, will create more stability by convincing Beijing its arsenal is sufficient to deter nuclear use.

THE POSSIBILITY OF A CHINA-RUSSIA ALLIANCE

China has no interest in forming a traditional military alliance with Russia. The results of a long-term research project the author has been conducting on the China-Russia military relationship suggests that China and Russia are significantly aligned, but their alignment is limited to facilitating China’s challenge to U.S. hegemony in Asia; it does not include helping Russia to take on the United States in Europe. Additionally, military support from Russia mainly comes in the form of assisting China in building up its own combat capabilities, though recent activities suggest movement toward supporting China, to a limited degree, in wartime as well. In other words, the two sides are not preparing to fight together in the traditional sense of allies. China also prefers that Russia not threaten the North Atlantic Treaty Organization (NATO) if it is fighting the United States because that increases the likelihood that U.S. allies will become deeply and directly involved, in which case the likelihood of victory plummets and the economic costs of war become too high. This means that Russia and China can be analytically treated as separate cases; hence, this essay is about what is needed to deter China. What is required to maintain nuclear deterrence and promote arms control with Russia is likely very different. Moreover, it is highly unlikely that China and Russia will actively collude in the context of a nuclear crisis or other major conventional war in Asia, but that does not negate the possibility of Russia taking advantage of a crisis in East Asia to advance its own objectives independently.

Implications for U.S. Policy

IMPLICATIONS FOR U.S. NUCLEAR MODERNIZATION

Assumptions about Chinese nuclear intentions lead to a popular recommendation in Washington: that the United States needs to build more nuclear weapons and delivery systems, or at the very least deploy more from its stockpiles. But it is far from clear that such a costly endeavor would have positive impacts on deterrence and stability in the region. Based on an assessment of Chinese thinking through readings and
interaction with Chinese counterparts, more U.S. nuclear weapons would have a negligible impact on China’s calculus. The United States already has nuclear dominance, its elites are largely confident in its nuclear deterrent against China, and China’s minimal deterrence posture has traditionally been based on the belief (correct, in the author’s view) that the prospect of even one nuclear detonation on U.S. soil is enough to deter a U.S. nuclear attack.\(^63\)

Moreover, more nuclear weapons will not solve other perennial issues, such as deterring a range of more limited Chinese military actions or non-military coercive activities, as their use in these scenarios is not credible. And given that collusion between Russia and China is unlikely in the nuclear realm (indeed, China is likely cautioning Russia to not use nuclear weapons in Ukraine), the United States need not match the combined arsenals of China and Russia for deterrence to hold. Moreover, even if China is increasing its arsenal to maintain a second-strike capability, and maintain a limited retaliatory capability, and even if it increases its arsenal to 1,000 weapons, this does not undermine U.S. deterrence.

While more work should be done to confirm these views, based on current trends and developments China will not necessarily change its nuclear strategy and posture away from the core components of treating nuclear weapons mainly as tools to deter nuclear use. Moreover, the existence of additional U.S. nuclear weapons does not fundamentally change China’s thinking on its strategy, doctrine, and posture—at least not in ways that benefit the United States. It is possible that such moves could encourage changes in China’s nuclear strategy that the United States should seek to avoid, such as China threatening nuclear use against any country that intervenes in its territorial disputes or against non-nuclear claimants to make gains. Indeed, dissuading China from moving away from the strategy that has served it well since 1964 should be the key objective of U.S. deterrence strategy and will be discussed more in the next section. What should the United States do, if not build up its own nuclear arsenal? It should use the Chinese buildup to make gains in other areas, such as conventional deterrence. This will be discussed more in the section on arms control.

**IMPLICATIONS FOR NUCLEAR DETERRENCE**

The most important role of nuclear weapons is to enhance deterrence. However, how nuclear weapons impact other countries’ calculus on using force and what exactly states hope to deter can be debatable and evolve over time. This section focuses on the trade-offs between conventional and nuclear deterrence. This starts with the premise, developed in the previous section, that China’s unique nuclear strategy to date ensures that the balance of nuclear warheads and delivery systems in the 2035 to 2050 period is as likely to deter Chinese nuclear use as any U.S. force posture could. This does not mean that there are not problematic deterrence and escalation dynamics; allies and partners might be reassured by a larger arsenal (even though logically they should not be). But the likelihood and nature of a war with China are unlikely to be significantly impacted by improvements in U.S. nuclear force posture.

This section addresses one of the primary topics in deterrence: the relationship between nuclear and conventional deterrence. During the Cold War, the United States adopted nuclear deterrence as an “asymmetrical response” against the Soviet Union.\(^64\) The approach reinforced Washington’s strength in nuclear weapons and, in turn, neutralized Moscow’s advantage in conventional forces. The Eisenhower administration believed that nuclear weapons make deterrence more credible and decrease the risk of aggression at minimal cost. Conventional and mutual deterrence, however, were still valued among other administrations: Kennedy pursued a flexible response that would equip the United States with numerous feasible options against different types of aggressions as potential alternatives to resorting to nuclear weapons.\(^65\) Nuclear deterrence is relatively stable between China and the United States, but because of China’s unique approach, characterized
by no-first-use, minimal deterrence, and a lack of tactical warheads, the presence of nuclear weapons does not impose the level of caution on each side that deterrence theory might espouse.

The fact that both the United States and China possess nuclear weapons means that any war could escalate to the nuclear level, which should impose caution on both sides. There is reason to believe, however, that the power of nuclear weapons to deter conventional conflict is relatively weak in the U.S.-China case. This is because of China’s view that nuclear weapons are only for deterring nuclear use and U.S. confidence in its escalation dominance in the nuclear realm. China firmly believes that nuclear war cannot be controlled once it begins; societal pressure on leaders not to back down, the circumstances of the country, and uncertainty about reactions from adversaries incentivize escalation. As such, China poses that strategic weapons are better than tactical weapons, and that they are only useful for signaling resolve, not waging war. Combined with practical concerns about having a weaker nuclear arsenal than the United States—where only half of its weapons can strike the continental United States—China is dedicated to maintaining a no-first-use policy.

Moreover, the concept of mutually assured destruction was based on the U.S.-Soviet nuclear relationship, in which both countries had thousands of nuclear weapons and relative parity with one another. This is not the case for the United States and China, the latter of which has chosen to pursue an assured retaliation posture. China also arguably did not have a second-strike capability until relatively recently. With only a few hundred warheads, and with the majority of its systems comprised of older missiles that were land-based, liquid-fueled, slow-launching, and stored in easily targeted silos, there was the possibility of a successful debilitating first strike. But China started to modernize its nuclear force in the 1990s, and now it has 50 to 75 ICBM launchers, of which 33 are the newer, road-mobile DF-31 and DF-31A. In 2017, China also showcased the DF-31AG, an improved version of the DF-31A missile, featuring an enhanced launcher, reduced support needs, and a wheeled transporter erector launcher capable of navigating off-road terrain. As of 2015, China also has a sea-based nuclear deterrence in its four Jin-class nuclear submarines, each of which carries 48 nuclear-capable JL-2 SLBMs. However, China’s mobile missiles still have the highest survival rate. This is because the Jin-class submarines are easily tracked. Given advances in U.S. missile defense, it is possible that China could not deliver a sufficient retaliatory strike against the United States after absorbing an attack. Even if the United States needed 80 warheads to destroy one DF-31, given the challenges of detection, Washington could probably destroy enough that China could not reliably retaliate after absorbing an attack on its nuclear forces.

The fact that the United States and China both possess nuclear weapons reduces the likelihood of conventional conflict, but it does not make it unthinkable, given the persistent asymmetry in vulnerability. Whether it should be the case or not, the reality is that Chinese military planners believe it is very possible to fight a conventional war with the United States without escalating to the nuclear level. This is in part because they believe that once nuclear weapons are used, escalation would be uncontrollable, and therefore neither side will strike first. Additionally, many Chinese experts believe that the United States would avoid intervening in a conflict between a U.S. ally and China if doing so would ultimately lead to a nuclear confrontation. PLA strategists, not unlike some U.S. strategists, believe that advancements in intelligence, surveillance, and reconnaissance capabilities as well as C2 capabilities and precision weapons have further strengthened the ability to control war. Indeed, most of U.S. war planning over Taiwan makes this assumption implicitly or explicitly. Whether or not a war escalates to the nuclear level depends on whether the two sides can negotiate a mutually acceptable settlement and can prevent accidents.
In other words, the nuclear relationship between China and the United States has less of an impact on Chinese calculations about use of force than its perception of conventional balance of power. Unlike the Cold War, the United States cannot use nuclear threats to compensate for conventional issues given that China has no plans to attack and occupy other inhabited entities, with Taiwan being the exception—and this level of threat and cost makes U.S. willingness to fight nuclear wars relatively incredible. Indeed, in the case of U.S.-China tensions, the atrophy of U.S. conventional deterrence is the main driver for an increased likelihood of war, and thus the United States needs to prioritize re-establishing conventional deterrence. This means that in instances in which nuclear modernization may come at the expense of conventional force development, conventional force development should have priority. A good example of this was the United States pulling out of the Intermediate-Range Nuclear Forces (INF) Treaty in 2019 following “Russia’s repeated violations of the treaty,” which allows the United States to now develop a key class of new conventional weapons to deter China.26

There are two policy changes in particular that U.S. strategy should be designed to deter. First is a Sino-Russian alignment to the degree to which each provides some form of extended deterrence to the other. There is no consideration of this in China, so it does not present a real threat in the foreseeable future, but it is still worth mentioning.

Instead, the most important goal for U.S. deterrence policy should be to ensure it does not encourage a change in China’s nuclear policy and in posture. To state this more clearly, if China starts to threaten nuclear use in response to U.S. conventional intervention in conflicts, this will severely impact U.S. war planning. China has never leveraged its nuclear arsenal to make up for conventional inferiorities, even in the 1990s when it was outclassed by far by the United States. But China might believe it could improve its ability to coerce U.S. partners and allies in Asia without risking confrontation with the United States. If the Chinese threat is credible, the United States will find itself with limited options to defend its allies in lower-level conflicts, in effect forcing the United States to concede the region to China. In other words, any movement in the United States to integrate conventional and nuclear operations, or to use nuclear weapons to make up for issues in U.S. regional conventional force posture, should be avoided, as they could encourage China to do the same.

In line with these concerns, the Biden administration’s decision to cancel the nuclear-armed sea-launched cruise missile (SLCM-N) program in 2022 demonstrates a commitment to avoiding the co-mingling of conventional and nuclear systems on vessels that are not SSBNs.27 This decision helps reduce the risk of platform ambiguity in the Indo-Pacific region, which could potentially escalate conflicts due to misinterpretation of intentions. By taking this step, the United States is actively working to prevent any changes in China’s nuclear policy and posture that could result from the integration of conventional and nuclear operations, thus maintaining stability in the region and safeguarding the interests of its allies.

Given the limited nature of Chinese ambitions, the United States should also rethink the objectives of extended deterrence and how to best reassure allies and partners. First, given China’s limited nuclear arsenal and policy of not using nuclear weapons against non-nuclear states, China’s nuclear threat to U.S. allies in Asia is more limited than Russia’s threat to NATO allies, especially during the Cold War. The big question concerns China’s willingness to use nuclear weapons against U.S. assets in Asia, which might be on allied soil, as an intermediate rung on the escalation ladder to using them against the U.S. homeland. This is likely the motivation behind recent Chinese posture changes that show much greater interest in intermediate escalation options such as the DF-26, air-launched ballistic missiles (ALBMs), the DF-21, and the DF-17.

Notably, the DF-26 is often referred to as the “Guam Killer” due to its ability to target U.S. military installations on the island of Guam in the Western Pacific.28 ALBMs can be launched from aircraft and offer the potential for
rapid response, mobility, and the ability to launch nuclear strikes outside of the coverage areas of traditional missile defense systems.\textsuperscript{29} The DF-21 is commonly referred to as the “Carrier Killer” because of its intended capability to target aircraft carriers and other large warships.\textsuperscript{30} The DF-17 is known for its maneuverability and ability to fly at extremely high speeds, making it more difficult for existing missile defense systems to intercept.\textsuperscript{31} Additionally, as per the previous discussion, nuclear weapons do not deter admittedly problematic conventional activities. And the United States should avoid this pathway for the sake of assuring allies because it could encourage China to then threaten nuclear use in response to U.S. conventional activity, which would seriously complicate defense planning.

\section*{Implications for Extended Assurance and Deterrence}

U.S. strategists should also revisit whether there are more costs than benefits associated with its allies in Asia possessing nuclear weapons, namely South Korea, Japan, and Australia. The downsides include that this could undermine the global nonproliferation regime and increase the likelihood of nuclear use due to an accident. Historical records show that the United States had many “close calls” where the “accidental or unauthorized detonation” of a nuclear weapon was a real possibility.\textsuperscript{42} The upside is that Chinese conventional attack, and subsequent escalation to nuclear war, becomes less likely.

China’s growing conventional and nuclear capabilities in the Indo-Pacific have driven many in allied countries to question their current approaches. Many in South Korea are worried by the possibility that U.S. extended deterrence could fail. In their eyes, North Korea’s ability to hit any U.S. city could prevent U.S. assistance in the event of a restarted Korean war, making a South Korean nuclear deterrent the only guarantor of the country’s safety—a logic that applies to China as well.\textsuperscript{63} South Koreans are historically more open to the idea of developing a nuclear bomb than their Japanese counterparts, and in recent years that option has been discussed more frequently. In January 2023, President Yoon Suk Yeol commented that the nation may have to pursue nuclear weapons development or “demand redeployment of U.S. nuclear arms” to South Korea in response to the North Korean nuclear threat.\textsuperscript{54} According to a 2022 poll, 71 percent of South Koreans were in support of the nation pursuing its own nuclear weapons.\textsuperscript{55} The North Korean nuclear threat has also influenced thinking in this area. While no country has taken steps toward this option, what was once an unthinkable topic has now become more mainstream.

In Japan, the specter of a rising China and the Trump administration’s unreliability undermined Tokyo’s faith in extended deterrence. Russia’s invasion of Ukraine has done even more to drive the debate underway in Japan. And whereas advocates of pursuing a nuclear weapon are traditionally found on the far right, this formerly taboo opinion is becoming more mainstream, with Prime Minister Abe Shinzo, shortly before his death, publicly raising the idea of housing U.S. nuclear weapons in Japan (i.e. through a nuclear-sharing arrangement).\textsuperscript{56} While the current prime minister, Kishida Fumio, quickly rejected the suggestion, Kishida was also severely criticized for failing to “mention the [Treaty on the Prohibition of Nuclear Weapons] and for not clarifying Japan’s future role in nuclear disarmament” in the 2022 NPT Review Conference.\textsuperscript{67} It is important to note here that besides Russia’s invasion, China’s conventional buildup and increasingly aggressive foreign policy are likely driving most of Japanese anxiety. China’s nuclear buildup is probably only a secondary driver. Japan’s 2022 National Defense Strategy, for instance, discusses China’s anti-access/area denial (A2/AD) network, aggressive activities around the Senkakus, and threat to Taiwan much more than its nuclear forces.\textsuperscript{68}

While the Australian government maintains its firm stance on nuclear nonproliferation, the development of China’s military capacity has posed increasing security risks to the nation and prompted discussion on
the strengthening of U.S. extended deterrence. Australian minister for defense Richard Marles expressed his concerns toward China’s use of force in the South China Sea and called for increased U.S. military presence as part of Australia’s new defense strategy. Some defense analysts have questioned U.S. extended deterrence and suggested the possibility of acquiring nuclear weapons. A 2022 poll revealed that 36 percent of Australians were in favor of obtaining nuclear weapons—more than double the amount in a 2010 poll conducted on a similar (though differently phrased) question.

How can the United States deal with these growing concerns about U.S. extended deterrence? First, deployment of U.S. tactical nuclear weapons in Asia is not the answer. At best, this has little impact on Beijing’s thinking, and at worst, it may enhance the legitimacy of China’s attacks on U.S. regional bases and even on Taiwan if nuclear weapons were discussed as an option for cross-strait stability. That leaves the software options of greater consultations and joint defense planning, which might reassure allies and partners of U.S. intentions even as they have minimal impact on Chinese contingency planning.

Implications for Arms Control Approaches

Political scientist Joseph Nye defines arms control as efforts between nations to “limit the numbers, types, or disposition of weapons.” There are two key data points that drive the following recommendations on the potential of arms control agreements with China. First, China’s participation in arms control regimes to date is largely driven by the belief that these arrangements give them a competitive edge. Granted, China’s participation in arms regimes is widely touted as a success story. In 1980, Beijing was essentially uninvolved in international arms control agreements, but by the late 1990s, its participation rate was on par with that of other major powers. China joined the International Atomic Energy Agency in 1984, agreed to the Treaty on the Non-Proliferation of Nuclear Weapons in 1992, helped negotiate the Comprehensive Nuclear Test-Ban Treaty in 1996, and signed and ratified the 1993 Chemical Weapons Ban Treaty.

But given China’s different approach to nuclear weapons and conventional arms sales, China has sacrificed little in terms of potential power gains. It makes sense, therefore, for China to work to constrain the United States’ ability to leverage its advantages in these areas. Indeed, Chinese experts such as Tang Yongsheng, professor at the PLA National Defence University, have been direct about the strategy, arguing that China should “use the UN arms control and disarmament institutions to restrain U.S. arms development and deescalate the U.S.-China arms race.” China has gone further than current regimes, advocating for a complete ban and destruction of nuclear weapons and advocating for a global no-first-use treaty for nuclear states. Indeed, this self-serving approach to arms control best explains why China has more of a spotty record on export controls.

Second, taking into account the modernization discussion in the first section, which argues that China has yet to deviate from its minimal-deterrent nuclear strategy and posture, there is likely no possibility of China joining bilateral arms control arrangements between Russia and the United States that focus on restricting the quantity of its nuclear weapons or the effectiveness of its delivery systems until Russia and the United States reduce their arsenals to China’s level. Fu Cong, the head of the arms control department of China’s Ministry of Foreign Affairs, explicitly stated that “China has no interest in joining the so-called trilateral negotiations, given the huge gap between the nuclear arsenal of China and those of the U.S. and the Russian Federation.” In the eyes of Chinese military strategists, arms control is generally seen as a tool by the strong to keep down the weak. This inherent suspicion is illustrated in the Science of Military Strategy, a core textbook for senior PLA officers, in which arms control is described as a “struggle” between self-interested great powers.
leaders are particularly suspicious of U.S.-led arms control regimes, which Chinese strategists see as a “trap”
designed to solidify U.S. nuclear dominance and undermine China’s nuclear deterrent. Indeed, China mostly
uses arms control as a notion to protest against other countries’ arm deployment and development.

This does not mean progress cannot be made, but U.S. objectives need to shift. First, to support the argument
in the deterrence section about instability in conventional deterrence, the United States could consider
asymmetric arms control arrangements, such as reductions in U.S. theater missile defense capabilities or even
in the number of nuclear warheads, in exchange for demobilization of certain types and numbers of Chinese
conventional missiles. Chinese interlocutors have often expressed interest in a U.S. statement of mutual
vulnerability. What would make such a concession to China worthwhile to the United States? The United States
could maintain that it possesses a strong nuclear capability, and that China would certainly suffer far more
than the United States in any nuclear exchange, while also admitting at the same time that the United States is
vulnerable to nuclear attack.

China, the United States, and Russia have been focused on developing artificial intelligence (AI), but through
different approaches. The Russian projects are directed at creating military hardware which relies on AI
but leaves decisions entirely in human hands, while the U.S. approach is also more conservative, with the
goal of producing computers that can assist human decisionmaking but not contribute on their own. China
has the most aggressive approach, focusing on developing advanced AI that could contribute to strategic
decisionmaking. In China’s 2017 New Generation Artificial Intelligence Development Plan, which lays out
its goal of leading the world in AI by 2030, China aims to have AI systems that can outperform humans in
complex, changing environments and that can process more battlefield information than humans. This would
give the PLA a substantial advantage over its adversaries that have less ability to utilize information. Despite
these lofty goals, much more research and development needs to be done before any existing AI system is
advanced enough to advise battlefield operations.

China understands that the proliferation of AI brings new risks and challenges to the global stage and wants
to be in charge of setting the norms for this new technology. As such, China’s New Generation Artificial
Intelligence Development Plan calls on minimizing the risks of AI to ensure a “safe, reliable, and controllable”
development of the technology. This includes formulating laws, regulations, ethical norms, and safety
mechanisms for AI.

Chinese officials have also expressed concerns about an AI arms race and emphasized the need for
international cooperation and potential arms control. PLA scholars have indicated that they are concerned
that AI “will lower the threshold of military action” because states may be more willing to attack each other
with AI military systems due to lowered casualty risks. Chinese officials have also expressed that they are
concerned about increased misperceptions through the use of these systems. China’s private sector, which
plays a big role in developing a lot of AI systems—for example, Baidu makes autonomous vehicles, Alibaba
Cloud is in charge of smart cities, and Tencent makes medical imaging—have also voiced their worries. Jack
Ma, the chairman of Alibaba, explicitly stated at the 2019 Davos World Economic Forum that he was concerned
that the global competition over AI could lead to war.

There may be more room to maneuver, therefore, to discuss how cyber warfare, counterspace capabilities,
or AI-enabled systems could create crisis dynamics that neither side favors, and thus China may be willing to
agree to mutual constraints in these areas to protect C2 and otherwise reduce the likelihood of accidents and
miscalculation. For instance, the U.S. 2022 Nuclear Posture Review emphasizes the importance of keeping a
human in the loop for nuclear employment and decisionmaking. This approach aims to maintain control
and reduce risks associated with AI-driven systems. A general agreement with China on this matter could be useful in promoting transparency, trust, and stability between the United States and China. Given China’s concerns about AI arms races, misperceptions, and the potential for conflict, it is possible that it may be open to such an agreement, as it aligns with its security interests.

On space, China has been promoting the Prevention of Placement of Weapons in Outer Space Treaty, which aims to prohibit the placement of weapons in outer space. China supports this treaty to prevent a space arms race. However, the United States opposes the agreement, as it believes the treaty lacks proper verification mechanisms and could potentially limit its ability to defend its space assets. Furthermore, the United States has been advocating for international norms and rules to regulate space activities, while Beijing has expressed reservations about this approach. China’s 2013 Science of Military Strategy prefers to argue that “seizing command of space and network dominance will become crucial for obtaining comprehensive superiority on the battlefield and conquering an enemy.” Despite these disagreements, reaching a consensus would be challenging but possible. As China and the United States consider space weaponization and threats to space assets, including satellite systems that support nuclear C2 on the ground, agreements on protecting these systems will become critical points for maintaining control over nuclear forces—something of mutual interest to both nations.

In addition to refining which capabilities to control and restrict, U.S. strategists should also consider whether bringing China into bilateral agreements currently in place with Russia is the right strategy. This largely depends on alliance dynamics between China and Russia. If it looks like the two countries might team up to promote their preferred norms, trilaterals may not be superior to two separate bilateral channels. However, if China’s participation will impose constraints on Russia or vice versa, or the two countries are so clearly in alignment that they concede deterrence is determined by the balance of U.S. forces against an aggregate of Chinese and Russian nuclear forces (such that then the United States is outnumbered and may have to make some concessions), trilateral and broader multilateral arrangements may be the optimal future modality.

Lastly, China tends to exploit gaps in the international order, making advances at the expense of others when international norms are not solid. Many of the main concepts central to arms control—such as what defines a strategic system, a deployed system, or a tactical nuclear weapon—are debatable. This ambiguity creates space for China to pursue its modernization goals with relatively less pushback and reputational costs. Even if China and the United States cannot agree on force posture, a first step in arms control should be to reach agreement about these fundamental concepts and their meanings and implications.

**Conclusion**

China’s nuclear modernization and buildup requires new thinking on deterrence, force posture, and arms control. However, it is not necessarily the case that the solutions of the past suit the challenges in store for the coming period between 2035 and 2050. A best-case scenario for U.S. and allied security is for Chinese nuclear doctrine and strategy to treat nuclear weapons as only relevant for nuclear deterrence, serving no war fighting use. As the United States considers changing its approach to its own nuclear modernization, extended deterrence, or arms control, a primary question should be how these changes might alter the role of nuclear weapons in China’s strategy. This does not need to be a two-peer competition, as this volume posits, but rather the United States could avoid creating a strategic adversary in Beijing altogether. Preventing a more permissive Chinese nuclear strategy should be the top priority of all efforts, even if it means living with a larger, more survivable Chinese nuclear arsenal.
Endnotes


2 Admiral Charles Richard, commander of U.S. Strategic Command, frames it: “By these measures, China is already capable of executing any plausible nuclear employment strategy within their region and will soon be able to do so at intercontinental ranges as well. They are no longer a ‘lesser included case’ of the pacing nuclear threat, Russia.” See: “Statement of Charles A. Richard Commander United States Strategic Command before the Senate Committee on Armed Services,” Senate Committee on Armed Services, April 20, 2021, https://www.armed-services.senate.gov/imo/media/doc/Richard04.20.2021.pdf.


4 Ibid., 7.


6 Scholars have noted that the United States has been planning for two major theater wars since the end of World War II. See Paul D. Miller, “Why we need to move beyond the ‘Two War’ doctrine,” Foreign Policy, January 6, 2012, https://foreignpolicy.com/2012/01/06/why-we-need-to-move-beyond-the-two-war-doctrine/.


In other words, why would Russia and China deploy a large non-strategic nuclear force unless they thought it provided an advantage at the regional nuclear level?


Fireside chat with Kurt Campbell, coordinator for Indo-Pacific Affairs, The Aspen Institute, December 8, 2022.

Harvey and Soofer, “Strengthening deterrence with SLCM-N.”


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Ibid.


Ibid.


“When attending the plenary meeting of the delegation of the People’s Liberation Army and the Armed Police Force, Xi Jinping emphasized the realization of a good start in national defense and military construction during the “14th Five-Year Plan” period and celebrated the 100th anniversary of the founding of the Communist Party of China with outstanding results” [习近平出席解放军和武警部队代表团全体会议强调：实现“十四五”时期国防和军队建设良好开局 以优异成绩迎接中国共产党成立100周年], Xinhua [新华网], March 9, 2021, https://www.xinhuanet.com/politics/2021-03/09/c_1127191057.htm


Li Tilin [李体林], “Creative Development of the Nuclear Strategic Theory of China since the Reform and Opening-up” [改革开放以来中国核战略理论的发展], *China Military Science* [中国军事科学], no. 6 (2008): 42.

Ibid., 42.


41 Hans Kristensen et al., “Status of World Nuclear Forces,” Federation of American Scientists, March 31, 2023, https://fas.org/initiative/status-world-nuclear-forces/. Exact estimates of the size of the U.S. nuclear arsenal vary slightly across sources. Analysts agree that there are about 3,800 active warheads in the military stockpile but range the number of retired warheads awaiting dismantlement from 1,750 to 2,000, which explains the variance in the total number.


43 Kristensen and Korda, “Status of World Nuclear Forces.”


54 Yeung, “China claims successful anti-ballistic missile interceptor test.”


65 Ibid.


71 Wu, “Survivability of China’s Sea-Based Nuclear Forces.”


73 Cunningham and Fravel, “Dangerous Confidence?”


