CHAPTER 6

CHINA'S NUCLEAR RISE

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Rational leaders took us to the brink of nuclear annihilation; that peril still exists today.

— Robert S. McNamara, U.S. Defense Secretary, 1961–1968
Interview in *The Fog of War*, 2003

Introduction

Tensions between the United States and the People's Republic of China (PRC) have sharpened under Xi Jinping, as long-simmering flashpoints—especially Taiwan and the South China Sea—move to the center of great-power rivalry.[1]

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Compounding the risk is Beijing's breakneck nuclear expansion. Satellite imagery released in 2021 revealed three vast missile-silo complexes in Gansu, Xinjiang, and Inner Mongolia, each capable of hosting scores of solid-fuel intercontinental ballistic missiles (ICBM).[2] In 2024, the Stockholm International Peace Research Institute (SIPRI) projected that, if construction continues, the People's Liberation Army Rocket Force could field ICBMs in numbers comparable to the U.S. arsenal by about 2030, even though Washington will still retain a far larger warhead stockpile.[3] These developments warrant scrutiny.

This chapter explores how these shifts affect U.S. deterrence strategy, emphasizing the value of a secure second-strike capability. Next, it considers possible motivations behind China's nuclear expansion. It then examines lessons from the Russia-Ukraine war, particularly regarding nuclear signaling, escalation thresholds, and deterrence credibility. The chapter concludes with policy recommendations for the United States, aimed at preserving stability in the Indo-Pacific.

Nuclear Weapons and the Cold War

Since 1945, the role and impact of nuclear weapons on global conflict and peace have been extensively analyzed in scholarly literature. While the logic of nuclear deterrence holds significant appeal to policymakers and scholars, the complexities of its application, particularly the lessons from the Cold War, are often misunderstood. In my 2004 doctoral study on nuclear deterrence, I concluded that the overall

effects of nuclear weapons on conflict within the international system remain ambiguous. Although nuclear arsenals may reduce the likelihood of war, the possibility of conflict between nuclear-armed states persists. Two decades later, this assessment remains unchanged.

Early in the nuclear age, strategists recognized that a secure second-strike capability was paramount for nuclear deterrence to foster stability. A nuclear-armed state (Nuclear Weapon State, or NWS) must have a force structure that guarantees its ability to retaliate after a nuclear attack, inflicting unacceptable levels of destruction on the aggressor.

While experts differ on the exact magnitude of the necessary retaliatory force, the principle of second-strike capability is widely accepted. For the United States during the Cold War, this meant the ability to destroy approximately 30% of an adversary's industrial infrastructure. For the PRC, until recently, it involved the capacity to obliterate 5–10 major cities of an opponent.

There is an ongoing debate about other nuclear force structure options—such as escalation ladders, damage mitigation posture, or "escalate-to-deescalate" strategies—but the second-strike capability is universally regarded as indispensable for deterrence. The 1983 U.S. wargame "Proud Prophet" further underscored this reality—regardless of how nuclear war begins, the outcome is total Armageddon, as declassified results revealed in 2012.[4]

The Cuban Missile Crisis of 1962 stands as the most perilous confrontation between nuclear-armed states in

history. At that time, the United States possessed overwhelming nuclear superiority over the Soviet Union, with the capability to launch approximately 3,000 warheads, whereas the Soviet Union could retaliate with only 30.[5]

Despite this imbalance, the Soviet Union's secure second-strike capability ensured that nuclear war was not a feasible option for either side. As President Kennedy's National Security Advisor, McGeorge Bundy, famously stated, "The largest single factor that might have led to a nuclear war—the readiness of one leader or the other to regard that outcome as remotely acceptable—simply did not exist in October 1962."[6] The risk of inadvertent escalation through miscalculation, as outlined by Scott Sagan,[7] was present, but leaders on both sides were committed to avoiding nuclear war.

Following this near miss, U.S. and Soviet leaders took deliberate steps to avoid similar crises. The Cuban Missile Crisis proved to be a unique event; no subsequent nuclear standoff approached the same level of danger. With the Cold War's conclusion in late 1991, the allure of nuclear weapons appeared to diminish.

In the 33 years following, while North Korea developed a nuclear capability and India and Pakistan modestly expanded their arsenals, the United States and Soviet Union (later Russia) *dramatically* reduced theirs.[8] Additionally, four nations—Ukraine, Belarus, Kazakhstan, and South Africa—voluntarily gave up their nuclear weapons.

During this period, the United States and its allies focused on addressing the perceived threat of "undeterrable" rogue

states and non-state actors, such as terrorists, who might obtain nuclear weapons. This concern spurred U.S. investment in ballistic missile defense (BMD), costing hundreds of billions of dollars.[9]

While BMD systems offer some protection, they can be easily overwhelmed by a peer competitor with a large arsenal. Ironically, these U.S. investments may have motivated Russia and China to expand their capabilities, as we will explore in subsequent sections.

One significant development during and after the Cold War was the emergence of the "nuclear taboo," a term popularized by Nina Tannenwald in her 2008 study. Tannenwald argued that there is a strong global aversion to the use of nuclear weapons, driven by the moral repugnance associated with their indiscriminate and catastrophic destruction.[10] This "taboo" appears to have influenced nuclear decision-making during Russia's invasion of Ukraine.

In mid-2023, Chinese President Xi Jinping reportedly urged Russian President Vladimir Putin to refrain from using nuclear weapons, suggesting that such an act would severely damage China's global standing due to the strength of the taboo and China's close relationship with Russia.[11] While it would be overly optimistic to assume the nuclear taboo alone can prevent nuclear conflict, its persistence suggests it remains a critical consideration in modern nuclear strategy.

China's Expanding Nuclear Arsenal

Turning now to the developments in China's nuclear weapons

posture, China first deployed ICBMs capable of reaching the continental United States in the mid-1970s. Until the identification in 2021 of hundreds of new missile silos under construction, assessments held that China possessed only a few dozen ICBMs and adhered to a policy of "minimum deterrence."

By 2021, China's ICBMs had increased from roughly two dozen at the end of the Cold War to around eight dozen.[12] This growth likely reflected China's concern that the maturation of U.S. BMD systems could negate its second-strike capability unless it expanded its missile force to overwhelm U.S. defenses. Indeed, the Clinton administration's 1999 BMD plan aimed to defend against up to 20 incoming missiles—the approximate number of Chinese ICBMs capable of striking the United States at that time.[13]

In addition to increasing the number of missiles, China has been developing alternative delivery systems to ensure its second-strike capability. Two systems of note are maneuverable hypersonic missiles—capable of traveling more than five times the speed of sound—and a Fractional Orbital Bombardment System (FOBS). While these systems do not provide a significant military advantage beyond overcoming U.S. BMD systems, they are considerably more expensive to develop and deploy. The Soviet Union considered building an FOBS during the Cold War but concluded that fielding more ballistic missiles was a more cost-effective way to overwhelm U.S. missile defense systems.[14]

The discovery of China's dramatic missile silo

construction in 2021 likely signals a broader shift in its nuclear strategy. Since then, analysts increasingly predict that China aims to build a nuclear arsenal on par with the United States, a conclusion supported by the 2024 SIPRI report. Notably, such a large arsenal is not required to ensure a secure second-strike capability. This raises the question: Why is China expanding its nuclear forces so dramatically?

Tong Zhao, a well-regarded scholar at the Carnegie Endowment for International Peace, argues that this buildup is driven by President Xi Jinping's decision to elevate the political importance of nuclear weapons in China's strategy. Xi appears to believe that a larger arsenal will influence U.S. policy in ways that benefit Beijing.[15]

This perspective may be partially informed by the work of Georgetown University's Matt Kroenig, who argued in his 2018 book that U.S. numerical superiority in nuclear weapons has provided a bargaining advantage in international relations and reduces the expected costs of war.[16] While many scholars challenge Kroenig's conclusions regarding the bargaining advantage,[17] his excellent reputation in U.S. defense circles may give his ideas considerable weight in Chinese strategic thinking. Additionally, there are notable references in Chinese-language discussions that suggest a belief in the importance of greater numbers driving their nuclear buildup.[18]

In terms of reducing the expected costs of war, the U.S.'s long-standing Launch on Warning (LoW) posture, combined with its highly accurate delivery systems, enables it to preemptively launch a "damage mitigating" first strike. In such

a scenario, the United States could destroy much of an adversary's nuclear arsenal if its leadership became convinced that nuclear war was inevitable.

It is possible that Beijing, observing this capability, has concluded it must mimic the U.S. nuclear posture to achieve similar damage-mitigating" potential. While transparency in Chinese decision-making is limited, the rapid expansion of its nuclear capabilities is consistent with this interpretation.

Even if China is not currently pursuing a LoW or damage-mitigation strategy, the forces it seems to be building will grant it a de facto damage-mitigation capability, allowing for a potential policy shift at any time. As China builds a posture that mirrors the United States, the global environment becomes far more precarious. In a future crisis, three major nuclear powers—the United States, Russia, and China—could each have both the capability and the potential incentive to launch a first strike under the pressure of high-stakes confrontation. The risks and consequences of such a reality are starkly illustrated in Annie Jacobsen's book *Nuclear War*.[19]

Lessons from Russia's War in Ukraine

The war in Ukraine offers several critical lessons for nuclear deterrence. First, Russia's "escalate to de-escalate" strategy appears fundamentally flawed. Before 2022, many in the United States believed that Russia adhered to this strategy, whereby it would use tactical nuclear weapons in a conventional conflict with the United States to signal resolve and compel de-escalation.

This assumption was often used to justify expanding the U.S. tactical nuclear arsenal, allowing for a proportional response in kind. However, nearly three years into the war, Russia has suffered hundreds of thousands of casualties and issued numerous nuclear threats, yet has refrained from using nuclear weapons.

One key reason for this restraint is the persistence of the nuclear taboo, as previously mentioned. More importantly, any Russian use of tactical nuclear weapons would either be so limited as to undermine the intended show of resolve or so significant as to trigger unacceptable reputational and escalation costs. Furthermore, the practical tradeoffs of using nuclear weapons on the battlefield render them unattractive for most conventional military operations.

Another important lesson from the Ukraine conflict is that escalation from conventional warfare to nuclear use appears to be more difficult than previously assumed. In international relations scholarship, war is typically defined as occurring when at least 1,000 battle-related deaths occur within 12 months.[20]

To date, there are only two instances in which nuclear-armed states were directly involved in conflicts with each other: the 1969 Ussuri River Crisis between China and the Soviet Union and the 1999 Kargil Conflict between India and Pakistan. In both cases, the death toll barely exceeded the 1,000-death threshold, leading some analysts to conclude that nuclear states could engage in "limited wars" without triggering nuclear escalation.[21]

However, the war in Ukraine presents a different scenario. Although the United States, France, and the United Kingdom do not have soldiers on the ground, their weapons and logistical support have been critical in preventing Ukraine's defeat.

Russia, meanwhile, has framed the conflict as a broader struggle against the West, led by the United States.[22] Despite this framing—and the fact that Western-supplied arms have contributed to the deaths of 100,000 to 150,000 Russian soldiers as of Jul 2024—nuclear escalation has not occurred.[23] The West has been cautious in its support, aiming to avoid provoking Russia, yet several so-called "red lines" have been crossed without resulting in nuclear retaliation.

The war in Ukraine thus suggests that the combination of the nuclear taboo, the low utility of nuclear weapons on the battlefield, and the existence of secure second-strike capabilities on all sides may allow major wars between nuclear-armed states to occur without escalating to nuclear exchanges. This insight holds significant implications for U.S. policy and strategy regarding China. It indicates that even in high-stakes conflict, the threshold for nuclear use may be higher than previously assumed, providing a degree of reassurance as tensions with Beijing continue to evolve.

U.S. Policy and Deterrence in the Indo-Asia Pacific

Most analysts agree that China is a revisionist power with a strong desire to alter several aspects of the global status quo, particularly concerning Taiwan and the South China Sea—two

of the most volatile flashpoints in the region.

The United States has been grappling with how to maintain the status quo in the face of these challenges. As a scholar of nuclear weapons, I am both alarmed and reassured by the mutual possession of nuclear arsenals in these scenarios. Alarm stems from the risk of escalation to nuclear conflict and its corresponding catastrophic consequences. At the same time, reassurance comes from the fact that leaders in Washington and Beijing are likely acutely aware of this risk and, therefore, exercise caution to avoid open conflict.

The war in Ukraine complicates this logic. It is the largest war in Europe since World War II and has inflicted far higher casualties on a nuclear-armed state than any previous conflict. Although the Korean and Vietnam Wars saw the United States suffer significant casualties from opponents supplied by a nuclear-armed power, those numbers were less than a third of what Russia experienced in Ukraine.

Additionally, the Cold War proxy wars were fought thousands of miles away from the U.S. and the Soviet Union's respective borders. In contrast, Ukraine is a land war fought directly on Russia's borders and is now inside Russian territory. This uncharted terrain raises concerns that China might interpret the situation differently, potentially concluding that the risk of nuclear escalation is not insurmountable and opting to launch a conventional war to change the status quo in the Indo-Pacific.

Given this possibility, the United States must strengthen its conventional deterrence in the Indo-Pacific. A logical

approach would involve increasing defense spending on capabilities designed to defeat key Chinese military strategies, such as an amphibious assault on Taiwan. Weapons like very long-range anti-ship missiles could be critical in deterring such actions. These weapons significantly impacted a series of U.S.-China war game scenarios conducted by the Center for Strategic and International Studies.[24]

Additionally, the United States should continue reinforcing its international partnerships with allies and like-minded nations in the region through frameworks like the Quad—a strategic partnership between the United States, Japan, India, and Australia—and AUKUS, a security pact between the United States, the United Kingdom, and Australia focused on enhancing military capabilities, including nuclear-powered submarines, to counter growing threats. Such alliances greatly amplify the scope of economic and military power China must contend with, further discouraging attempts to alter the status quo.

In terms of nuclear posture, debates will continue over whether the United States requires expanded capabilities, such as additional tactical nuclear weapons or intermediate-range nuclear missiles. While I will not delve into those specific debates here, one point is clear: as a peer competitor with the world's second-largest economy, China can achieve nuclear parity if it chooses to do so. Therefore, the United States should avoid entering an arms race for numerical superiority.

While it is imperative that China does not surpass the United States in nuclear strength, whether this is Beijing's

intent remains uncertain. Some may worry that the combined Russian and Chinese deployed nuclear warheads significantly outnumber U.S. nuclear forces, but as former National Security Advisor Jake Sullivan noted in June 2024, "the United States does not need to increase our nuclear forces to outnumber the combined total of our competitors in order to successfully deter them."[25] For now, the U.S. nuclear arsenal appears sufficient.

The most critical priority is maintaining a secure second-strike capability. Washington's existing nuclear Triad ensures this, and while modernization programs for each leg of the Triad are costly, they are, unfortunately, necessary. The United States must remain vigilant for any developments in BMD systems by Russia or China, as such advances could necessitate further investment to safeguard the credibility of the U.S. second-strike capability.

The catastrophic destruction of nuclear war makes it an irrational choice, but as Sagan notes, miscalculations *can* still occur. This does not mean that they will or must happen, and we can act now to significantly reduce the risk of miscalculation. The clearest way to do this is by establishing dedicated lines of communication and holding regular meetings between top officials from all sides. Crises will inevitably arise in the future, and navigating them will be far easier if we do our homework now.

The end of the Cold War in 1990 brought widespread hope that the era of living under the constant threat of nuclear annihilation had passed. For several decades, that hope seemed

justified. However, China's nuclear build-up and the war in Ukraine have drawn us back into a world where nuclear deterrence once again looms large. Although this reality is unsettling, history shows that we have successfully navigated such dangers before, and we can do so again in the decades to come.

Conclusion

China's evolving nuclear posture presents serious but manageable challenges. Strategic realism—rooted in historical precedent, credible deterrence, and steady alliance coordination—can help the United States navigate this new landscape.

Avoiding arms races and maintaining second-strike capabilities should remain central to U.S. policy. Additionally, the establishment of direct communication channels and recurring senior-level dialogues with Beijing would reduce the risk of miscalculation.

The post–Cold War optimism about nuclear disarmament has faded. Yet the tools and practices that sustained deterrence through more dangerous periods remain available. By adapting these tools to new realities and avoiding reactive overreach, the United States can maintain strategic balance in the face of China's nuclear expansion, helping preserve a stable Indo-Pacific and a more secure international order.

Endnotes

[1] This chapter, originally titled "Balancing Act: Shaping U.S. Policy in the Face of China's Nuclear Expansion," was first published in *The Indo-Pacific Mosaic: Comprehensive Security Cooperation in the Indo-Pacific,* edited by James M. Minnich (2025), https://doi.org/10.71236/IRAK6624. The current version has been updated and retitled for this volume, the first in the *Strategic Edge Series*.

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