Caitlin Talmadge, Ph.D.

Associate Professor of Security Studies, School of Foreign Service, Georgetown University

THE U.S.-CHINA NUCLEAR RELATIONSHIP: GROWING ESCALATION RISKS AND IMPLICATIONS FOR THE FUTURE

Testimony before the U.S.-China Economic and Security Review Commission

Hearing on China's Nuclear Forces

June 7, 2021

Commissioner Fiedler, Commissioner Wong, other distinguished members of the Commission, fellow panelists, thank you for the opportunity to speak with you today. I have been asked to address the topic of China's nuclear arsenal, possible scenarios for Chinese nuclear use, and the implications for the United States. My testimony today comes from my perspective as an analyst of military affairs and nuclear strategy whose research has focused heavily on the U.S.-China nuclear relationship in recent years.

The main point I want to get across today is that the U.S.-China nuclear relationship is becoming more competitive in ways that raise risks of nuclear use.[1] Leaders on both sides might enter a future conflict with the expectation that it will remain controlled, limited, and purely conventional, but there are persuasive reasons to doubt this sanguine view. Specifically, the risk of Chinese nuclear use, while still very low in absolute terms, is growing relative to where it once was, in part because the overall risk of conflict between the two nations is also growing. For decades, nuclear weapons have been largely peripheral to U.S.-China relations, but that is no longer the case. Unfortunately, a future U.S.-China conventional conflict may not remain easily controlled and limited, and there are some real dangers of nuclear escalation. Furthermore, as I will discuss, a more competitive U.S.-China nuclear relationship will likely have important consequences even in peacetime or a crisis, short of war, because nuclear weapons cast a long shadow.

In my remarks today, I will first give an overview of the important changes underway in China's nuclear arsenal, before turning to some possible scenarios for Chinese use. I will then discuss some of the broader potential implications of a more competitive U.S.-China nuclear relationship and conclude with some recommendations for Congress.

China's Nuclear Modernization

[1] My testimony draws throughout on my previous publications. These include Caitlin Talmadge, "Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* 40, no. 4 (Spring 206): 50-92; Caitlin Talmadge, "Beijing's Nuclear Option," *Foreign Affairs* 97, no. 6 (November/December 2018): 44-50; and Caitlin Talmadge, "The U.S.-China Nuclear Relationship: Why Competition Is Likely to Intensify," Brookings Global China Series, September 2019.

Only a decade or two ago, China's nuclear arsenal was small, vulnerable, and maintained at a very low state of peacetime readiness. China's no-first-use pledge was thus credible simply because its forces were minimal and not poised for use.[2] Like the United States and Russia, however, China is now undergoing a significant period of nuclear modernization. Much of the public discussion of changes in China's nuclear arsenal has focused on growth in arsenal size, but it is important to remember that China is beginning from a very low baseline.[3] China's arsenal remains dramatically smaller than that of the United States and Russia, in the low hundreds rather than thousands, and the United States for decades has consistently over-predicted increases in the size of China's nuclear forces.[4] Thus, when we hear concerns that China's nuclear arsenal may soon double, we should pause to remember that even a doubled Chinese arsenal would be only a fraction of the U.S. and Russian arsenals. That said, China's arsenal is clearly on a steady upward trajectory, and China has the resources to support a significantly larger nuclear arsenal that it currently possesses. It seems prudent to assume that growth in Chinese forces will continue, although to what ultimate level remains unclear.

Equally important are the qualitative characteristics of China's nuclear weapons and what clues they offer as to China's nuclear strategy, beyond simply the quantitative size of the arsenal. Many of China's recent changes seem clearly oriented toward improving survivability. In other words, they do not necessarily by themselves signal any departure from China's long-standing no-first-use pledge. Instead, they appear oriented toward ensuring that if China suffered a nuclear attack, it would still have enough surviving forces to inflict a retaliatory second strike on its opponent. They are about creating a condition of mutual vulnerability with the United States—a situation in which there is no meaningful way for either side to avoid suffering unacceptable damage in a nuclear war, no matter who strikes first.

For example, China has taken steps to improve the mobility of its nuclear forces, investing in road-mobile ICBMs that would be significantly more difficult for an adversary to locate and destroy prior to launch, compared to silo-based ICBMs in fixed locations.[5] China is also investing in a sea-based nuclear deterrent, which although currently rudimentary and vulnerable to U.S. anti-submarine warfare capabilities, provides a foundation for a future ballistic missile

---

[2] Taylor Fravel and Evan Medeiros, "China's Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure," *International Security* 35, no. 2 (Fall 2010): 48-87; Avery Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution* (Stanford, CA: Stanford University Press, 2000); Vipin Narang, *Nuclear Strategy in the Modern Era*, chapter 5; and Taylor Fravel, *Active Defense: China's Military Strategy Since 1949* (Princeton: Princeton University Press, 2019), chapter 8.

[3] For example, Robert Ashley, "Russian and Chinese Nuclear Modernization Trends," (remarks at the Hudson Institute, Washington, DC May 29, 2019), https://www.dia.mil/News/Speeches-and-Testimonies/Article-View/Article/1859890/russian-and-chinese-nuclear-modernization-trends/; Bill Gertz, "China Engaged in 'Breathtaking' Nuclear Expansion,' STRATCOM commander warns," *Washington Times*, April 21, 2021; and Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China*, Annual Report to Congress, 2020, 85.

[4] On arsenal size, see *Military and Security Developments*, 85; Hans Kristensen and Matt Korda, "Chinese Nuclear Forces, 2020," Bulletin of the Atomic Scientists, vol. 76, no. 6: 444. On estimates, see Hans Kristensen, "DIA Estimates for Chinese Nuclear Warheads," *Federation of American Scientists*, May 31, 2019, https://fas.org/blogs/security/2019/05/chinese-nuclear-stockpile/.

[5] *Military and Security Developments*, 86.

submarine force.[6] This force could someday strengthen China's secure second strike capabilities, especially versus U.S. missile defenses, given submarines' less predictable launch locations and depressed launch trajectories.[7] Likewise, China has worked to extend the range of its nuclear forces so that they can credibly threaten targets in the continental United States. It is adding multiple independent re-entry vehicles (MIRVs) to much of its intercontinental land-based nuclear missile force, even the silo-based force, likely with the goal of improving the ability to penetrate U.S. missile defenses.[8]

Other aspects of China's nuclear modernization are more ambiguous, however, and suggest that China might be considering new and more ambitious nuclear missions, such as tactical nuclear use or nuclear warfighting.[9] These roles would potentially go well beyond the secure second strike retaliatory capability we typically associate with China's nuclear forces.

Notably, for example, China deploys two intermediate-range, land-based ballistic missiles, the DF-21 and more recently the DF-26, which can carry both nuclear and conventional warheads. In particular, the DF-26 reportedly has a "hot swapping" capability, meaning that China can rapidly shift between launching the nuclear and conventional variants. The missile is also said to be highly accurate, potentially enabling it to attack moving targets such as aircraft carriers. In addition, the DF-26 is very long range, able to reach targets as far as Guam.[10]

These purported characteristics—nuclear-conventional flexibility, precision, and range—suggest that the DF-26 is designed to be used for something other than a countervalue second strike against an enemy city, which was the standard role of Chinese nuclear weapons in the past. Indeed, the DF-26 appears to be well suited to limited nuclear use against U.S. military targets in the Pacific.

Of course, there are scenarios in which even this type of nuclear use would not necessarily be first use; China could be envisioning the use of a theater nuclear capability only in response to similar U.S. use, and it is important not to try to render a definitive verdict about shifts in Chinese nuclear intentions based on one or two new missiles. But certainly this is a clue to the possibility of impending changes and should be watched closely.

In addition, China is apparently taking steps to improve its command and control of nuclear forces and conducting exercises to improve the readiness of its nuclear forces. Some of these exercises may involve mating warheads to missiles, possibly on a widespread scale and with regularity. Again, this marks a change from China's arsenal in the past, which was widely characterized as having warheads stored separately from missiles in peacetime. In the context of

---

[6] *Military and Security Developments*, 86. On the limits of China's current SSBN force, see Owen Cote, "Invisible nuclear-armed submarines, or transparent oceans? Are ballistic missile submarines still the best deterrent for the United States?" *Bulletin of the Atomic Scientists* 75, no. 1 (January 7, 2019): 30-35.

[7] Andrew Erickson and Lyle Goldstein, "China's Future Nuclear Submarine Force: Insights from Chinese Writings," *Naval War College Review* 60, no. 1 (Winter 2007): 56, 65; and Cunningham and Fravel, "Assuring Assured Retaliation," 28-29.

[8] *Military and Security Developments*, 56.

[9] This analysis draws heavily on Austin Long, "Myths or Moving Targets? Continuity and Change in China's Nuclear Forces," War on the Rocks blogpost, December 4, 2020, available online.

[10] *Military and Security Developments*, 56.

China's deployment of theater nuclear forces, such developments again suggest more of a possible emphasis on tactical nuclear use.[11]

Overall, it is very clear that China's arsenal is undergoing a period of change, both quantitatively and qualitatively.[12] The full strategic implications of that change are as yet unclear but merit close attention, as they could presage a shift away from China's no-first-use pledge, which I will discuss more below. Yet even if the changes are intended only to improve the survivability of Chinese forces for purposes of ensuring second strike retaliation, this would also potentially be a consequential change for reasons I will discuss below as well.

Risks of Chinese Nuclear Escalation

There is good news and bad news regarding the potential for actual Chinese nuclear use given the developments just mentioned. The good news is that many of the mechanisms analysts typically believe could lead to nuclear use probably are still unlikely to be relevant in the U.S.-China context.

For example, analysts sometimes have worried about the possibility of unauthorized nuclear use by countries such as Pakistan, but that is very unlikely in China, where for political reasons there is strong centralized party control of nuclear weapons. This seems unlikely to change any time soon. Similarly, during the Cold War both sides were deeply concerned about the potential for an all-out nuclear first strike by the other side, either for purposes of outright aggression or for pre-emption because it thought the other side was about to launch. But China's arsenal is still far too limited in its size and capabilities to conduct this sort of strike against the United States and is likely to remain so for the foreseeable future. There is simply no prospect of a bolt-from-the-blue Chinese nuclear attack of the sort that the United States once feared the Soviets might launch, unless Chinese leaders are utterly insensitive to costs. (However, China likely is fearful that the United States might launch a nuclear first strike on China, an important concern whose implications I discuss below.)

So that is the good news. The bad news is that there are still two other plausible pathways to Chinese nuclear use, each of which I discuss in more detail below.

Chinese Asymmetric Nuclear Escalation

One pathway to potential Chinese nuclear use is what MIT professor Vipin Narang calls *asymmetric escalation*: when a state turns to nuclear weapons because it is losing a high-stakes conventional conflict.[13] The idea is to engage in rapid nuclear escalation, likely against military targets, in an effort to get an opponent to back down from a conventional war the state is losing, or simply to halt the opponent's military campaign through crippling nuclear strikes.

---

[11] *Military and Security Developments*, 88.
[12] China also appears to be pursuing a nuclear-capable air-launched ballistic missile, which could eventually endow China with a true nuclear triad. However, China's nuclear bomber capability is currently much less developed than the air- and sea-based legs of China's arsenal, so I do not focus on it here. *Military and Security Developments*, 51, 85, 87.
[13] Vipin Narang, *Nuclear Strategy in the Modern Era*.

This is, in essence, what NATO threatened to do to the Warsaw Pact during the Cold War. It is what led Israel to consider nuclear weapons use during the 1973 war with Egypt. It is what Pakistan promises to do if India invades today; what many suspect North Korea would do if it was losing a war with Coalition forces on the peninsula; and what Russia's nuclear forces have been postured to do since the end of the Cold War left it conventionally inferior to NATO.[14]

Notably, however, these are all scenarios in which a state is or was at risk of losing important territory in a major land war—usually homeland territory that was in imminent danger of being conquered by an adversary's fast-moving ground forces. It is hard to see China facing such a situation. Despite recent border skirmishes, China is never going to be overrun by India, so it is hard to imagine China turning to nuclear weapons to coerce its way out of a border conflict. And, of course, the Pacific Ocean separates the United States and China, so there is no Fulda Gap bringing their armies eyeball to eyeball the way the superpowers found themselves in the Cold War.

The one possible exception might be a Taiwan scenario, though. Given the island's political importance, it is not inconceivable to think that Chinese leaders losing a war over Taiwan could engage in asymmetric nuclear escalation to try to get the United States to back down or simply to halt the U.S. conventional campaign. Again, the idea would be to engage in limited nuclear use, likely against military targets, for purposes of coercion or military denial or both. This would, obviously, constitute a violation of China's no-first-use pledge, but it is comparable to the sort of scenario that historically has led countries to threaten asymmetric nuclear escalation. It would also be the sort of situation in which theater nuclear capabilities of the sort described above could be relevant.

Chinese Nuclear Escalation in Response to Conventional Counterforce

A second pathway to Chinese nuclear use—which is distinct from but also could co-occur with the one I just described—could arise in response to what I have called *conventional counterforce*. Conventional counterforce happens when an adversary uses conventional weapons to degrade, destroy, or endanger components of a state's nuclear arsenal.[15] Conventional counterforce is most likely to occur in conventional wars between adversaries where one or both sides' militaries exhibit a high degree of entanglement between nuclear and conventional forces.[16] China's nuclear arsenal contains a number of such interlinkages, which I will discuss below, but the basic danger is that in fighting a major conventional war versus China, the United States is very likely to degrade, destroy, or endanger components of China's nuclear arsenal in ways that could precipitate limited Chinese nuclear escalation.

[14] On the common logic in these examples, see Keir Lieber and Daryl Press, *The Myth of the Nuclear Revolution: Power Politics in the Atomic Age* (Ithaca: Cornell University Press, 2020), chapter 4.
[15] I develop this concept in more detail in Caitlin Talmadge, "Would China Go Nuclear?" This article references the other important scholarship done on this topic, particularly Barry Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell University Press, 1991).
[16] James M. Acton, "Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War," *International Security* 43, no. 1 (Summer 2018): 56-99.

For example, I mentioned earlier that two of China's intermediate-range missiles, the DF-21 and DF-26, have both nuclear and conventional variants. For the DF-21 at least, it appears that the nuclear and conventional variants are in distinct launch brigades that operate in distinct locations, but they are still attached to the same bases.[17] Because of this, it is possible that the nuclear and conventional brigades utilize overlapping transportation networks and supply depots, and they might even share some command-and-control networks. Even if they don't, however, the United States might not be able to distinguish between the conventional and nuclear networks so as to avoid the nuclear-relevant systems while targeting only the conventional ones. The nuclear and conventional launch sites would also look the same (though the warhead storage sites would probably be distinct). What this means is that even if the United States wants to target only China's conventionally tipped DF-21 force in a conventional war over Taiwan, it may conduct strikes that also infringe on China's nuclear tipped DF-21 force—at least indirectly, and possibly directly if the United States lacks very accurate intelligence about the locations, operations, and command-and-control systems of the conventional versus nuclear brigades.

With the DF-26, the nuclear-conventional interlinkages are even more significant if the missile has the aforementioned "hot swapping" capability. Functionally, this means that there is no meaningful distinction between the conventional and nuclear variants of the missile, except perhaps distinct warhead storage sites. All of the missile launchers have the ability to lob conventional ordnance at U.S. forces and friendly territory, making all of them likely to be targeted by U.S. conventional campaign planners. But strikes on DF-26 bases, launch sites, and transporter-erector launchers will, by definition, also degrade China's nuclear capabilities even if the missiles are not mated to nuclear warheads at the time of the conventional attack—because all of them are nuclear-capable. In fact, this may be intentional on China's part, reflecting a possible belief that the missile's dual capability will deter U.S. attacks on it.[18]

The sea-based leg of China's nuclear forces has significant linkages with conventional forces too. For example, China uses the same shore-based, very low frequency transmitters to communicate with both its attack submarines and its ballistic missile submarines (SSBNs). It is very likely in the event of a war that the United States would want to disable this communications system as part of the conventional naval battle, which would not be hard to do given that it is a large, fixed, emitting target. The problem is that doing so would also prevent the ability of Chinese leaders to communicate with their SSBN force, essentially decapitating the sea leg of China's nuclear deterrent unless China were to make the very unlikely decision to totally devolve launch authority to SSBN commanders.[19]

---

[17] Fiona Cunningham and Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Strategy and U.S.-China Strategic Stability," *International Security* 40, no. 2 (Fall 2015), 43.

[18] Ankit Panda, "China's Dual-Capable Missiles: A Dangerous Feature, Not a Bug," *The Diplomat*, May 13, 2020, available online. For alternative perspectives suggesting that the entanglement is not part of a deliberate strategy by China, see Tong Zhao and Li Bin, "The Underappreciated Risks of Entanglement: A Chinese Perspective," in *Entanglement: Russian and Chinese Perspectives on Non-Nuclear Weapons and Nuclear Risks*, ed. James Acton (Washington, DC: Carnegie Endowment for International Peace, 2017), 53; and David Logan, "Are They Reading Schelling in Beijing? The Dimensions, Drivers, and Risks of Nuclear-Conventional Entanglement in China," *Journal of Strategic Studies*, forthcoming, available online.

[19] Again, please see my previously published works cited in footnote 1 for further details, especially Caitlin Talmadge, "Would China Go Nuclear?"

Other likely components of a U.S. conventional campaign would also leave China's nuclear arsenal vulnerable, even if the nuclear forces were not attacked directly. To continue with the discussion of the naval realm, for example, the United States is very likely to pursue and sink Chinese attack submarines in a war over Taiwan because these submarines will threaten U.S. surface forces. But China's attack submarines also protect its ballistic missile submarines, which would become exceptionally vulnerable if their escort force is sunk.

Similarly, in any conventional air campaign against mainland targets, the United States is likely to try to degrade, disable, or destroy the ground-based radars and air defenses protecting Chinese conventional forces, especially the missile forces relevant to a Taiwan campaign. But doing so will also create corridors through which the United States could potentially conduct a surprise attack on China's nuclear forces—including, in the future, its apparently re-emerging nuclear bomber force. Again, attacks on legitimate conventional targets could leave components of China's nuclear arsenal more vulnerable to further attack.

Of course, each aspect of this potential infringement on China's nuclear forces would be subject to the contingencies of any particular scenario, and it is possible that taken in isolation, each component would not necessarily be alarming to Chinese leaders. For example, even if the United States severely degraded China's intermediate range ballistic missile force and the air defenses protecting it, China would still have several brigades of intercontinental nuclear ballistic missiles located far from any fight over Taiwan in far western China.

Nevertheless, the overall picture would probably not be a comforting one to Chinese leaders: attacks on their theater nuclear forces and supporting bases, launch sites, infrastructure, and possibly command and control networks; a degradation of the early warning radars and air defense systems protecting other components of China's land-based nuclear arsenal; the loss of communication with its ballistic missile submarine forces; the degradation of the escort submarines needed to protect those boomers.

Assessing this pattern of damage to their nuclear forces, Chinese leaders might come to think that Washington had aims beyond winning the conventional war—that the United States might be seeking to disable or destroy China's nuclear arsenal outright, even the intercontinental ballistic missiles located deep in the country's interior, perhaps as a prelude to regime change. For years, observers have pointed to the U.S. military's failed attempts to locate and destroy Iraqi Scud missiles during the 1990-91 Gulf War as evidence that mobile missiles are virtually impervious to attack. Therefore, the thinking goes, China could retain a nuclear deterrent no matter what harm U.S. forces inflicted on its coastal areas. Yet recent research suggests otherwise.[20] Chinese intercontinental ballistic missiles are larger and less mobile than the Iraqi Scuds were, and they are harder to move without detection. The United States is also likely to have been tracking them much more closely in peacetime. As a result, China is unlikely to view a failed Scud hunt in Iraq nearly 30 years ago as reassurance that its residual nuclear force is safe today, especially during an ongoing, high-intensity conventional war.

[20] Austin Long and Brendan Rittenhouse Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," *Journal of Strategic Studies*, vol. 38, nos. 1-2 (2015), 56-64.

China's vehement criticism of a U.S. regional missile defense system designed to guard against a potential North Korean attack already reflects these latent fears.[21] Beijing's worry is that this system could help Washington block the handful of missiles China might launch in the aftermath of a U.S. attack on its arsenal. That sort of campaign might seem much more plausible in Beijing's eyes if a conventional war had already begun to seriously undermine other parts of China's nuclear deterrent. It does not help that China's real-time awareness of the state of its forces would probably be limited, since blinding the adversary and deliberately imposing the "fog of war" on opponents are standard parts of the U.S. military playbook.

At that point, the question becomes, how will China react? Will it practice restraint and uphold its no-first-use pledge once its nuclear forces appear to be under attack? Or will it use those weapons while it still can, gambling that limited escalation will either halt the U.S. campaign or intimidate Washington into backing down?

Beijing's answers to these questions have grown somewhat ambiguous in recent years. Although officially China continues to adhere categorically to its no-first-use pledge, some PLA officers have written publicly that China should signal that it might use nuclear weapons in the event that a conventional war threatened China's nuclear arsenal or the survival of the regime.[22] However, this is not an official stance, and even so, which exact set of capabilities China would consider part of its core nuclear deterrent and which it considers less crucial remains unclear. For example, if China already recognizes that its sea-based nuclear deterrent is relatively small and vulnerable, then seeing it become even more vulnerable in a war might not prompt any radical discontinuity in Beijing's calculus.

The danger lies in wartime developments that could shift China's assumptions about U.S. intentions. If Beijing interprets the erosion of its sea- and land-based nuclear forces as a deliberate effort to destroy its nuclear deterrent through conventional counterforce, or perhaps even as a prelude to a nuclear counterforce, it might see limited nuclear escalation as a way to force an end to the conflict.[23] For example, China could use nuclear weapons to instantaneously destroy the U.S. air bases that posed the biggest conventional threat to its arsenal. It could also launch a nuclear strike with no direct military purpose on an unpopulated area or at sea as a means of signaling to the United States. Nothing says "you've crossed my red line" quite like a mushroom cloud.

China's own history of nuclear decision-making points to how these wartime perceptual dynamics could prompt escalatory behavior. In 1969, a border crisis brought China to the brink of nuclear war with the Soviet Union. In early March of that year, Chinese troops ambushed Soviet guards amid rising tensions over a disputed area. Less than two weeks later, the two countries were fighting an undeclared conflict with heavy artillery and aircraft. The dispute

[21] Elizabeth Shim, "Kim Jong Un Is Willing to Denuclearize, Xi Jinping Says," *UPI*, June 27, 2019; and Fiona Cunningham and Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Strategy and U.S.-China Strategic Stability," *International Security* 40, no. 2 (Fall 2015): 7-50.
[22] *Military and Security Developments*, 86.
[23] To be clear, this is my deduction. Chinese nuclear experts frequently claim that China will not engage in this type of controlled nuclear bargaining. The key question is whether these sorts of reassuring peacetime claims will actually hold up under the pressure of a crisis or war. Fiona Cunningham and Taylor Fravel, "Dangerous Confidence? Chinese Views on Nuclear Escalation," *International Security*, vol. 44, no. 2 (Fall 2019): 61-109.

quickly escalated beyond what Chinese leaders had expected, and before the end of March, Moscow was making thinly veiled nuclear threats to pressure China to back down.

Chinese leaders initially dismissed these warnings, only to radically upgrade their threat assessment once they learned that the Soviets had privately discussed nuclear attack plans with other countries. Moscow never intended to follow through on its nuclear threat, archives would later reveal, but Chinese leaders believed otherwise. On three separate occasions, they were convinced that a Soviet nuclear attack was imminent. Once, when Moscow sent representatives to talks in Beijing, China suspected that the plane transporting the delegation was in fact carrying nuclear weapons. Increasingly fearful, China test-fired a thermonuclear weapon in the Lop Nur desert and put its rudimentary nuclear forces on alert—a dangerous step in itself, as its liquid-fueled missiles posed a serious danger of unauthorized or accidental launch.[24] Only after numerous preparations for Soviet nuclear attacks that never came did Beijing finally agree to negotiations.[25]

China is a different country today than it was in the time of Mao Zedong, but the 1969 conflict offers important lessons. To recap: China started a skirmish that risked war and initially believed that nuclear weapons would be irrelevant, even though the Soviet arsenal was several orders of magnitude larger than China's, just as the U.S. arsenal dwarfs China's today. Once the dispute escalated in ways they did not expect, however, the Chinese reversed their assessment of the possibility of a nuclear attack to a degree bordering on paranoia. Most worrying, China appears to have actually considered using its nuclear weapons, even though it had to expect devastating retaliation.[26] Ambiguous wartime information and worst-case thinking led it to take nuclear risks it would have considered unthinkable only months earlier. This pattern could unfold again today, with a conventional deterrence failure—which by definition would have occurred if the United States and China were fighting a major war—giving way to a nuclear deterrence failure.

Broader Implications of China's Improving Nuclear Arsenal

Even short of the possibility of actual Chinese nuclear use in a war, China's improving arsenal will likely have some significant consequences during peacetime and in any future crises. The main reason is that a more robust Chinese arsenal will entrench the United States and China in a deeper state of mutual nuclear vulnerability, or mutually assured destruction (MAD). As I mentioned earlier, in MAD there is no meaningful way for either side to avoid suffering unacceptable damage in a nuclear war, no matter who strikes first.

---

[24] It is unclear if the test was in response to the crisis or already preplanned, but at a minimum China did not delay the test due to the crisis.

[25] For more on the 1969 episode, see M. Taylor Fravel, *Strong Borders, Secure Nation: Cooperation and Conflict in China's Territorial Disputes* (Princeton, N.J.: Princeton University Press, 2008), 211–217; and Lorenz M. Lüthi, "Restoring Chaos to History: Sino-Soviet-American Relations, 1969," *China Quarterly*, June 2012, 378–397; Michael Gerson et al., *The Sino-Soviet Border Conoict: Deterrence, Escalation, and the Threat of Nuclear War in 1969* (Washington, D.C.: Center for Naval Analyses, November 2010); John Wilson Lewis and Litai Xue, *Imagined Enemies: China Prepares for Uncertain War* (Stanford, Calif.: Stanford University Press, 2006), 45-72.

[26] Much remains unclear about this episode, in part due to the chaotic nature of Chinese command and control at this time.

Historically, the United States has been highly resistant to acknowledging the condition of MAD with China.[27] Instead of accepting MAD with China—a country that possesses intercontinental ballistic missiles (ICBMs) that can reach the continental United States—the United States has sought capabilities that could be used for damage limitation. The most recent U.S. Nuclear Posture Review in fact explicitly highlights the long-standing U.S. pursuit of damage limitation, which is a nuclear mission distinct from deterrence.[28] Deterrence tries to convince an adversary not to launch a nuclear attack by threatening him with nuclear retaliation if he does so. Damage limitation, by contrast, is not about imposing costs on the adversary; it is about meaningfully reducing the costs to oneself in an all-out nuclear war.[29] The United States pursues damage limitation through counterforce capabilities, which can enable the United States to find, destroy, or disable adversary nuclear forces; missile defenses, which can intercept adversary nuclear launches; and civil defense measures.

It is important to note that the pursuit of damage limitation does not mean that the United States intends to start a nuclear war or that it believes it could emerge from a nuclear war unscathed. Rather, the likely U.S. objective is to make China to worry that if *China* starts a crisis or conflict that raises risks of nuclear escalation, the United States will have a higher tolerance for bearing these risks than China will, because of the United States' relatively greater ability to limit the damage the United States would suffer in a nuclear exchange.[30] Were this effort successful, U.S. nuclear capabilities could theoretically deter China from initiating any conflict in the first place, or could endow the United States with bargaining advantages in any effort to coerce China if a crisis or war did break out. Again, the idea is not that the United States would relish fighting a nuclear war. It is that when nuclear weapons began to cast their inevitable shadow over any tense U.S.-China interaction—even well below the nuclear threshold—the United States probably would be less likely to back down over escalation fears than China. China's awareness of this fact could thus give the United States an important advantage in what strategist Thomas Schelling famously characterized as a "competition in risk-taking."[31]

From this perspective, China's nuclear improvements are worrisome to many U.S. policymakers not because of a fear that China will suddenly launch a nuclear attack. Rather, China's improvements to survivability are perceived as threatening even if China maintains its no-first-use policy because they erode the U.S. ability to limit damage. If the United States enters an undisputed state of mutual nuclear vulnerability with China—meaning that China can inflict unacceptable damage on U.S. cities, even in the aftermath of a U.S. first strike—then U.S. policymakers may worry that U.S. nuclear weapons will be much less likely to deter China from

---

[27] "Nuclear Posture Review Report, April 2010," U.S. Department of Defense, April 6, 2010, https://www.hsdl.org/?view&did=777468. For background on the issue see Vince Manzo, *Nuclear Arms Control Without a Treaty? Risks and Options After New START* (Center for Naval Analyses, 2019), Part IV.

[28] "Nuclear Posture Review Report 2018," U.S. Department of Defense, February 5, 2018, https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF, VIII, 23.

[29] Charles Glaser and Steve Fetter, "Should the United States Reject MAD? Damage Limitation and U.S. Nuclear Strategy toward China," *International Security* 41, no. 1 (Summer 2016): 49-50.

[30] This logic is explained well in Austin Long, "U.S. Nuclear Strategy toward China: Damage Limitation and Extended Deterrence," in *America's Nuclear Crossroads: A Forward-Looking Anthology*, ed. Caroline Dorminey and Eric Gomez (Washington, DC: Cato Institute, 2019), 47-55. For a critical view, see Glaser and Fetter, "Should the United States Reject MAD?," 49-98.

[31] Thomas Schelling, *Arms and Influence* (New Haven: Yale University, 2008), 91.

engaging in conventional or sub-conventional aggression, especially against U.S. allies or partners. The United States would also be less able to leverage nuclear threats against China in the event of a crisis or war.[32]

Classic deterrence theory of course would suggest that the mutual presence of second-strike forces would stabilize the U.S.-China relationship and reduce the likelihood of conflict due to the fear of escalation.[33] But U.S. policymakers may reasonably worry that if China turns out to be a highly revisionist actor with growing local conventional military advantages, improvements in its nuclear arsenal could embolden rather than inhibit Chinese aggression, in line with the so-called Stability-Instability Paradox.[34] It was precisely this sort of fear that led to U.S. pursuit of a damage limitation capability versus the Soviets during the Cold War, even though MAD seemed much more entrenched then than it is today between the United States and China.[35]

The basic concern is that if the two sides are stalemated at the nuclear level, the conventional balance becomes much more important for deterrence and bargaining, and as is well known, the conventional balance also is not moving in a favorable direction for the United States and its allies. The key issue is one's assessment of how China might behave under the condition of mutually acknowledged, mutual vulnerability versus how it behaves now.[36] Would China's behavior be different in a world where its leaders believed it had a robust, secure second-strike force that U.S. policymakers knew was capable of inflicting unacceptable damage on U.S. cities, even in the aftermath of a U.S. first strike?

Again, the traditional view is that precisely because nuclear war would be so devastating under this condition of mutual vulnerability, conventional conflict would become very unlikely.[37] The two sides might still follow the U.S. and Soviet course and engage in a costly arms race, but they would probably be much less likely to end up in a hot war deliberately initiated by either side.

The alternative, more pessimistic view is that the loss of any U.S. relative nuclear advantage, combined with an eroding U.S. conventional position, could actually invite aggression from a highly revisionist China. Again, this view assumes both that U.S. nuclear weapons play some role in constraining China conventionally now, and also that Chinese aims would be expansive if this constraint were loosened, in combination with a conventional balance more favorable to China. From this perspective, China might be especially tempted to expand its "gray-zone" challenges below the threshold of full-on conventional war, if it knew that the United States might fear that a robust conventional response to such challenges could risk nuclear escalation. Or, China might follow the logic of the Stability-Instability Paradox just mentioned and simply assume that it was "safe" to fight a conventional war, or even a limited nuclear war, under the

[32] For more on this logic see Green and Long, "Correspondence."
[33] Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon* (Ithaca: Cornell University Press, 1989).
[34] The term comes from Glenn Snyder, "The Balance of Power and the Balance of Terror," in *The Balance of Power*, ed. Paul Seabury (San Francisco: Chandler, 1965), 184-201.
[35] Austin Long and Brendan Green, "Stalking the Secure Second Strike: Intelligence, Counterforce, and Nuclear Strategy," *Journal of Strategic Studies* 38, no. 1 (2015): 38-73; and Brendan Green, *The Revolution That Failed: Nuclear Competition, Arms Control, and the Cold War* (Cambridge: Cambridge University Press, 2020).
[36] Long, "U.S. Nuclear Strategy toward China."
[37] Jervis, *The Meaning of the Nuclear Revolution.*

shadow of mutually assured destruction, because it would be irrational for either side to escalate to all-out nuclear use. The key point is that depending on the perceptions of key decisionmakers on both sides, more entrenched mutual vulnerability could generate crises and challenges, not stalemate and stability.

Unfortunately, although nuclear competition with China is far from totally inevitable, the United States also is unlikely to do much to forestall such competition, for two reasons. First, some in the United States may (with varying degrees of reluctance or enthusiasm) accept the prospect of nuclear competition with China, given that this is a contest in which the United States is currently far ahead. If U.S. policymakers believe that U.S. nuclear advantages generate deterrent power or coercive leverage, especially in the face of a less and less favorable conventional balance, they are very unlikely to cede this position. In fact, they may choose to ramp up competition further, assuming domestic politics permit them to do so.[38]

Second, China is not the only nuclear-armed state of concern to the United States. Even if the United States wanted to eschew nuclear competition with China, U.S. nuclear policy choices with respect to other nuclear states would make it difficult to signal this choice credibly to China. For example, the United States might reasonably decide that damage limitation capabilities are an important part of preparation for worst-case scenarios vis-à-vis Russia and North Korea—states that clearly do reserve the right to use nuclear weapons first. But these capabilities are likely to appear highly threatening to China even if they are aimed elsewhere, and they may propel a more competitive dynamic even if this is not the intent.[39]

Recommendations for Congress

Several recommendations come out of this analysis. First, U.S. policymakers should acknowledge, at least to themselves, the trade-offs inherent in a more competitive nuclear relationship with China. U.S. refusal to acknowledge mutual vulnerability, when combined with continued development of capabilities relevant to damage limitation and a worsening bilateral relationship, makes China relatively more likely to adopt an ambitious nuclear strategy than would otherwise be the case. It could create rational incentives for China to potentially move away from no-first-use, for example. If and when China does so, the United States should then recognize the role that its own policy choices may have played in that decision, rather than interpret such change as entirely a function of aggressive Chinese intentions.[40] Of course, this is not an all-or-nothing equation, and is not meant to downplay China's own motives and behavior, but the key point is simply to recognize that China will react to U.S. choices.

Furthermore, U.S. pursuit of damage limitation could also be destabilizing, not to mention costly. It will almost certainly lead to policies that heighten Chinese fears of U.S. nuclear attack,

[38] This belief has a long lineage in American strategic thought. For a recent exposition, see Matthew Kroenig, *The Logic of American Nuclear Strategic: Why Strategic Superiority Matters* (Oxford: Oxford University Press, 2018). For critiques, see Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithaca: Cornell University Press, 1984); Charles Glaser, *Analyzing Strategic Nuclear Policy* (Princeton: Princeton University Press, 1990); and Todd Sechser and Matthew Fuhrmann, *Nuclear Weapons and Coercive Diplomacy* (Cambridge: Cambridge University Press, 2017).

[39] Glaser and Fetter, "Should the United States Reject MAD?."

[40] For a full discussion of these dangers, see Glaser and Fetter, "Should the United States Reject MAD?."

because most of the capabilities relevant to damage limitation—such as counterforce—are also useful in launching a first strike. A healthy Chinese fear of U.S. capabilities could of course be useful in deterring China from deliberately initiating a war, but if the two countries stumble into a conflict through something other than a rational calculation on China's part—such as a misperception or a crisis with a third party—Chinese concerns about the survivability of their nuclear forces could lead to escalatory pressures on Beijing.

Second, even in a more competitive nuclear relationship, the United States can work to reduce the danger of nuclear escalation. Even if the United States believes that there are some deterrent or coercive advantages to be gained in a competitive nuclear relationship with China—advantages that depend on credible threats of escalation—the United States can still work with China to build off-ramps in the event of a crisis or war. The United States might seek to develop what RAND analysts in the Cold War once called "an optimal amount of instability": "enough to deter the [adversary] from precipitating a crisis, but not enough to cause a crisis to spiral out of control should it occur."[41] Fostering robust, direct crisis communication channels between high-level policymakers, and especially high-ranking military officers, is important in this regard, despite the challenges that such efforts face.[42] It is encouraging to see that the Biden administration is working in this direction.

Finally, the United States should consider engaging in arms control with China, bearing in mind that arms control in the future will probably look different from how it evolved in the Cold War. Because of that experience, Americans tend to define arms control narrowly—as legally binding, bilateral treaties that produce symmetrical reductions in nuclear forces. But as Thomas Schelling and Morton Halperin noted decades ago, arms control can be conceptualized much more broadly, "to include all the forms of military cooperation between potential enemies in the interest of reducing the likelihood of a war, its scope and violence if it occurs, and the political and economic costs of being prepared for it." It requires only "the recognition that our military relation with potential enemies is not one of pure conflict and opposition, but involves strong elements of mutual interest."[43]

With respect to China, an arms control process might be conceived of as strategic stability talks that could seek to address not only nuclear weapons but also emerging technologies in the cyber and space domains that are likely to affect nuclear escalation risks.[44] China has thus far resisted efforts to join U.S.-Russian strategic arms control given its dramatically smaller nuclear arsenal.[45] This position is somewhat understandable, but the United States should emphasize to China that it benefits from verifiable constraints on the U.S.-Russian arsenal, and that over the medium term, some type of Chinese participation in this regime will likely be required in order to sustain the strategic arms control framework. Without it, China would potentially have to

---

[41] Glenn Kent and David Thaler, *First-Strike Stability: A Methodology for Evaluating Strategic Forces* (Santa Monica, CA: RAND, 1989), 5.
[42] Scott Harold, "Optimizing the U.S.-China Military-to-Military Relationship," *Asia Policy* 14, no. 3 (July 2019): 145-168.
[43] Thomas Schelling and Morton Halperin, *Strategy and Arms Control* (Washington: Pergamon Press, 1985), 1-2.
[44] Frank Rose, "The end of an era? The INF Treaty, New START, and the Future of Strategic Stability," *The Brookings Institution*, February 12, 2019, https://www.brookings.edu/blog/order-from-chaos/2019/02/12/the-end-of-an-era-the-inf-treaty-new-start-and-the-future-of-strategic-stability/.
[45] Tom O'Connor, "China 'Will Never' Join Arms Control Deal with U.S. and Russia," *Newsweek*, May 20, 2019.

worry about much larger U.S. and Russian arsenals and would, in essence, be entering a three-way arms race as the latecomer.

Though it will not be easy, there are a variety of credible and creative means by which the United States might begin to integrate China into an arms control framework: convening bilateral strategic stability talks with China, expanding talks with Russia to include China, developing a bilateral pre-launch missile notification regime with China, inviting China to observe a New START inspection, establishing a link between the U.S. Nuclear Risk Reduction Center and a Chinese counterpart, and even building on Obama administration progress with China to develop norms for outer space.[46]

Arms control is not an end in itself, of course. It has to serve U.S. strategic objectives.[47] In the Cold War, the United States used arms control both to cap the arms race and, at times, to channel it into areas of competition more favorable to the United States. Although current prospects for arms control with China are dim, the U.S. relationship with the Soviets was adversarial, too. The two sides still found common ground in making some of their forces more transparent to the other in ways that would reduce the likelihood of dangerous misperceptions in a crisis. Despite China's long-standing resistance to greater transparency, the United States should continue trying to engage China in both government-to-government and non-governmental dialogue on nuclear issues, with an eye toward developing an arms control framework over the longer term.[48]

[46] Frank Rose, "The Future of Global Strategic Stability," (Remarks at the Sasakawa Peace Foundation Book Launch, Tokyo, Japan, July 19, 2019), 5, available from the author.
[47] Robert Joseph and Eric Edelman, "New Directions in Arms Control," *The National Review*, April 29, 2016.
[48] Oriana Mastro, "The Vulnerability of Rising Powers: The Logic Behind China's Low Military Transparency," *Asian Security* 12, no. 2 (2016): 63-81; and Wu Riqiang, "How China Practices and Thinks About Nuclear Transparency," in in *Understanding Chinese Nuclear Thinking*, ed. Li Bin and Tong Zhao (Washington, DC: Carnegie Endowment for International Peace, 2016), 219-250. On the mixed record of success of past efforts to engage China in dialogue on nuclear issues, see *Taking Stock: U.S.-China Track 1.5 Nuclear Dialogue*, ed. Brad Roberts (Center for Global Security Research, December 2020), especially 15-32.