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The Strategic Implications of the Evolving US-China Nuclear Balance

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China is significantly expanding the size and sophistication of its nuclear forces. Over the summer of 2021, researchers using satellite imagery discovered three separate fields of intercontinental ballistic missile (ICBM) silos under construction in the deserts of north-central China.ⁱ If each silo is eventually equipped with a missile, the Chinese nuclear arsenal capable of striking the continental US could triple in size. The US government estimates that China's nuclear arsenal could number 1000 warheads by 2030, with at least 200 deployed on long-range platforms.ⁱⁱ

In addition to expanding its silo-based missile force, Beijing is building more robust and effective road-mobile missiles capable of striking targets in Asia and the continental United States. China will also soon join the United States and Russia as the only nuclear powers with a complete nuclear triad—the capability to launch nuclear weapons from land-based missiles, submarines, and bomber aircraft. China is also exploring new kinds of nuclear weapons delivery platforms, including a hypersonic “fractional orbital bombardment system” and possibly autonomous underwater drones.ⁱⁱⁱ As a result, US military commanders have assessed that China is “no longer a lesser-included case” of the “pacing” nuclear threat posed by Russia.^{iv} Taking note of China's nuclear expansion, Secretary of Defense Lloyd Austin recently observed that “China's military is on pace to become a peer competitor to the United States in Asia—and, eventually, around the world.”^v

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How should the United States make sense of the changing US-China nuclear balance? Analysts have debated whether to be alarmed by the impending growth in China's arsenal, whether these capabilities presage changes to China's long-standing approach to nuclear strategy, and whether these new systems make it harder to deter Chinese nuclear attacks, especially large nuclear attacks on the US.^{vi} Optimists in this debate argue that China's nuclear expansion does not fundamentally imperil nuclear deterrence, while pessimists argue that the recent revelations are the first step in a Chinese bid for nuclear superiority.

As this debate has unfolded, it has introduced complexity but not clarity. China's nuclear buildup raises two fundamental questions for US and international security: First, does China's nuclear expansion presage a fundamental shift in Chinese nuclear strategy? Second, does China's emerging nuclear posture pose challenges for US nuclear strategy and defense strategy? The available evidence today is largely consistent with both continuity and change in Chinese nuclear strategy, as viewed from the perspective of American and Chinese strategic thinking. Yet even if China's nuclear strategy remains largely unchanged, growth in both the size and sophistication of China's nuclear forces presents multiple challenges for US nuclear strategy as well as broader US defense strategy in East Asia.

The most immediate challenge is that a more capable arsenal allows Beijing to make more credible threats of limited nuclear escalation during conventional wars. Whereas China's legacy nuclear forces are constrained in their ability to initiate or respond to limited nuclear use, its emerging arsenal provides Beijing with a range of seemingly credible options for doing so. As a result, China will soon overcome long-standing strategic dilemmas and undermine enduring US advantages.

Continuity or Change in China's Nuclear Program?

Analysts have struggled to make sense of China's nuclear buildup, wondering whether a larger arsenal is consistent with established Chinese nuclear strategy, which is often described as "minimum deterrence." Because some Chinese strategists have described China's approach to nuclear posture as "small but streamlined," analysts have questioned whether a significant growth in Chinese forces implies a shift toward greater emphasis on nuclear weapons. Yet, the available evidence is consistent with both continuity and change in Chinese thinking on nuclear deterrence as described by People's Liberation Army (PLA) thinkers and government analysts.

China's established approach to nuclear strategy is best understood in the context of how China views its overall military requirements. In the aftermath of the Cold War and then the 1991 Gulf War, Chinese military thinkers surveyed the international environment and concluded that the principal military threat to China came in the form of a limited conflict with a conventionally superior, technologically advanced military power, namely the US. Chinese strategists then began to devise ideas for how to use military power to secure vital interests in East Asia in the face of potential US resistance.^{vii} China terms this strategy "Active Defense," but it is better understood through the Chinese concept of "counter-deterrence," the goal of which is to prevent the United States from using its conventional or nuclear forces to deter China from pursuing its legitimate interests.^{viii}

The core elements of this approach are to weaken US alliances while dissuading, deterring, and preventing the United States from bringing the full weight of its power to bear in a regional armed conflict.^{ix} China aims to use military and non-military tools—ranging from information warfare to cyber and space attacks to precision conventional strikes—to do so. By intimidating US allies, attacking US power projection capabilities, and manipulating the US sense of the risks of armed conflict, Chinese thinkers hope to generate leverage from the early stages of a crisis through the trajectory of an armed conflict.^x

Nuclear weapons make several contributions to Chinese defense strategy, including signaling China's great power status and the prevention of major wars.^{xi} Most important from the perspective of U.S. defense strategy in Asia, however, is the Chinese view that nuclear capabilities contribute to keeping conventional conflicts limited by deterring the U.S. from escalating to nuclear use, which helps shape U.S. perceptions of the risks of fighting a longer and bigger war, and provides additional means for China to signal resolve.

China's improved nuclear arsenal can be understood to provide additional insurance in each of these areas. Chinese strategists recognize that they might fail to achieve their military aims in a conflict with the US before the point at which Washington would be tempted to escalate to nuclear use.^{xii} This is unlikely but not unimaginable in China's eyes. China has therefore developed multiple weapons platforms capable of responding to (and therefore deterring) a limited U.S. nuclear strike intended to forestall defeat in a regional conflict, such as the dual nuclear-conventional capable DF-26 missile that can target U.S. regional bases.^{xiii} These systems have garnered international attention because they are capable of both nuclear and conventional strikes with high precision,

which enables China to potentially constrain its retaliation to U.S. military targets while avoiding significant civilian casualties or environmental damage. Less appreciated is the role that China's improved intercontinental or "strategic" nuclear forces, including silo-based forces, could play in helping manage regional nuclear escalation. China's improved strategic nuclear forces underwrite escalation management in three ways: improved survivability and resilience, improved capabilities for discriminate strikes against the US homeland, and a wider range of signaling options. China's progress in each of these areas directly targets long-standing areas of US advantage.

Seeking Escalation Control Options

China's newest intercontinental-range nuclear forces represent a significant improvement over their predecessors. In addition to its growing silo-based forces, China is fielding more advanced mobile ICBMs. US military leaders have characterized these as "precision strike nuclear delivery systems."^{xiv} Several can reportedly carry multiple warheads.^{xv} With greater precision and more warheads, each missile that survives a potential attack can carry out a wider range of retaliatory strikes. At the same time, greater precision allows China to potentially reduce the destructive power of its warheads because as accuracy improves, the explosive power necessary to destroy a given target declines.^{xvi} A larger arsenal of more survivable long-range forces helps China manage escalation by expanding the range of retaliatory options available even after a potential US attack on China's nuclear forces.

Suppose the United States were faced with a decision over whether to use nuclear weapons to stop a Chinese invasion of Taiwan, perhaps by attacking Chinese naval forces in the Taiwan Strait. US leaders and strategists do not anticipate facing such a scenario, but nuclear escalation is not wholly unimaginable if the US were on the cusp of losing a conventional war. In retaliating to a limited US nuclear attack, China would be confronted with two related dilemmas; first, to devise a response that does not provoke the US into a massive retaliatory attack, including against China's nuclear forces; and second, to devise a response that deters the US from further nuclear escalation of any kind.

China's principal means to deter a larger US attack is the ability to respond in kind, including against US territory. Nuclear strategists call this a "second-strike capability" because it refers to the ability to hit back after an enemy nuclear attack. A second-strike capability has long eluded China. Beginning in the 2000s, China began to deploy road-mobile missiles that were thought to be more survivable to a US first strike. Yet China also deployed these weapons in small numbers, raising the possibility that only a few

would survive a concerted attack.^{xvii} At best, China could reasonably expect that a small number of its forces would survive a US first strike. Here, Chinese thinkers see a role for US homeland missile defenses and precision conventional strike weapons which could, in the Chinese view, contribute to a US campaign to neutralize China's nuclear forces. Because its submarine-based forces remain in development, ensuring the survival of its land-based missile force has been China's principal option for preserving a "second-strike" retaliatory capability. Given Chinese concerns about the vulnerability of its forces, experts have explained China's nuclear expansion in terms of a desire to improve the survivability of China's retaliatory forces.^{xviii}

A shift to a large silo-based force also makes sense in the context of trying to stay ahead of the US threat. As a signatory to the New START Treaty with Russia, the US has agreed to cap its number of deployed nuclear weapons. In addition to providing a means to cheaply increase the size of China's nuclear force, silo-basing would force the United States to use nuclear weapons to destroy these forces, since hardened silos are unlikely to be vulnerable to current US conventional weapons, which cannot range China's missile fields without flying over Chinese territory.^{xix} China's silos are also based deep in the western half of the country, making them less vulnerable to US standoff capabilities and carrier-based aircraft.^{xx} By making a US attack more difficult and increasing the certainty of retaliation, a larger arsenal helps China deter large-scale nuclear attacks.

Yet a more survivable second-strike deterrent alone does not solve the second dilemma that would confront China's leaders in the event of a limited US attack: how to devise a response that would contribute to de-escalation rather than provoking further attacks. China's legacy forces provide China's leaders with few options, while China's modernized intercontinental-range nuclear forces help ease this dilemma. With greater precision and more warheads, each missile that survives a potential attack can carry out a wider range of retaliatory strikes, creating the option for China to strike back against U.S. territory rather than in Northeast Asia. Conversely, if China's leaders sought a discriminate response with their legacy forces, their arsenal of imprecise, high-yield weapons would risk overkill, potentially causing hundreds of thousands of casualties and significant economic and social devastation.^{xxi} The small size of China's arsenal compounded this dilemma. Over the years, China could be increasingly certain in its ability to strike back against the United States, but it could not know in advance how many weapons it would have available to do so. Depending on the numbers of weapons remaining after a first strike, China's leaders would have to balance the desire to leave some weapons in reserve as a deterrent to further attack with the desire to hit

hard with a larger initial retaliation. The shift from a small arsenal of inaccurate, highly destructive weapons to a large arsenal of accurate, multiple warhead missiles contributes to China's options for shaping escalation.

These dilemmas would have been even more acute if China had been the first side to cross the nuclear threshold. If China were first to arrive at a choice between nuclear escalation or losing something important, Beijing would have to think hard about whether nuclear escalation could conceivably compel the United States to back down. With an unsophisticated arsenal, even an attack with a small number of weapons could have devastating consequences. Given the limited accuracy of China's legacy missiles, such an attack would have to be targeted at civilian areas or large military bases. This could kill thousands, enrage the American people, deepen the US stake in the conflict, and potentially provoke a US attack on China's remaining forces. Given the choice between such an escalation or the risk of defeat, China might choose the latter. Conversely, with a larger, more precise, and survivable arsenal of both theater and intercontinental-range nuclear forces, China would have the ability to vary the scale, severity, and targets of its response to fit its evolving understanding of the needs of the moment.

A shift toward an arsenal that is as discriminate as it is survivable is consistent with Chinese strategic and military literature, which observes that the principal objective of a retaliatory nuclear attack should be to shock the enemy into submission and de-escalate the conflict. It is also consistent with Chinese skepticism about the utility of tactical nuclear weapons. Chinese nuclear thinking has rejected the notion of "nuclear warfighting" and instead argues for asymmetric responses to nuclear attacks. Viewed this way, China's nuclear expansion implies a desire to supplement an assured capability to respond to a US attack with the capability to end the conflict decisively.

Creating Counterforce Capabilities

In addition to creating more survivable, discriminate, and therefore credible retaliatory options, China's latest strategic forces also seem increasingly capable of counterforce military strikes such as targeting smaller US military installations (e.g., airfields), naval vessels, or US nuclear weapons bases and silos.^{xxiii} Counterforce provides China with two potential sources of strategic leverage in contemplating nuclear retaliation.

First, a counterforce capability is a special case of the shift to an arsenal capable of a wider range of retaliatory strike options. The ability to target US military forces can increase the de-escalatory potential of Chinese nuclear strikes by forcing the US into a

dilemma between restraint and overkill. For instance, China's retaliation to a limited US nuclear attack could involve a somewhat discriminate attack on US territory that degrades the US ability to respond, primarily hurts military personnel, and still preserves the majority of China's retaliatory capabilities. Striking a limited number of nuclear facilities on the US homeland, such as a bomber base, could also signal resolve while still limiting US casualties, which could lead the United States to consider whether a nuclear response was necessary, appropriate, and worth the risk of further escalation.

Second, a counterforce capability opens the door to a different way to use nuclear weapons for strategic advantage: not just to signal resolve or manage escalation, but to change the military balance. This would mark a significant departure in contemporary Chinese nuclear thinking. Consider the scenario of US limited use to forestall a defeat in a Taiwan conflict. Counterforce could give China the option of limiting nuclear retaliation to remaining US military bases and forces in the region. Doing so would not only force the US to escalate the nuclear war, but it would also make it more difficult for the US to remain in the conventional fight. Of course, this is just one hypothetical and low probability scenario. Yet, the advent of a Chinese counterforce capability forces the US to consider the military consequences of Chinese nuclear retaliation, which could strengthen China's ability to deter the US from contemplating first use in the first place.^{xxiii}

Counterforce does not yet appear to provide China with advantages in nuclear *first use* as opposed to retaliation, because US ballistic missile submarines would be able to retaliate to a major Chinese attack on US nuclear bases in the United States. As China's arsenal grows, however, the US may become more concerned by the fact that it would face two nuclear powers each capable of attacking US nuclear forces.

Expanding Signaling Capabilities

A larger and more diverse arsenal also provides China with an expanded ability to make threats and send signals, which could provide China with additional strategic leverage in crises or conflicts. Chinese military writings on deterrence reveal a sophisticated set of ideas for how to send signals and create leverage through shows of force, snap exercises, and tests of conventional missile systems.^{xxiv} The aim of such demonstrations is to convey to potential adversaries that they may have miscalculated China's willingness and ability to defend its interests. Because they showcase military capabilities, some of which are nuclear-capable, demonstrations and other signals can confer leverage in a crisis or conflict by conveying one's ability and willingness to risk

escalation to secure some important interest. Actual crises might involve the extension of these concepts to China's nuclear missile forces. The possibility that a future US-China crisis could involve more extensive Chinese signaling creates several challenges for the United States.

First, deterrence campaigns involving either nuclear or dual-capable systems could contribute to a broader Chinese strategy to separate the United States from its allies. Deterrence operations coupled with cyber attacks and even limited conventional missile strikes could serve to intimidate Japan or South Korea into neutrality in a crisis involving Taiwan or disputed features in the South or East China Seas.

The second potential purpose follows from the first: to further limit US response options. In a crisis or war, US bombers would likely be the preferred tool for so-called “presence missions” and deterrence operations, but these might also be in demand for conventional strike operations. B-52s may be tasked to deliver hypersonic weapons, such as the Air-Launched Rapid Response Weapon, while B-2s may be allocated to high-value conventional strike campaigns. These aircraft would also have to transit from the continental United States to forward bases in the Western Pacific. Such bases could be vulnerable to some of the weapons that China might include in a signaling campaign, such as the DF-26 missile. Flying B-2s close to Chinese territory would also risk revealing valuable information about their radar signatures, compromising their efficacy for later missions and further diminishing the incentives of theater commanders to release aircraft for a messaging campaign. Thus, signaling operations with dual-capable missiles provide China with the means to remind the US of the potential costs of a conflict while reinforcing the futility of resorting to nuclear weapons to prevail in such a conflict.

Implications for US Nuclear Strategy

US nuclear strategy toward China is arguably stuck in limbo between a Cold War paradigm and post-Cold War efforts to forge a new relationship. For over 50 years, US security commitments to Japan, South Korea, and other Asian allies have included a nuclear component.^{xxv} During the Cold War, these guarantees were underwritten by US nuclear superiority. Former Defense Department official Brad Roberts notes that this superiority involved two elements: first, a “one-sided dominance by the United States as defined in terms of its ability to preemptively eliminate China’s strategic force,” and second, “an ability to dominate any level of escalation in any potential conflict.”^{xxvi} US Cold War military posture in East Asia compensated for regional conventional military

weakness through plans for the massive use of nuclear weapons in the event of a Sino-American military conflict over Taiwan.^{xxvii} This allowed Washington to assure its allies that it would be willing to accept the risks of war because the worst consequences of such a war could be kept limited to Chinese territory.

In the 1990s and 2000s, the United States hoped to forge a new relationship with China, one that deemphasized military security. With the United States' tacit acceptance, China began chipping away at the twin pillars of US superiority. China embarked on the development of a more survivable nuclear arsenal beginning in the late 1980s.^{xxviii} The initial deployment of the DF-31 intercontinental ballistic missile (ICBM), introduced in the mid-2000s, represents the culmination of these efforts.^{xxix} As more such systems were deployed, China achieved a survivable retaliatory capability for the first time. China then embarked on the development of a flexible and survivable regional nuclear strike capability. The latest revelations represent the culmination of these efforts. In tandem, US-China relations have declined and military matters have returned to the fore in the US-China nuclear relationship. Yet no new paradigm has emerged to define the US-China nuclear relationship.

China's nuclear modernization does not yet undermine the US ability to deter large-scale nuclear attacks from China, although dramatic changes to US nuclear posture could change this assessment.^{xxx} Nevertheless, the possibility that future conventional conflicts could escalate to nuclear use despite the best intentions of either party demands greater coherence in US regional and strategic nuclear policy toward China.

US Regional Nuclear Posture and Extended Deterrence

While the United States neither anticipates nor relies on nuclear use to defend its allies in Asia, US nuclear policy has long been to retain the option to do so, particularly with respect to Japan and South Korea.^{xxxi} The recipients of US extended nuclear deterrence guarantees do not rely solely on US nuclear deterrence for their security.^{xxxii} However, the emergence of the North Korean nuclear threat has raised the salience of nuclear deterrence in both countries. The steady growth of China's conventional and nuclear capabilities has only intensified these concerns, and both Japan and South Korea have expressed concern at US interest in narrowing the stated role of nuclear weapons in US defense policy, such as through issuing a "no first use" or a "sole purpose" declaration.^{xxxiii} China's nuclear expansion, along with improvements in Chinese non-nuclear capabilities, compounds these concerns and challenges the US ability to meet its nuclear commitments to its allies.

The first area of concern is the United States' ability to give force to its extended nuclear deterrence commitments through the potential for limited nuclear escalation in a regional war. China's regional nuclear strike capabilities, such as the DF-21 and DF-26 missiles, provide China with new options to engage in nuclear first use in the region. By the same token, they provide China with options to respond to US nuclear use, which weakens the credibility of US commitments to use nuclear weapons to deter major non-nuclear attacks.

It is worth thinking through the scenarios in which the United States might conceivably act on its first use commitments. Suppose, for instance, that in a war over Taiwan, the US defense was on the brink of collapse. At that point, the United States would have to admit defeat or contemplate nuclear escalation. Accepting defeat would mean acquiescing to the first instance of territorial conquest of a vibrant, prosperous democracy since 1940. Depending on the nature of the American defeat, capitulation would also raise serious questions about the credibility of US defensive commitments to Japan, South Korea, and NATO. China may underestimate the importance of these commitments and may ignore warnings that an invasion of Taiwan would raise the stakes of the conflict. Undeterred, China presses on, leading US military commanders to ask the president to authorize a nuclear attack on the Chinese invasion force and a small number of supporting military facilities on the Chinese coast.

The US has several capabilities that could be called upon to carry out a nuclear attack on Chinese forces including B61 gravity bombs, air-launched cruise missiles, and possibly the low-yield version of the Trident submarine launched ballistic missile.^{xxxiv} In the past, China's response to a discriminate US attack would encounter the dilemmas described above. China would struggle to put together an option that the US might see as limited, and China would have to worry whether a large response would provoke the US into an attack on China's nuclear forces. Today, China no longer faces this dilemma. Instead, now it is the US which faces the dilemma of whether to engage in a highly destructive attack on China's larger nuclear forces or keep weapons in reserve to deter Russia, North Korea, and additional attacks from China. There are several ways for the US to manage this dilemma, including ruling out nuclear first use. At the moment, however, this dilemma remains unresolved.

A US response to China's regional deterrence capability also demands an assessment of the risks of miscalculation created by China's expanded signaling options. For China, the development of new mobile missile capabilities creates new opportunities to engage in tacit communication through demonstrations and exercises. Yet a more robust

Chinese strategic repertoire also increases the opportunities for the US to misperceive these signals.

Most of the signaling options anticipated by Chinese strategists involve actions that would fall short of nuclear use but could nonetheless appear like preparations for nuclear use to an outside observer. Engaging in actions that look like launch preparations could send a powerful deterrent message to the US, but forces would be unable to distinguish between a feint and an imminent threat. US military commanders could be tempted to attack the missile preemptively, but they would have to consider whether such a response was prudent or instead would trigger significant further escalation

Chinese strategists view such ambiguity as potential enhancements to nuclear deterrence because they believe that the US is risk averse and unwilling to fight a major war with China.^{xxxv} US leaders recognize the possibility of inadvertent escalation and may indeed act with caution in such a scenario. Yet in the context of an escalating conflict, the US appetite for risk and restraint may change quickly. China, overconfident in US risk aversion, could instead provoke a US response. Troublingly, researchers have found that Chinese analysts are generally quite confident that they can manage the risks of escalation and they downplay the possibility that China's actions in a crisis or conflict could trigger an escalatory spiral that results in nuclear escalation.

The United States arguably has not begun to grapple with the implications of China's more capable regional and strategic nuclear forces on extended deterrence. US experts tend to see the burden of nuclear escalation falling on China, and they view China's new capabilities primarily as evidence that China is reneging on its no first use pledge.^{xxxvi} Yet Chinese experts have long viewed the burden of nuclear escalation as falling on the United States.^{xxxvii} US allies see the shifting military balance and may also be arriving at this position. Restoring the credibility of US first use threats is not insurmountable, but it requires serious thought and consultation with allies about the circumstances in which the US might credibly threaten nuclear use in a regional conflict. A more comprehensive US regional nuclear strategy would also consider whether nuclear responses would contribute to de-escalation and war termination and meet US standards for the limitation of collateral damage and compliance with the law of war.^{xxxviii} Improving US strategy for regional nuclear deterrence would also be compatible, and could be helped by, efforts to reduce nuclear dangers and promote US-Chinese strategic dialogue.

Accept Mutual Vulnerability with China?

The second challenge for US nuclear strategy is to define the nature of the US-China nuclear relationship. In the 2000s, China's attainment of a rudimentary nuclear retaliatory capability prompted analysts to call on the US to acknowledge US-China "mutual vulnerability": the fact that the US is vulnerable to China's nuclear forces, as is China to US forces.^{xxxix} China has long sought such an assurance. The fact that the US has not taken steps to restore nuclear superiority over China is tantamount to a tacit acceptance of mutual vulnerability, but the United States is reluctant to concede the fact outright out of fear that doing so would embolden China and weaken US deterrence commitments to Japan.

The United States' resistance to making a political statement about mutual vulnerability arguably conceals a fundamental uncertainty about what kind of nuclear relationship the US desires with China. Is China like Russia, a nuclear power amenable to deterrence but capable of deterring in kind, or is it a more advanced North Korea, undeterrable but vulnerable to US power? The United States accepts mutual vulnerability with Russia as an immutable fact. The US and Russia have a nuclear relationship forged by intense competition and periods of cooperation. In contrast, the United States rejects mutual vulnerability with North Korea and remains committed, through missile defense and other means, to staying ahead of the threat.

Whither China? The Russian and North Korean models imply different approaches to deterrence and different requirements for the size and capability of US nuclear forces, as well as specific capabilities tailored to the US understanding of what deters Chinese leaders. Clarifying the nature of the US-China nuclear relationship is therefore a prerequisite for US diplomatic engagement, operational planning, and force planning vis-à-vis China. If the United States opts to reject mutual vulnerability with China, significant increases in China's nuclear forces create even greater requirements for the size and sophistication of US nuclear forces. Conversely, if the United States accepts mutual vulnerability, it will need to decide whether to pursue a "Russia-like" relationship or something different.

A Russia-like nuclear relationship with China would face all the difficulties inherent in the current US-Russia military relationship without the benefits of decades of experience. The US would need a credible response to anxious allies and a credible plan for managing the US-Chinese nuclear competition through a mix of diplomatic engagement, deterrence, and potentially sustained nuclear competition.

It is also clear that acceptance of mutual vulnerability would not free the United States from the need to respond to changes in Chinese nuclear capabilities. US nuclear policy has rejected a minimum deterrence approach to any of its adversaries. Minimum deterrence would waive the targeting of adversary military capabilities, accept the risk of a smaller arsenal, and potentially require a shift in nuclear employment policy to embrace targeting civilian populations. In contrast, the United States maintains counterforce capabilities vis-à-vis Russia even while it accepts the basic fact of mutual vulnerability.^{xi} A nuclear relationship on China premised on mutual vulnerability might actually increase the political pressure from allies and domestic audiences for the United States to engage in a qualitative arms competition with China to minimize perceived disadvantages and bolster existing strengths in particular areas, such as regional nuclear capabilities, missile defenses, and so forth.

As China's nuclear arsenal grows, moreover, the United States may also feel pressure to grow the size of its nuclear arsenal to be able to degrade some of China's nuclear forces and ensure that enough US forces could survive a Chinese first strike to provide the President with credible retaliatory options. In other words, as China's forces improve, so would the pressure for the United States to keep up.

Envisioning Multiple Nuclear Futures

What does China's nuclear expansion ultimately mean for the United States? Viewed from the perspective of Chinese strategic thinking, a more accurate, discriminate, and survivable nuclear force provides China greater confidence in its ability to fight and win conventional wars—exploiting advantages in geography, perceived stake, and non-nuclear capabilities to win a relatively low-cost victory in Asia. Yet, improved nuclear forces also give China greater options to manage conflicts that approach and cross the nuclear threshold. At the same time, these capabilities present both the United States and China with a range of risks: the risk that the United States will fail to deter China from using force to change the status quo; the risk of miscalculation and inadvertent escalation; and the risk of intensified competition.

In the longer term, China's nuclear modernization introduces endemic uncertainty into US-China nuclear relations. Analysts maintain that China's focus remains on attaining a credible assured retaliation capability. Yet, this diagnosis is contingent on whether publicly available sources accurately represent Chinese nuclear thinking. Confidence in the view that China only seeks assured retaliation also rests on the assumption of continuity in Chinese nuclear thinking.^{xli}

In past Chinese debates about whether to adapt or even abandon Beijing's approach to nuclear strategy, namely a 2008 debate on its no-first-use policy, the decisive vote was cast by the Communist Party leadership.^{xiii} Today, our understanding of the Party's view is filtered through the writings of Chinese military strategists. Chinese leader Xi Jinping seems to see untapped political value in a more muscular nuclear posture, and he seems to have signaled to PLA military planners that he is eager to consider a different direction for China's nuclear posture.^{xiii} How long would it take for China's strategic writings to reflect a change in the Party's views? Such a change may already be underway.

It is also possible that Chinese leaders may not have a clear or settled vision for the future of their nuclear deterrent. China's modernization activities are consistent with a desire to acquire a range of capabilities suitable for whatever future contingencies may arise. While China remains focused on overcoming perceived vulnerabilities in its retaliatory capabilities, Beijing's approach to overcoming these vulnerabilities is expansive and open-ended. Moreover, as China rises, Chinese leaders may place greater importance on shoring up perceived gaps in China's ability to respond to challenges from other regional powers. American observers tend to assume that the United States is the singular focus of Chinese defense planning, but China also seeks to lead a region inhabited by other nuclear powers including India, North Korea, and Russia.

For these reasons, China's nuclear posture and strategy are increasingly moving targets.^{xiv} Consequently, China's rivals will struggle to devise a long-term response to China's emergence as a full-fledged nuclear power. An arsenal capable of "any plausible nuclear employment strategy" will induce China's adversaries to imagine *all* plausible scenarios.^{xv} Analysts have focused intently on the inadvertent escalation risks posed by China's entanglement of nuclear and conventional forces, but heightened nuclear capabilities themselves increase the potential of miscalculation.^{xvi}

The deepening uncertainty about the US-China nuclear relationship underscores how important it is that the United States clarify its strategic thinking on regional and strategic nuclear deterrence vis-à-vis China. The first step to devising such a model might be to examine the United States' ability to meet its existing deterrence objectives with its entire strategic toolkit, of which nuclear weapons are just one part. Such an assessment could reveal whether non-nuclear capabilities could enhance the efficacy of the United States' existing nuclear means. Defensive, conventional strike, and non-kinetic capabilities could help the United States meet existing deterrence requirements without significant changes to its nuclear posture.

The US should also begin to imagine the alternative trajectories that China's nuclear forces could take. This would require greater insight into Beijing's ability to direct resources to technological innovation and some understanding of trends in technology and the impact of technological change on the future of warfare and strategic interaction. This kind of net assessment could help the United States better understand the prospects for arms control and other guardrails on the nuclear competition with China.

Finally, a reassessment of the US-China nuclear relationship should attempt to gauge the limits of US influence. Many analysts today link China's pursuit of new nuclear capabilities to US actions, such as missile defense's conventional strike capabilities. The implication of such thinking is that US restraint could engender Chinese restraint. Yet, a more sophisticated and confident China may be less sensitive to US behavior. The time when the US could shape China's behavior may have passed. This may prove to be a double-edged sword. If China's nuclear developments are motivated not just by US missile defense and conventional strike capabilities, but also by a desire to sustain escalation advantages, deter US nuclear escalation, and communicate China's great power status, the US need not be as concerned that its own efforts to reinforce deterrence will trigger an arms race. But by the same token, a more capable China is one which will set the pace of future arms races, and the US may find that it has little choice but to remain in the competition.

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