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SUPERIORITY COMPLEX

Why America's growing nuclear supremacy may make war with China more likely

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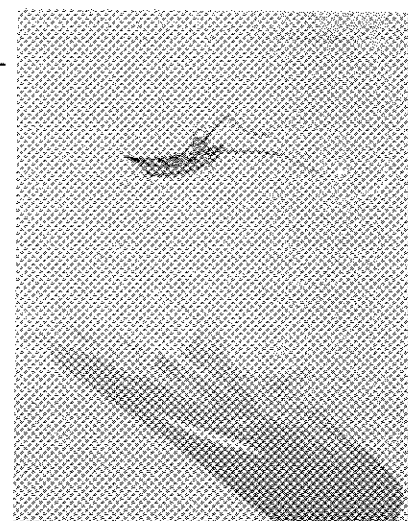
In the coming years, as China's economy booms and its armed forces grow, the United States will seek to curb Chinese military power and influence. The U.S.-China rivalry is poised to become the world's most dangerous strategic relationship. Optimists might contend that the pacifying effects of economic integration will forestall outright hostility and conflict between Washington and Beijing. Others would argue that the strategic competition itself augurs peace and stability between the superpowers, because each country's arsenal of nuclear weapons constitutes a security blanket: Just as the danger of mutual nuclear annihilation—or mutual assured destruction (MAD), as it was labeled then—helped prevent war between the United States and the Soviet Union during the Cold War, so too will nuclear deterrence cool tensions between the United States and China.

But little about the emerging nuclear balance between the United States and China should lead anyone to assume a similar stabilizing effect. The United States is pursuing capabilities that are rendering MAD obsolete, and the resulting nuclear imbalance of power could dramatically exacerbate America's rivalry with China.

In the 1990s, with the Cold War receding, nuclear weapons appeared to be relics. Russian and Chinese leaders apparently thought so. Russia allowed its arsenal to decline precipitously, and China showed little interest in modernizing its nuclear weapons. The small strategic force that China built and deployed in the 1970s and early 1980s is essentially the same one it has today.

But meanwhile, the United States steadily improved its “counterforce” capabilities—those nuclear weapons most effective at targeting an enemy's nuclear arsenal. Even as it reduced the number of weapons in its nuclear arsenal, the U.S. made its remaining weapons more lethal and accurate. The result today is a global nuclear imbalance unseen in 50 years. And nowhere is U.S. nuclear primacy clearer—or potentially more important—than in the Sino-U.S. relationship.

China has approximately 80 operationally deployed nuclear warheads, but only a few of them—those assigned to single-warhead DF-5 intercontinental ballistic missiles (ICBMs)—can reach the continental United States. (There is no definitive, unclassified count of China's DF-5 ICBMs, but official U.S. statements have put the number at 18.) China has neither modern nuclear ballistic-missile submarines nor long-range nuclear bombers. Moreover, China's ICBMs can't be quickly launched; the warheads are stored separately, and the missiles are kept unfueled. (Unlike the solid fuel used in U.S. missiles, the liquid fuel used to propel Chinese ICBMs is highly corrosive.) Finally, China lacks an advanced early-warning system that would give Beijing reliable notice of an incoming attack.



ISTVAN BANYAI

This small arsenal fulfilled China's strategic requirements in the 20th century, but it is now obsolete. The current Chinese force was designed for a different era: when China was a poor nation with a limited role on the world stage, and when U.S. and Soviet missiles were too inaccurate to carry out a disarming strike—even against Beijing's small force. But China's international presence is expanding, and America's counterforce capabilities have soared. Moreover, one of the biggest constraints that would deter American leaders from contemplating a disarming strike is fading away. In the past, a U.S. preemptive attack would have generated horrific civilian casualties, but that may soon cease to be the case.

How the United States achieved nuclear dominance after the Soviet Union collapsed is an open secret. The Navy refitted its entire fleet of nuclear-armed submarines with new, highly accurate Trident II missiles and replaced many of the 100-kiloton W76 warheads on these missiles with 455-kiloton W88 warheads. (One kiloton is the explosive energy released by 1,000 tons of TNT.) The result is an unprecedented combination of accuracy and destructive power, essential for an attack on hardened silos. The Navy also recently tested a GPS guidance system that would dramatically boost the accuracy, and thus lethality, of the submarine missile arsenal.

For its part, the Air Force has improved the guidance systems of land-based Minuteman III missiles. Many of these missiles are also being "retipped" with more-powerful warheads—and more-accurate reentry vehicles—taken from recently retired MX ("Peacekeeper") missiles. The Air Force has also upgraded the avionics on B-2 bombers. These nuclear-mission-capable bombers are already "stealthy," but the upgrades improve the planes' ability to penetrate enemy airspace secretly, by flying very low and using the terrain to shield them from radar.

Perhaps as important, the United States is pursuing a slew of nonnuclear weapons that will provide officials options they may find more palatable if they decide to attack an adversary's nuclear arsenal. These include precision "bunker buster" conventional bombs, high-speed long-range cruise missiles, and conventionally armed ballistic missiles—each of which could be used to destroy enemy missile silos. Furthermore, Washington is undertaking initiatives—including advances in antisatellite warfare and in wide-area remote sensing, designed to find "relocatable" mobile missile launchers—that will make China's nuclear forces vulnerable. Even a missile-defense system substantially boosts U.S. offensive counterforce capabilities. Critics of this system are right in claiming that it could not shield America from even a modest nuclear attack (e.g., 25 warheads), because it would be easily overwhelmed by decoy warheads and the "penetration aids" that would accompany an adversary's missiles. But it could enhance *offensive* nuclear capabilities, by "mopping up" a small number of incoming warheads that survived a U.S. first strike.

America's growing counterforce power reflects its concern about China's emergence as what Pentagon planners call a "peer competitor." In 2006, the Pentagon warned: "Of the major and emerging powers, China has the greatest potential to compete militarily with the United States." Not surprisingly, the U.S. is pursuing dominance over China across the military spectrum—building up its conventional-warfare, space-warfare, and information-warfare capabilities, as well as its missile-defense and offensive nuclear-strike systems.

Changes in war plans and shifts in the location of nuclear forces confirm that American nuclear upgrades are linked to the perception that China may become a threat. In 1997, the Clinton administration made the first major change in presidential guidance for nuclear-war plans since the early 1980s, broadening the spectrum of Chinese targets. Leaked excerpts from the Pentagon's 2001 Nuclear Posture Review called for the United States to be prepared to use nuclear weapons against China. And the head of the U.S. Missile Defense Agency, Lieutenant General Henry A. Obering III, acknowledged that his agency's plans are not entirely focused on "rogue states" or the "axis of evil." In fact, the Missile Defense Agency also plans for Chinese contingencies. Perhaps the most concrete sign of the increased prominence of China in U.S. nuclear-war plans is the transfer of five nuclear-armed submarines from their Atlantic base at Kings Bay, Georgia, to the Pacific base at Bangor, Washington; two-thirds of the U.S. strategic submarine fleet is now based in the Pacific. Finally, in May 2006, it was reported that the Pentagon had adopted a new war plan to defend Taiwan from a Chinese attack by striking Chinese targets, potentially with nuclear weapons. Of course, it's difficult to ascertain Washington's intentions, but as a 2003 Rand report on the future U.S. nuclear arsenal concluded, "What the planned force appears best suited to provide beyond the needs of traditional deterrence is a *preemptive counterforce capability against Russia and China*. Otherwise, the numbers and the operating

procedures simply do not add up” (emphasis in original).

These changes do not mean that the United States is adopting a nuclear first-strike strategy—it strongly prefers to fight any future wars without resorting to nuclear weapons. Rather, the United States is honing its nuclear capabilities for three broad purposes: to deter conventional or nuclear attacks, to strengthen its leverage against nuclear-armed adversaries during high-stakes crises or wars, and to give itself better nuclear options in dire circumstances.

NUCLEAR WAR-FIGHTING OPTIONS

From a military perspective, this modernization has paid off: A U.S. nuclear first strike could quickly destroy China’s strategic nuclear arsenal. Whether launched in peacetime or during a crisis, a preemptive strike would likely leave China with no means of nuclear retaliation against American territory. And given the trends in both arsenals, China may live under the shadow of U.S. nuclear primacy for years to come.

This assessment is based on unclassified information, standard targeting principles, and formulas that defense analysts have used for decades. (And we systematically chose conservative estimates for key unknowns, meaning that our analysis understates U.S. counterforce capabilities.) The simplest version of an American preemptive strike would have nuclear-armed submarines in the Pacific launch Trident II missiles at the Chinese ICBM field in Henan province. The Navy keeps at least two of these submarines on “hard alert” in the Pacific at all times, meaning they’re ready to fire within 15 minutes of a launch order. Since each submarine carries 24 nuclear-tipped missiles with an average of six warheads per missile, commanders have almost 300 warheads ready for immediate use. This is more than enough to assign multiple warheads to each of the 18 Chinese silos. Chinese leaders would have little or no warning of the attack.

During the Cold War, U.S. submarines posed little danger to China’s silos, or to any other hardened targets. Each warhead on the Trident I missiles had little chance—roughly 12 percent—of success. Not only were those missiles inaccurate, their warheads had a relatively small yield. (Similarly, until the late 1980s, U.S. ICBMs lacked the accuracy to carry out a reliable disarming attack against China.) But the Navy’s new warheads and missiles are far more lethal. A Trident II missile is so accurate, and the newer W88 warhead so powerful, that if the warhead and missile function normally, the destruction of the silo is virtually assured (the likelihood is calculated as greater than 99 percent).

In reality, American planners could not assume such near-perfect results. Some missiles or warheads could malfunction: One missile’s rockets might fail to ignite; another’s guidance system might be defective. So a realistic counterforce plan might assign four warheads to each silo. The U.S. would “cross-target” the missiles, meaning that the warheads on each missile would each go to different silos, so that a silo would be spared only if many missiles malfunctioned. Even assuming that 20 percent of missiles malfunctioned—the standard, conservative assumption typically used by nuclear analysts—there is a 97 percent chance that every Chinese DF-5 silo would be destroyed in a 4-on-1 attack. (By comparison, a similar attack using Cold War-era Trident I missiles would have produced less than a 1 percent chance of success. The leap in American counterforce capabilities since the end of the Cold War is staggering.)

Beyond bolstering the ability to conduct a first strike, the improvements to U.S. counterforce weapons also allow war planners to design nuclear options that will make the weapons more “usable” during high-stakes crises. Nuclear planners face many choices when they consider striking a given target. First, they must choose a warhead yield. The American arsenal includes low-yield weapons such as the B-61 bomb, which can detonate with as little explosive force as 0.3 kilotons (one-fiftieth the power of the bomb that destroyed Hiroshima), and high-yield weapons such as the B-83 bomb, which can yield 1,200 kilotons (80 times the strength of the Hiroshima bomb). For a military planner, high-yield weapons are attractive because they’re very likely to destroy the target—even if the weapon misses by some distance. Low-yield warheads, on the other hand, can be more discriminating, if planners want to minimize civilian casualties.

A second key decision for war planners is whether to set the weapon to detonate at ground level or in the air above the target. A groundburst creates enormous overpressure and ground shock, ideal for destroying a hardened target. But groundbursts also create a lot of radioactive fallout. Dirt and other matter is sucked up into the mushroom cloud, mixes with radioactive material, and, after being carried by the wind, falls to earth in the hours after the blast, spreading lethal radiation.

Airbursts create smaller zones of extremely high overpressure, but they also generate very little fallout. If the detonation occurs above a threshold altitude (which depends on the weapon yield), virtually no heavy particles from the ground mix with the radioactive material in the fireball. The radioactive material rises into the high atmosphere and then falls to earth over the course of several weeks in a far less dangerous state and over a very wide area, greatly reducing the harm to civilians.

In the past, a nuclear attack on China's arsenal would have had horrific humanitarian consequences. The weapons were less accurate, so an effective strike would have required multiple high-yield warheads, detonating on the ground, against each target. The Federation of American Scientists and the Natural Resources Defense Council modeled the consequences of such an attack—similar to the submarine attack described above—and published their findings in 2006. The results were sobering. Although China's long-range missiles are deployed in a lightly populated region, lethal fallout from an attack would travel hundreds of miles and kill more than 3 million Chinese civilians. American leaders might have contemplated such a strike, but only in the most dire circumstances.

But things are changing radically. Improved accuracy now allows war planners to target hardened sites with low-yield warheads and even airbursts. And the United States is pushing its breakthroughs in accuracy even further. For example, for many years America has used global-positioning systems in conjunction with onboard inertial-guidance systems to improve the accuracy of its conventionally armed (that is, nonnuclear) cruise missiles. Although an adversary may jam the GPS signal near likely targets, the cruise missiles use GPS along their flight route and then—if they lose the signal—use their backup inertial-guidance system for the final few kilometers. This approach has dramatically improved a cruise missile's accuracy and could be applied to nuclear-armed cruise missiles as well. The United States is deploying jam-resistant GPS receivers on other weapons, experimenting with GPS on its nuclear-armed ballistic missiles, and planning to deploy a new generation of GPS satellites—with higher-powered signals to complicate jamming.

The payoff for equipping cruise missiles (or nuclear bombs) with GPS is clear when one estimates the civilian casualties from a lower-yield, airburst attack. We asked Matthew McKinzie, a scientific consultant to the Natural Resources Defense Council and coauthor of the 2006 study, to rerun the analysis using low-yield detonations compatible with nuclear weapons currently in the U.S. arsenal. Using three warheads per target to increase the odds of destroying every silo, the model predicts fewer than 1,000 Chinese casualties from fallout. In some low-yield scenarios, fewer than 100 Chinese would be killed or injured from fallout. The model is better suited to predicting fallout casualties than to forecasting deaths from the blast and fire, but given the low population in the rural region where the silos are, Chinese fatalities would be fewer than 6,000 in even the most destructive scenario we modeled. And in the future, there may be reliable nonnuclear options for destroying Chinese silos. Freed from the burden of killing millions, a U.S. president staring at the threat of a Chinese nuclear attack on U.S. forces, allies, or territory might be more inclined to choose preemptive action.

STRATEGIC IMPLICATIONS OF THE NUCLEAR IMBALANCE

The most plausible flash point for a serious U.S.-China conflict is Taiwan. Suppose Taiwan declared independence. China has repeatedly warned that such a move would provoke an attack, probably a major air and naval campaign to shatter Taiwan's defenses and leave the island vulnerable to conquest. If the United States decided to defend Taiwan, American forces would likely thwart China's offensive, since aerial and naval warfare are strengths of the U.S. military. But looming defeat would place great pressure on China's leaders. Losing the war might mean permanently losing Taiwan. This would undermine the domestic legitimacy of the Chinese Communist Party, which increasingly relies on the appeal of nationalism to justify its rule. A crippling defeat would also strain relations between political leaders in Beijing and the Chinese military. To stave off a

regime-threatening disaster, the political leaders might decide to raise the stakes by placing part of the Chinese nuclear force on alert in hopes of coercing the United States into accepting a negotiated solution (for example, a return to Taiwan's pre-declaration status).

By putting its nuclear forces on alert, however, China's leaders would compel a U.S. president to make a very difficult decision: to accede to blackmail (by agreeing to a cease-fire and pressuring the Taiwanese to renounce independence), to assume that the threat is a bluff (a dangerous proposition, given that each Chinese ICBM carries a city-busting 4,000-kiloton warhead), or to strike the Chinese missiles before they could be launched.

How do America's growing counterforce capabilities affect this scenario? First, American nuclear primacy may prevent such a war in the first place. China's leaders understand that their military now has little hope of defeating U.S. air and naval forces. If they also recognize that their nuclear arsenal is vulnerable—and that placing it on alert might trigger a preemptive strike—the leaders may conclude that war is a no-win proposition.

Second, if a war over Taiwan started anyway, U.S. nuclear primacy might help contain the fighting at the conventional level. Early in the crisis, Washington could quietly convey to Beijing that the United States would act decisively if China put its vulnerable nuclear arsenal on alert.

Finally, if China threatened to launch nuclear attacks against America's allies, its territory, or its forces in Asia, nuclear primacy would make a preemptive first strike more palatable to U.S. leaders. Any decision to attack China's ICBM force, though, would be fraught with danger. A missile silo might have escaped detection. Furthermore, a strike on China's 18 ICBMs would leave Beijing with roughly 60 shorter-range nuclear missiles with which to retaliate against U.S. forces and allies in the region. However, in the aftermath of a "clean" disarming strike—one that killed relatively few Chinese—American leaders could credibly warn that a Chinese nuclear response would trigger truly devastating consequences, meaning nuclear attacks against a broader target set, including military, government, and possibly even urban centers. In light of warnings from Chinese defense analysts and from within China's military that it might use nuclear weapons to avoid losing Taiwan, an American president might feel compelled to strike first. In this terrible circumstance, he or she would reap the benefits of the past decade's counterforce upgrades.

But America's growing counterforce strength is a double-edged sword. To date, China's nuclear modernization has progressed very slowly. Beijing is working to deploy new mobile ICBMs and ballistic-missile submarines, but U.S. estimates of when these systems will become operational have repeatedly been pushed back. However, as China's role in the world changes, and especially as its leaders come to appreciate American counterforce capabilities, Beijing will face increasing pressure to accelerate and expand these programs—and it may already be doing so. Because America has spent decades honing its antisubmarine-warfare skills and technology, a few new Chinese nuclear-armed submarines wouldn't substantially reduce Beijing's vulnerability. A more attractive path would be to deploy hundreds of new mobile missiles. Of course, U.S. officials would likely view deployment of these missiles as a sign of growing bellicosity—and, amid worsening relations, would undertake additional military preparations.

Furthermore, American efforts to permanently secure nuclear primacy might encourage what defense experts call "crisis instability" and increase the chance of an inadvertent escalation. If China doesn't redress its nuclear vulnerability in peacetime, it may feel great pressure to do so during a brewing crisis or conventional war—simply to protect its forces. But a Chinese decision to arm a portion of its ICBM force, or to disperse its shorter-range mobile nuclear missiles, might be misinterpreted by the U.S. as nuclear blackmail or preparation for a nuclear attack (for example, on American military bases in Asia). Such a step could trigger the preemptive attack that the Chinese action was meant to forestall.

The greatest dangers of nuclear escalation, however, would arise during a conventional military confrontation between the U.S. and China. Contemporary American military doctrine is designed to rattle and confuse an adversary by degrading and overwhelming its command apparatus. Since at least 1991, a high priority in U.S. air campaigns has been to deny the enemy "situational awareness" by targeting its electricity supply, communications infrastructure, radar sites, and military-command bunkers. This may help win conventional battles, but it's

counterproductive if the goal is to prevent nuclear escalation. Glimpsing only a confused picture of the battlefield, and knowing that their radar coverage has been heavily damaged, Chinese leaders would feel tremendous pressure to put their nuclear forces on alert, especially those that can be dispersed (that is, their medium-range mobile missiles). These steps could trigger a U.S. escalation.

The previous period of American nuclear primacy—the 1950s and early 1960s—illustrates some of the strategic implications of such preeminence. The United States was able to force the Soviet Union to concede during a series of crises over Berlin from 1958 to 1961. At the peak of the 1961 Berlin crisis, President Kennedy carefully explored launching a surprise nuclear attack to disarm Soviet forces. Soviet leaders, although unaware of these deliberations, knew that any escalation was a losing proposition for them, and they backed down.

Also telling is the Cuban missile crisis of 1962. The U.S. strategic nuclear advantage helps explain why the Soviet Union sought to place missiles in Cuba in the first place: The Soviets had very few missiles that were capable of reaching American cities. But U.S. nuclear primacy—albeit eroding by 1962—also contributed to the Soviet decision to withdraw the missiles, because Khrushchev believed the United States was prepared to launch a major war, including massive nuclear strikes, against the Soviet Union.

America's nuclear primacy over China likely will have similarly beneficial and dangerous consequences. Optimists might find solace in the argument that nuclear primacy is irrelevant. Perhaps China's leaders will feel no pressure to build new arms in peacetime or to escalate in wartime, because they believe the United States would never risk launching a counterforce strike. According to this view, the mere possibility that a disarming strike could fail—for example, because of faulty U.S. intelligence about Chinese targets—is more than enough to deter U.S. leaders. Chinese leaders have been satisfied with a small nuclear arsenal for decades precisely because they're convinced that no sane leader in Washington (or Moscow) would risk losing a city over a foreign territorial dispute. China can therefore continue to stand pat. If Beijing doesn't put its nuclear forces on alert during a crisis, U.S. leaders won't be tempted to escalate.

One problem with this argument is that it underestimates the importance that the Chinese have always placed on the survivability of their nuclear arsenal. During the Cold War, China configured its small arsenal to survive a disarming strike from its likeliest adversary—the Soviet Union. China deployed medium-range missiles, capable of reaching Russia, on mobile launchers and hid others in caves. As Chinese leaders recognize that the United States is developing ever-more-discriminating nuclear and conventional options, they will feel great pressure to enlarge and protect their forces. The optimists' argument also ignores the prospect that Chinese leaders may rationally choose to put their arsenal on alert during a crisis—and inadvertently trigger an escalation. The Taiwan situation poses a fundamental danger: The balance of power favors Washington, but the balance of interests favors Beijing. Just as the United States hopes that its military dominance will deter China from attacking Taiwan—or at least deter China from escalating to the nuclear level during a war—China might reasonably assume that its dedication to preventing the breakup of what it sees as the Chinese homeland will ultimately compel the United States to back down.

Finally, the notion that the United States would never consider a disarming attack because of the risk of failure underestimates the power of fear during a crisis. Facing 18 alerted Chinese ICBMs, U.S. leaders may take actions that seemed too risky to contemplate during peacetime. A war game is not war, of course, and it is impossible to know how a nuclear standoff, over Taiwan or any other flash point, would unfold in real life. It is equally hard to know what China's leaders—the current ones or their successors—will decide about their deterrent posture. But it would be a big mistake to assume that China will be satisfied with a small arsenal. As China becomes a true great power and adopts a broader set of global interests, and as U.S. military preparations—conventional and nuclear—focus increasingly on China, leaders in Beijing will likely grow more and more uncomfortable living in the shadow of American nuclear primacy.

If U.S.-China relations are headed for trouble, the United States faces difficult questions now about its nuclear-force posture and grand strategy. It may seem too late to debate the merits of pursuing nuclear primacy, but important decisions about it remain. The United States is reducing its nuclear arsenal to comply with arms-control treaties. By simply retiring its least-effective systems, Washington can make those reductions without

affecting its nuclear primacy—and will most likely do this.

But the United States could decide instead to retire its most lethal submarine-based warheads, its highly accurate nuclear-tipped cruise missiles, and all nuclear warheads that can be set to detonate at low yields. Similarly, it could stop experimenting with GPS-guided nuclear delivery systems. And it could cancel plans to develop new long-range conventional weapons that would threaten China's nuclear arsenal. Such decisions would come at a real cost: They would weaken U.S. coercive leverage in crises involving nuclear-armed adversaries, and they would leave future presidents who find themselves in dire circumstances with few palatable counterforce options—meaning options that wouldn't kill millions of civilians. On the other hand, these steps might avert an arms race with China and prevent a dangerous spiraling of events during a crisis. During the latter decades of the Cold War, key measures of American nuclear-force structure were matters of intense public debate. They should be again.

More broadly, U.S. policy makers and analysts need to confront challenging questions about military strategy and foreign policy in an era of nuclear primacy. How should the United States plan to fight conventional wars against nuclear powers in a way that minimizes the odds of an inadvertent escalation? Will the United States need to adopt highly limited war aims—a reversal of the Powell Doctrine of committing overwhelming force to win decisively? Does the military need to rethink the American way of war, focused as it is on blinding and confusing the enemy? And how does the United States plan to manage an alliance system that may become strained, as its allies increasingly realize that they're more vulnerable than the United States to nuclear threats and coercion? This asymmetry of risks conjures memories of the Cold War and of the challenges that such problems posed for the NATO alliance; the rise of China will make the U.S. and its allies confront these painful issues again.

The fundamental conundrum for the United States is this: Its current drive toward nuclear primacy is both a solution—and the problem itself. Nuclear primacy is supposed to give the United States a trump card in future disputes, allowing it to reassure allies and coerce potential enemies. But it may also trigger an arms race and raise new risks that neither America's enemies—nor its allies—will find easy to bear.

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