

HAMMER AND ANVIL

COERCING RIVAL STATES, DEFEATING TERRORIST GROUPS, AND BOMBING TO WIN

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The power of airpower lies in its supreme ability to match the use of force to decisive weaknesses in an opponent's military strategy. This power lies not so much in technology, the balance of forces between coercer and opponent, civil-military relations, or professional command and control over military forces, although each of these is critical to the successful use of coercive airpower that achieves vital political objectives without inflicting harm to no purpose. Effective airpower instead turns, fundamentally, on understanding the enemy.

The 1991 Gulf War—it was a stunning victory! Nearly two decades after the United States' ignominious defeat in Vietnam, America's precision-guided airpower—based on a vast array of highly accurate weapons, advanced sensors, newly deployed stealth, and other aerial platforms, unified by computerized information processing—played the decisive role in coercing Saddam Hussain and Iraq's 42 heavy combat divisions to abandon their conquest of neighboring Kuwait. From this moment, airpower would become increasingly important to American grand strategy, projecting force more rapidly and at less risk of life than landpower and more formidably than seapower, whether the opponent was a nation-state or a terrorist group.

In the 30 years since, the central debate in American military strategy has been, can airpower alone do the job? Modern advocates of strategic bombing say yes. As they see it, the first Gulf War proclaimed a revolution in military affairs that dramatically increased the effectiveness of airpower both in absolute terms and relative to other coercive instruments.

Whether carried out by manned platforms or aerial drones and whether by threatening enough pain on enemy civilians to overwhelm their interests in the dispute or decapitating an opponent's leadership, strategic bombing could bring an opponent to its knees without messy ground battles. Wars could be won by bombing just a handful of key targets, thus requiring the commitment of relatively little or no ground forces.

Skeptics say no. The ground power school argues modern airpower is hardly more effective than in the past since only ground forces can take and hold territory. Thus, victory still requires the ability to destroy the enemy ground forces on and near the contested territory, there is no revolution in military affairs, and ground power remains the dominant coercive instrument.

The two extremes in this debate ignore an important middle position. Technology may indeed reverse the traditional relationship between landpower and airpower,

such that there are circumstances when airpower can do most of the work. The critical element of airpower, however, is not strategic bombing against an opponent's political and economic centers but theater air attacks against enemy fielded forces.

While strategic bombing aims to succeed without a friendly army, theater airpower operates together with ground power like a hammer and an anvil, smashing enemy fielded forces throughout the theater of operations. In most circumstances, intense ground pressure remains essential to force the enemy to expose itself to air attack. But airpower can indeed become the dominant partner, landpower the supporting instrument, and “hammer and anvil” an effective strategy even when American theater airpower is combined with Allied and partner ground forces.¹

Hammer and anvil has been my contribution to the airpower debate. This article explains the origins of how I arrived at this view in *Bombing to Win*, which has remained required reading in numerous universities and military education programs for over twenty-five years and has been published in multiple languages. This article also summarizes the principles of coercive success outlined in *Bombing to Win* and explains how they apply to the spectrum of conflict: nonstate actors to nation-states with conventional armies to great powers with nuclear forces.

To summarize my theory, the power of airpower lies in its supreme ability to match the use of force to decisive weaknesses in an opponent's military strategy. This power lies not so much in technology, the balance of forces between coercer and opponent, civil-military relations, or professional command and control over military forces, although each of these is critical to the successful use of coercive airpower that achieves vital political objectives without inflicting harm to no purpose. Effective airpower instead turns, fundamentally, on understanding the enemy.

Grasping the genuine power of airpower is not just of historical or academic significance. Understanding the capability of airpower makes all the difference in how America should prepare to fight future wars, what strategies America should actively develop as contingency plans, in military exercises, and with our Allies and partners, and ultimately whether America will fail or succeed.

Bombing to Win

Over 30 years ago, as a young PhD student at the University of Chicago studying national security affairs, I was fascinated by a key puzzle: Why did the United States—at the time, the world's leading military, economic, and technological power—lose the Vietnam War? This was clearly not a case of being outmatched on material grounds, since the opponent was relatively tiny, poorly equipped, with little industrial capacity, much less a sophisticated technological base. Moreover, the United States had a powerful weapon—airpower—that the opponent completely lacked. Building on deterrence concepts, classification schemes of militant groups, crucial airpower histories, and

1. Robert A. Pape, *Bombing to Win: Airpower and Coercion in War* (Ithaca, NY: Cornell University Press, 1996).

crisis bargaining dynamics, the idea for *Bombing to Win* (and subsequent analysis) was born.

Bombing to Win studies the conditions under which coercive airpower succeeds and fails, analyzing every strategic air campaign by the United States and other countries from World War I through the 1991 Gulf War, 40 cases in all. The book also deeply investigates five important cases of the employment of strategic airpower—Japan, Germany, Korea, Vietnam, and Iraq. In every case, the goal was to explain whether military coercive pressure caused the target opponent to accept the political demands of the coercer and if so, the relative role of strategic airpower in the coercive success compared to other coercive military instruments (ground or naval power) that may have been employed against the target opponent.

Bombing to Win challenged accepted wisdom on when and how military coercion works, focusing on the vital role of denial—the threat of military failure. The central finding was that denial, not punishment or leadership decapitation, was the crucial logic by which coercion most often succeeds. The record also showed that strategic bombing was a marginal coercive tool. The historically most common strategic bombing strategy, punishment, is rarely, if ever, effective.

Over 100 years, the record of airpower has been replete with efforts to alter the behavior of states by attacking or threatening civilian population centers or the civilian economy, with few cases where there is even serious debate over whether punishment produced decisive effects. The more popular strategic bombing strategy in today's military and civilian circles, leadership decapitation, is also rarely effective in producing political concessions independent of the use of more effective coercive tools. Although exceptions exist, history shows that theater airpower combined with landpower is a much more powerful coercive tool than strategic bombing.

In brief, *Bombing to Win* has four fundamental principles. First, the key to successful military coercion is to recognize that all strategic actors—the strategic rival as well as the coercer—want to win, at least once they are engaged in a severe international dispute. Although undoubtedly also motivated by other factors, successful coercers should prepare, plan, and execute strategies on the premise that strategic rivals want victory more than they want national prestige, the leaders' personal power, or ideological programs for their society, because victory, once a major international dispute starts, is the ultimate means to those other ends. Assuming an opponent has nonrational strategic goals underestimates the enemy, a key source of failure in past coercive attempts.

Second, the paramount importance of victory means the key to successfully coercing the opponent is denial—reducing the enemy's probability of success in achieving the issue at stake in the international dispute (usually, taking or holding specific territory). In other words, the coercer succeeds to the extent that it thwarts the opponent's military strategy for controlling the objectives in the dispute. Once the opponent is persuaded that specific objectives cannot be achieved, it is likely to concede rather than suffer further pointless losses regardless of effort. This form of coercion, however,

is rarely cheap or easy. Even successful coercion usually takes nearly as long and costs nearly as much as fighting to a finish.

Third, in terms of concrete operational strategies, denial often means hammer and anvil, where the combined power of an airpower hammer and a ground power anvil work together to put the opponent in a military catch 22. If the enemy concentrates its ground forces in large numbers to form thick and overlapping fields of fire, they become vulnerable, and the airpower hammer can smash them to bits. But if the enemy disperses to avoid air strikes, the coercer's ground forces can defeat them in detail, mopping them up with few losses.

Finally, the growing power of hammer and anvil is the true revolution in precision airpower. Today's precision weapons have not increased the coercive effectiveness of destroying political and economic targets since it has long been possible to destroy them with large numbers of "dumb" bombs. Nor have precision weapons revolutionized the effectiveness of leadership decapitation, which has failed repeatedly against a variety of enemies, working only against a rare type of terrorist group.

Today's precision weapons allow airpower to destroy massed enemy ground troops more easily, under a variety of conditions, and to attack other smaller but still essential battlefield targets. Until the precision age, airpower could rarely destroy tanks, trucks, command posts, or bridges used to supply fielded forces with even thousands of bombs aimed at these tiny targets. Now, satellites, advanced sensors, and various manned and unmanned bombing platforms can reliably locate concentrated enemy forces for precision strikes to destroy.

Coercion across the Spectrum of Conflict

The idea that successful military coercion is a function of thwarting an opponent's military strategy has an important implication: Not all enemy military strategies will be similarly vulnerable. Hence, coercers may have tremendous power against an opponent with one type of military strategy, only to discover that their coercive power is far weaker against opponents at different points along the spectrum of conflict from nonstate actors and terrorist groups to states with conventional military forces to states with both conventional military forces and nuclear capabilities.

The variability of coercive power across the spectrum of conflict is a hard lesson for coercers to take seriously. Strategic bombing advocates often view the success of coercion as a function of advances in bombing technology, with the result that they expect the same air campaign to produce success across a wide variety of enemy military strategies. Before World War II, the US Air Corps Tactical School claimed the enemy center of gravity was the will of the civilian population and so advocated for strategic bombing campaigns to inflict massive economic punishment as a one-solution strategy regardless of the enemy.

In the 1990s, modern strategic bombing advocates asserted that precision airpower's ability to target leaders with only a few air strikes meant that America would have unprecedented global power and global reach to coerce virtually any opponent on the planet, quickly and easily. These views, however, essentially ignore the enduring prin-

ciple that enemy strategies can vary tremendously in their vulnerability to coercive military pressure.

A good example prior to the precision age is the Vietnam War. From 1965 to 1968, American airpower sought to compel North Vietnam to end its insurgency against South Vietnam, launching the massive Rolling Thunder air campaign against military and industrial targets from the Demilitarized Zone to the vicinity of the major cities of Hanoi and Haiphong, all to no avail. In 1972, however, a highly similar set of air campaigns called Linebacker I and II did produce at least a modest coercive success by bringing the North to the negotiating table and halting its military operations against the South for several years.

What made the difference? Not punishment, since the bombing killed fewer civilians and destroyed less economically in 1972 than from 1965 to 1968. Not leadership targeting, since this strategy was not employed in a meaningful way in either period. The fundamental difference was that North Vietnam changed its military strategy from guerrilla warfare, which strategic bombing could do little to undermine, to a massive conventional invasion of South Vietnam that airpower in combination with friendly South Vietnamese army forces could and did thwart.

The principles of *Bombing to Win* thus apply across the spectrum of conflict, but this application varies according to differences in the vulnerability of the opponents' military strategy.

States with Conventional Armies

Hammer and anvil works best against opponents with large conventional military forces where the issue in dispute is the control of territory. Specifically, combined power is effective when it exploits the tactics commonly used by large, mechanized armies in modern warfare, the essentials of which have not changed with the advent of precision weaponry.

Since World War II, attackers in mechanized warfare have usually tried to break through the enemy lines and then advance through the breach, deep into enemy territory. To prevent such breakthroughs, defenders typically seek to build formidable front lines so that any section that is attacked can hold out until local reserves arrive. If breakthroughs do occur, defenders use mobile reserves to counterattack the exposed flanks of the penetrating spearheads to cut them off (or at least slow them down) while a new defensive line is established. Even when today's large infantry-based armies lack the full complement of mechanized forces, they often adopt similar tactics in strategies to take and hold territory.

Airpower plays a vital role in this situation. It is a powerful offensive tool that can thwart defensive strategies in two ways. Airpower can help a friendly ground attacker weaken the enemy's front line by attacking it directly or blocking its access to supplies and possible reinforcements. More critical, airpower can also assist penetrating spearheads after a breakthrough by stopping the movement of enemy reserves deeper behind the front and preventing them from redeploying or concentrating against the attackers. Combining air and ground power has been a remarkably winning strategy

in the precision age. It has played a crucial role in America's spectacular victories over opponents with mechanized and unmechanized conventional ground forces.

In Iraq in 1991, Saddam Hussein's critical mistake was underestimating the ability of US precision airpower to thwart Iraq's military strategy to inflict heavy costs on the Coalition's impending ground offensive. Over six weeks, Coalition airpower launched air strikes that directly killed over 30,000 Iraqi troops and convinced another 100,000 to desert, attriting infantry by about a third and creating huge holes in their front lines, making it impossible for the Iraqis to stop a breakthrough at the front. Airpower also destroyed 2,500 pieces of heavy equipment behind the front lines and prevented Iraq's mobile reserves from concentrating in significant numbers inside the theater, which kept them from filling the gaps in the front lines or blocking coalition ground forces that penetrated their lines.

In Bosnia in 1995, the combination of airpower and ground power also had a potent effect in ending Bosnia's three-year civil war. Although not a single bomb fell on Belgrade during this conflict, US theater airpower pounded Bosnian Serb battlefield command posts, military units, and supply bridges, while 100,000 Croat and Bosnian Muslim ground forces attacked the 50,000 troops of the Bosnian Serb army, coercive pressure that brought Slobodan Milosevic and other Serbian leaders to the bargaining table and determined the boundaries of the final map negotiated at Dayton.

The US air operation Deliberate Force was a critical complement to forces on the ground, largely because it bombed military targets in Bosnia and hindered the Bosnian Serb army's ability to counter-concentrate against the oncoming Muslim-Croat ground offensive. For the first time in history, the hammer-and-anvil strategy used US precision airpower working alongside local ground forces.

In Kosovo in 1999, Milosevic surrendered control of the province to NATO. While this is the one case over the past 100 years when punishing civilians may have had a coercive effect, the most persuasive explanation was NATO's threat to invade Kosovo by using airpower and ground forces simultaneously. NATO bombs killed about 500 Serb civilians and damaged Serbian economic infrastructure—a modest toll by historical standards and the rate of attacks against new strategic targets was sharply declining, especially in the weeks after NATO embarrassed itself by bombing the Chinese embassy in Belgrade. The more likely explanation is that Milosevic surrendered from fear that NATO would invade Kosovo with the devastating help of precision airpower.

On June 8, Former Russian Prime Minister Viktor Chernomyrdin met with the Serbian leader, summarizing his remarks in a press conference: "If the current peace plan for a settlement in Kosovo is not carried out . . . NATO has a plan for carrying out a ground operation."² NATO took strong measures to make that threat credible, widening supply roads in Albania, deploying over 35,000 combat troops on Kosovo's

2. Robert A. Pape, "The True Worth of Air Power," *Foreign Affairs* (March/April 2004): 125, <https://www.foreignaffairs.com/>.

borders, and calling up tens of thousands of ground-force reserves. Theater airpower combined with the threat of a ground offensive most likely won Kosovo.

In 2001 in Afghanistan, the United States successfully toppled the Taliban government by imitating and updating the strategy it had tested in Bosnia, combining precision airpower with ground attacks by local troops. Once again, hammer and anvil was devastating, but not before a failed effort at leadership decapitation occurred. The first month of bombing, in October 2001, targeted command and control locations of the Taliban's most senior leadership. These strikes failed to kill Mullah Omar or other top leaders.

As a result, in early November, US special operations forces began coordinating air strikes to support Northern Alliance assaults on the Taliban's approximately 25,000 troops in northern Afghanistan, most of which were concentrated in front lines. The Taliban's front lines collapsed within days of air strikes against their infantry, opening avenues for the Northern Alliance to quickly overrun major strategic points and the capital city, Kabul. Again, thwarting the opponent's capacity to concentrate ground forces proved to be the key to success.

In Iraq in 2003, the United States conquered Baghdad and vast portions of Iraq within about six weeks in another stunning military victory. Although the war started with a three-day effort to "shock and awe" the Iraqi leadership into surrendering without a fight, this promptly failed, and airpower soon shifted to Iraq's Republican Guard and other conventional army units that Saddam had deployed along the key approaches to Baghdad, hoping to create a protracted battle of attrition for the capital.³

Caught in a lose-lose choice between facing air strikes or ground strikes, most Iraqi troops abandoned their positions. As Brigadier General Allen Peck, USAF, a key member of the air command center, said: "Ground troops forced the enemy's hand. If they massed, airpower could kill them. If they scattered, they would get cut through by the ground forces."⁴ The hammer-and-anvil strategy succeeded once again against an opponent with a conventional army strategy.

Nonstate Actors

The principles of *Bombing to Win* also apply to terrorist groups, local militias, and other kinds of nonstate actors, but with an important caveat: Sometimes leaders matter decisively to nonstate actors, with the result that sometimes leadership decapitation can be effective, while at other times only hammer and anvil offers an effective strategy.

In the years after the 9/11 terrorist attacks, I focused much of my research efforts on explaining the root causes of suicide terrorism.⁵ This research also caused me to

3. Stephen T. Hosmer, *Why the Iraqi Resistance to the Coalition Invasion Was So Weak* (Santa Monica, CA: RAND Corporation, 2007), <https://www.rand.org/>.

4. Pape, "Worth of Air Power," 128.

5. Robert A. Pape, *Dying to Win: The Strategic Logic of Suicide Terrorism* (New York: Random House, 2005); and Pape and James K. Feldman, *Cutting the Fuse: The Explosion of Global Suicide Terrorism & How to Stop It* (Chicago: University of Chicago Press, 2010).

think more extensively about the conditions under which airpower and other coercive instruments could succeed against militant nonstate actors, a subject that I did not focus heavily on in my previous work on airpower, since states have historically been far and away the main targets of military coercion.

In *Dying to Win* (2005) as part of an offshore balancing counterterrorism campaign, I recommended strikes against Al Qaeda's leadership in Pakistan, since it was clear this group lacked much local support in the country and, therefore, aerial attrition could be an effective strategy against the group. In *Cutting the Fuse* (2010), my coauthor and I coined the term "over-the-horizon" to explain the offshore balancing concept more fully and recommended using US airpower combined with local ground Allied and partner forces as our most effective approach against other anti-American terrorist groups in the Middle East and Africa. In January 2015, coauthors and I advocated for the hammer and anvil strategy against ISIS in Iraq and Syria.⁶

As against state opponents, the airpower strategies most likely to be effective against nonstate actors depend on the characteristics and strategy of the opponent. Overall, nonstate actors vary considerably in their degree of dependence on leadership, support from the local community, and the nature of their military operations. Perhaps most important, the cohesion and membership of militant groups are sometimes heavily dependent on the support of preexisting social groups found in the local area of their operations, while at other times, they are instead dependent on idiosyncratic loyalties to specific leaders.

Further, nonstate actors also vary considerably in their commitment to territorial control. As Mao Zedong famously articulated, militant groups often pass through a series of operational phases, from guerrilla warfare with few or no meaningful territorial bases, to quasi-conventional light infantry operations to take and hold strategically valuable territory and population centers, to ultimate victory over the state by large-scale conventional war strategies.

Given the variation in their dependence on community support and commitment to territorial control, coercion is likely to be harder against nonstate actors than states with conventional armies, and coercers should expect to pay the full costs of military success to extract political concessions against militant groups. Hence defeat, not coercion, will often be the viable aim against nonstate actors.

From the perspective of airpower, there are three types of militant groups. The first type is a vanguard group with little or no sources of local community support and whose cohesion is primarily a function of loyalty to specific leaders. The second type is a socially embedded group comprised mainly of local leaders and fighters using quasi-conventional ground forces to actively defend and gain territory. The third type is comprised of socially embedded groups waging guerrilla operations independent of territorial control. These three categories of militant groups are important because each type is vulnerable to a different air strategy.

6. Robert A. Pape, Keven Ruby, and Vincent Bauer, "Hammer and Anvil: How to Defeat ISIS," *Foreign Affairs* (January 2015), <https://www.foreignaffairs.com/>.

No Local Support

Against vanguard groups, leadership decapitation and aerial attrition can significantly damage and degrade, if not defeat, the group. Since these groups lack deep local community support, they have great difficulty replenishing losses in their ranks at every level. The main problem for the attacking state is gathering accurate intelligence about the identity of members of targeted groups and their presence at specific locations and times. Such intelligence often requires patience, since accurate, real-time information commonly comes from unpredictable human intelligence successes, similarly unpredictable operational security failures by the opponent, and restraint, since attacking wrong targets and inflicting collateral damage against local bystanders is strategically counterproductive.

Al Qaeda Central is an example of effective leadership decapitation and aerial attrition against a vanguard group. After the fall of the Taliban in 2001, Osama bin Laden, other Al Qaeda leaders, and hundreds of Al Qaeda cadre—most from the Middle East and few from Pakistan or Afghanistan—fled Afghanistan and established operations in Pakistan.

For years, the group continued inspiring and directing attacks against Westerners in Bali, Madrid, London, and numerous other places. Consistent with recommendations in *Dying to Win*, the United States pursued a policy of selective air strikes. Over time, this military pressure culminated in the successful special forces raid that killed bin Laden in Abbottabad, Pakistan in March 2011, gradually wore down the group's core leaders and cadre, and rendered Al Qaeda a shadow remnant of the original group. Al Qaeda has not launched a major terrorist attack against the West in over a decade.

Socially Embedded with Local Leaders and Fighters

Hammer-and-anvil strategies can be effective against socially embedded militant groups committed to controlling territory. These groups have the greatest potential for mass recruitment provided they can control strategically vital territory and relevant population centers, usually with quasi-conventional forces.

When they reach this point, they become essentially nascent nation-states, unlikely vulnerable to leadership decapitation and aerial attrition because they can easily replace lost leaders and fighters but are vulnerable to hammer-and-anvil strategies because their operations depend on concentrating ground forces to control territory. The United States is strategically better off by working with a local ground-power ally, since this avoids the “occupier’s dilemma” of using foreign combat forces that stimulate more terrorists than it prevents.⁷ Hence, success against socially embedded groups

7. Pape and Feldman, *Cutting the Fuse*; Robert A. Pape, principal investigator, *Final Integrated Theory of Over-the-Horizon Counterterrorism and Suicide Attack Organization Response*, Technical Report #7 ONRBAA15-001 (Washington, DC: Office of Naval Research, August 25, 2017); and Pape, “Don’t Overestimate Drone Strikes’ Power to Kill High Value Targets,” Cipher Brief, September 10, 2017, <https://www.thecipherbrief.com/>.

turns critically on whether a viable local ground power ally exists that is in fact willing to fight and die to wrest control of territory away from the militant group.

The defeat of Islamic State in Iraq and Syria as a territorial entity is an example of an effective hammer-and-local-anvil strategy against a socially embedded group committed to controlling territory. In June 2014, ISIS took control of Mosul and other population centers in a vast area of Iraq and Syria that the group declared as its Caliphate. In August, the United States responded by launching an air campaign that blunted further territorial expansion by ISIS, particularly the group's ground attacks against the oil-rich regions of Iraq.

In early 2015, the air campaign evolved into a hammer-and-local-anvil strategy. Over the next several years, both the Obama and Trump administrations executed this strategy, providing close air support allowing the Iraqi army, Kurdish, and other Sunni groups to rollback ISIS areas of control in Iraq and eastern Syria and tacitly coordinating with Syrian government ground forces to finish off ISIS as a territorial entity by early 2018.

The Afghan Taliban seizure of control of Afghanistan in 2021 shows how airpower and enormous commitment of militant and economic resources can fail when an effective ground power anvil is not available. Despite a twenty-year commitment, installing a Western-style government in 2004, transferring over a trillion dollars of economic and military assistance to the Afghan government and security forces, and a major employment of airpower, the United States was unable to stop the increasing Taliban offensive to control territory.

For years, the Taliban's territorial control had been gaining momentum, as the group increasingly absorbed non-Pashtun as well as Pashtun areas of the country, a rising tide that culminated in the sweeping wave of Taliban victories over nearly the entire country during the spring and summer of 2021.

Although complete information about the tactics the United States employed there is still unavailable, it appears the crucial failure was the inability to find or create a viable local ground power ally that would coordinate with American airpower but still fight mainly on its own. Indeed, in the spring and summer of 2021, the Afghan security forces were not so much beaten in pitched battles; they merely deserted en masse rather than confront the enemy. The lesson is clear: hammer and anvil cannot work if the ground power anvil is unwilling to come to the fight.

Socially Embedded Guerillas

In the case of socially embedded groups waging guerrilla operations—no meaningful concentration of ground forces, miniscule logistic requirements, and little time-sensitive communication across integrated command and control networks—airpower is most effectively used directly against guerrillas. But the ability of airpower to substitute for ground power is significantly constrained by tremendous difficulties in identifying friend from foe from the air, which can be offset only partially by increasing loiter time over the target and coordination between air and ground units. These severe limitations on airpower against guerrillas help to explain why so many “search

and destroy” campaigns fail against scattered militant groups who employ mostly hit-and-run tactics.

States with Nuclear Weapons

As *Bombing to Win* explains, coercion is possible against states armed with nuclear weapons but with an important stipulation: because of their unparalleled destructive power, nuclear weapons will cast a strong shadow over the prospects for coercion. Once a crisis starts between adversary states that both have nuclear weapons—as will happen whenever the United States, which has nuclear weapons, becomes embroiled in a serious military dispute with a state with nuclear weapons—national leaders on both sides will quickly focus on the risk of nuclear escalation.

Manipulating the risk of escalation to the use of heavy punishment, which is not effective in conventional disputes, can be successful in nuclear disputes. Since the destructive power of nuclear weapons magnifies the risks, the coercer can threaten beyond levels that any state can accept, perfect credibility is not required, and even the mere possibility of nuclear escalation can generate pressure to make concessions. In this context, denial of military power matters, not because it shifts battlefield outcomes, but as another source generating risk of escalation.

In practice, manipulating the risk of escalation means relying on conventional tripwires in the early stages of a crisis. An effective tripwire deploys sufficient force to define the meaningful territorial boundary in the dispute and turn any combat over that boundary into a protracted war of attrition, denying the challenger the prospect of a quick and decisive victory to change the territorial status quo, and so compelling the opponent to fear that the conventional conflict could escalate to the nuclear level.

Since both sides would have the same fear, the logic of coercion when states possess nuclear weapons implies that nuclear coercion efforts will be rare and, when they do occur, the outcome will be determined by the balance of interests—which is often to return to the status quo.

Thus far, every coercive episode involving nuclear-armed adversaries—the end of the Korean War, Cuban Missile Crisis, other Cold War disputes, and crises involving India and Pakistan, the United States and China (Taiwan 1996), and the United States and Russia (Crimea in 2014)—have all been settled without a major conventional war. These episodes have been settled with rarely even a skirmish and at territorial boundaries that reflect either the status quo ante or new military boundaries following a rapid fait accompli by one adversary, effectively using a mobile tripwire to limit gains without engaging the other adversary’s conventional forces.

This logic and evidence have important implications for America’s challenges with Russia and China, adversaries who both have formidable nuclear capabilities. Despite shifting aggregate economic and military power balances, a conventional war of protracted attrition among today’s great powers is exceedingly unlikely in the coming decades so long as they retain assured nuclear retaliatory capabilities.

To be sure, as great powers gain relative power, they will seek adjustments in the international order that reflect their new states. Just as surely, as today’s leading great power, the United States will have incentives to resist those changes. And the future

will surely involve regional crises, just as we have witnessed regional crises over Taiwan, Ukraine, and the South China sea. In times past, such pressures have indeed led to great power wars.

Today's era of great power politics, however, has an overwhelming source of stability: the inevitable shadow of nuclear escalation that will be cast over any major crisis. Since no great power adversary can be completely sure how the other will react, both are compelled by the logic of the situation to contemplate in the early stages of any major crisis how conventional operations can lead to inadvertent, domestic political, and even deliberate pressures that lead to the use of nuclear weapons.

As a result, the certainly horrible consequences of nuclear escalation and the dangerously uncertain consequences of conventional war combine to generate enormous pressure on great power adversaries to prevent their conventional forces from engaging in serious combat. What will matter most in future coercive episodes among great powers is not the exact balance of forces but the balance of interests in how the dispute is resolved, a balance likely to compel both sides to settle the quarrel before their conventional forces do battle.

From the Napoleonic Wars to World War II, great powers have aggressively pursued regional ambitions that led to numerous great power wars. Since the coming of nuclear weapons in World War II, how many of the multitude of regional crises involving nuclear-armed great power adversaries have escalated to a conventional hot war? In this over 75-year period, the number of great power wars is precisely zero. The coming of nuclear weapons changed the nature of great power politics, the nature of military coercion, and, accordingly, the logic of *bombing to win*.

The Future of *Bombing to Win*

In the coming years, airpower is destined to be at the heart of US international security strategy, and so our decisions about how to effectively employ this powerful instrument will take on greater weight than in the recent past. Just since 2020, America has seen domestic crises related to the COVID-19 pandemic, a wobbling economy, and political violence on both the right and the left that would stress even the most robust great power. America's domestic challenges may encourage international rivals—state and nonstate actors alike—to probe opportunities to make gains, while at the same time discourage American leaders from making major commitments of ground forces to meet potentially rising security needs.

Today's generation of military and civilian leaders will, thus, face demanding decisions about the use of airpower. Essential for America's success is understanding that airpower must be matched to critical weaknesses in an opponent's military strategy. Æ

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