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Lieber, Keir; Press, Daryl

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Coercive Nuclear Campaigns in the 21st Century

Understanding Adversary Incentives and Options for Nuclear Escalation

Keir A. Lieber, PhD
Georgetown University

Daryl G. Press, PhD
Dartmouth College

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PASCC
PROJECT ON ADVANCED SYSTEMS AND CONCEPTS
FOR COUNTERING WEAPONS OF MASS DESTRUCTION



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Keir A. Lieber
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For further information, please contact:

The Center on Contemporary Conflict

Naval Postgraduate School
1411 Cunningham Road
Monterey, CA 93943

pascc@nps.edu

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EXECUTIVE SUMMARY

This report examines why and how regional powers armed with nuclear weapons may employ those weapons coercively against the United States or U.S. allies during a conventional war. We argue that the problem of intra-war deterrence – preventing nuclear-armed adversaries from escalating during a conventional conflict – is arguably the most important deterrence challenge facing the United States in the 21st century.

The strategic environment facing the United States, its allies, and its potential adversaries has changed dramatically since the end of the Cold War. For nearly four decades, the United States and its NATO allies planned to use nuclear weapons to defend themselves from a major Warsaw Pact invasion of Western Europe. The armies of the Warsaw Pact were perceived to be too formidable to confront with a strictly conventional defense – at least at spending levels that would be acceptable to the North Atlantic alliance. Nuclear weapons were thus NATO’s “trump card”: NATO planned to employ nuclear weapons coercively during a war to raise the costs and risks to the Warsaw Pact and thereby convince them to halt their military operations before they could inflict a total defeat on NATO.

Today, the global balance of power is reversed. Now U.S. military forces are the most formidable, and potential U.S. adversaries need trump cards of their own to stalemate the United States. This reversal in the balance of power helps explain why the United States now seeks to delegitimize nuclear weapons and reduce their role in the world. Unfortunately, the same conditions that once made NATO rely on nuclear weapons will now likely compel other countries – including several potential U.S. adversaries – to rely upon nuclear weapons.

In today’s world, relatively weaker adversaries face a range of incentives and options to use nuclear weapons coercively during conventional conflicts. Facing conventionally superior foes, regional nuclear-armed states will worry deeply about the consequences of military defeat. Recent history shows that such defeats are often extraordinarily costly for adversary leadership – as the fate of Manuel Noriega, Slobodan Milošević, Radovan Karadžić, Saddam Hussein, and Muammar Qaddafi demonstrate so starkly. Therefore, regional adversaries face powerful incentives to employ nuclear

weapons coercively to stalemate their opponents before suffering major battlefield defeats and the attendant catastrophic consequences.

The logical appeal of coercive nuclear escalation is well understood by countries around the world. The strategy appears to be reflected in the defense plans and doctrines of key states. Moreover, the countries that appear to have internalized the strategic logic of coercive nuclear escalation are the same ones predicted to do so according to the arguments in this report.

Some conflicts are more likely to escalate than others. Some of the world's nuclear "hotspots" are more dangerous than others. Threats to invade and conquer an adversary and overthrow its regime are obviously the most escalatory, but other kinds of conflicts offer grounds for deep concern. Military campaigns that significantly degrade an adversary's ability to defend itself, military operations that target adversary strategic assets, and conflicts that make regime downfall more likely if the adversary fails to achieve its political objectives all contain the seeds of escalation.

The principal implications of this study for U.S. policy makers can be summarized in five points:

- U.S. adversaries have powerful incentives to use nuclear weapons against the United States during conventional wars. The same logic that led NATO to adopt a strategy of coercive nuclear escalation during the Cold War will likely drive future U.S. adversaries to do the same to stalemate the United States.
- History suggests that most nuclear-armed countries that face overwhelming conventional military threats develop, and rely upon, coercive nuclear doctrines.
- Most of the world's most dangerous conflicts – i.e., those that create the greatest incentives for combatants to use nuclear weapons – involve the United States: including war on the Korean Peninsula, conflicts in maritime East Asia, and in

the future war in the Strait of Hormuz. (The most notable non-U.S. conflict which involves high nuclear escalation risks is India-Pakistan.)

- Because the United States seeks to prevent escalation during conventional wars, regional war planners need to fully integrate the goal of escalation prevention into the foundation of their war plans and conventional concepts of operations (CONOPS). Existing “limited aims” plans may pursue limited *objectives* without restraining U.S. military *operations* sufficiently to mitigate escalation risks.
- The challenges of deterring escalation during conventional wars, and assuring allies during those conflicts, place a premium on flexible U.S. conventional and nuclear forces. Proposals regarding the size and composition of the U.S. nuclear arsenal should assess the proposed force against the challenge of deterring intra-war escalation, and not just the mission of peacetime deterrence.

INTRODUCTION

The most critical question about nuclear weapons in the 21st century is whether states will ever use them again. Is the *possibility* of inter-state nuclear war sufficiently *plausible* to be a major concern? In the coming decades, are there realistic circumstances in which states might choose to use nuclear weapons against enemies, including the United States? In short, might some states be so powerfully motivated to use nuclear weapons that deterrence will fail?

Many analysts would answer each of these questions with a simple “no.” According to an increasingly common view, states are unlikely to use nuclear weapons at all, highly unlikely to use them against other states that can retaliate in kind, and extremely unlikely to use them against the United States – the world’s preeminent military power. No other act seems as foolhardy. Although U.S. President Barack Obama pledged, in his “global zero” speech in Prague in 2009, that “the United States will maintain a safe, secure and effective arsenal to deter any adversary, and guarantee that defense to our allies,” most analysts do not believe deterrence is a demanding mission – because the odds of an adversary nuclear attack seem vanishingly small. “To put an end to Cold War thinking,” President Obama also proclaimed, “we will reduce the role of nuclear weapons in our national security strategy, and urge others to do the same.”¹ Those analysts who favor further deep cuts to the U.S. nuclear arsenal commonly make the point that such weapons are stale leftovers from the Cold War. According to this logic, nuclear deterrence is a “legacy” mission. Cold War era nuclear arsenals, strategies, war plans, alert postures, deterrence puzzles, and worst-case scenario planning are relics of a bygone era.²

Of course, even those analysts who are confident that U.S. adversaries will not use nuclear weapons against the United States or its allies tend to recognize an array of contemporary nuclear dangers. For instance, terrorists might acquire nuclear weapons or

¹ The White House, Office of the Press Secretary, “Remarks by President Barack Obama,” Hradcany Square, Prague, Czech Republic, April 5, 2009.

² Indeed, some scholars debate whether nuclear weapons were ever essential for deterring the Soviet Union. For two examples of prominent scholars who argue that nuclear weapons were unnecessary to deter the Soviet Union during the Cold War, see John E. Mueller, *Atomic Obsession: Nuclear Alarmism from Hiroshima to Al-Qaeda* (Oxford: Oxford University Press, 2009); and Richard Ned Lebow and Janice G. Stein, *We All Lost the Cold War* (Princeton, NJ: Princeton University Press, 1994). More broadly, many scholars and policy analysts argue that nuclear deterrence – whatever its role in the Cold War – is either unnecessary today or a simple mission because intentional nuclear attack is so unlikely.

materials; accidents may lead to unwanted detonations; or states may start inadvertent nuclear war. But none of those dangers can be effectively mitigated through nuclear deterrence strategies. Terrorist acquisition is so terrifying precisely because terrorists are difficult to deter.³ Accidents cannot be prevented through deterrence. And deterrence is irrelevant to inadvertent war scenarios, which by definition do not result from deliberate decisions for war. The implication is that these nuclear dangers can only be mitigated if nuclear policy is focused, first and foremost, on the goals of non-proliferation, de-legitimization, and eventual abolition. Many in the U.S. national security community acknowledge that nuclear weapons continue to play a residual deterrent role but, they believe that deterrence is straightforward: deterring the deterrable is fairly simple, and deterring the real dangers (terrorism, accidents, and the unintended) is impossible. This is why, for a large and growing portion of mainstream analysts and policymakers, nuclear policy essentially boils down to the goals of non-proliferation and disarmament.

Unfortunately, the increasingly influential perspective in Washington and the broader analytical community rests on a weak understanding of the role that nuclear weapons played during the Cold War, and it therefore overlooks the strategic continuities between the Cold War and the present. When one examines why NATO once relied so heavily on nuclear weapons, the continuities between past and present become clear, and the policies of those countries that are “hold outs” against the global campaign for nuclear arms reductions begin to make sense. In fact, nuclear deterrence will continue to be central to the conduct of international politics, now and long into the future. Moreover, the likelihood of intentional nuclear attacks – even against the United States – is far higher than most scholars and analysts realize. In short, nuclear deterrence is likely to be quite difficult in the foreseeable future.

This report argues that the U.S. policy community has given too little attention to the problem of intra-war nuclear deterrence. Specifically, relatively weak but nuclear-armed countries – including potential adversaries of the United States – will face intense

³ Paul K. Davis and Brian Michael Jenkins, *Deterrence and Influence in Counterterrorism: A Component in the War on al-Qaeda* (Santa Monica, Calif.: RAND, 2002), p. xviii. A new study suggests, however, that it is possible – indeed very likely – that the United States can deter states from giving nuclear weapon to terrorists. Keir A. Lieber and Daryl G. Press, “Why States Won’t Give Nuclear Weapons to Terrorists,” *International Security* (Summer 2013), forthcoming.

pressures during conventional wars to use nuclear weapons coercively to create a stalemate and avoid a calamitous military defeat. The United States has little experience at deterring intra-war nuclear escalation.⁴ It has fought conventional wars against states with nuclear-armed allies, but never directly against a nuclear-armed adversary. That fact may soon change. Given the United States' global military commitments and the spread of nuclear weapons to potential U.S. adversaries, the United States could soon find itself engaged in conventional operations against a regional nuclear-armed adversary. Regional adversaries cannot match U.S. conventional military power, and conventional defeat is often extraordinarily costly for adversary leaders and their regimes. Therefore, regional adversaries face powerful incentives to employ nuclear weapons coercively to stalemate the United States before suffering major battlefield defeats and the attendant catastrophic consequences.

This report makes four principal arguments: First, nuclear weapons are just as salient today as they were in the past. During the Cold War, nuclear weapons were enormously valuable because one set of countries (members of the North Atlantic Treaty Organization, or NATO) lacked the conventional military power to defend itself from the Soviet Union and its Warsaw Pact allies. Nuclear weapons allowed the “weak” side to deter the “strong” one.⁵ And had war erupted, nuclear weapons would have given the weak side its best hope of fighting the strong side to a stalemate.⁶ The Cold War is over, but the

⁴ The U.S. Department of Defense's 2006 Deterrence Operations Joint Operating Concept (DO JOC) holds that deterrence “is achieved by credibly threatening to deny benefits and/or impose costs while... convincing the actor that restraint will result in an acceptable outcome.” In many potential conflicts, however, the nature of U.S. desired end-states, the fragility of adversary regimes, the proximity of an adversary's conventional weapons and strategic systems, and the nature of U.S. military doctrine (which is designed to deny the adversary situational awareness) will make it difficult to assure adversaries that their restraint will lead to “acceptable outcomes.” Furthermore, it may be difficult to deny adversaries the benefits of nuclear escalation or credibly threaten to impose adequate costs. In short, intra-war deterrence will likely pose daunting challenges for the United States and its partners in the coming years.

⁵ In this report, “weak” refers to the country (or alliance) that lacks the conventional military power to prevail in a conventional war against its key enemies; “strong” refers to a country that is likely to win a conventional conflict. Used in this fashion, weak and strong are dyadic features – i.e., they refer to the relationship between two states (or groups of states) rather than to underlying features of the states themselves. Using this formulation, because NATO declined to spend sufficiently on defense to create a robust conventional defense, which could be expected to reliably defeat a major Warsaw Pact attack, it required nuclear weapons to create stalemate and effective deterrence.

⁶ Note that the conventional military balance in Europe was not as one-sided as was often portrayed. But even in the late-1980s, at the height of NATO's conventional military might, the NATO-Pact military balance was merely *competitive* – meaning that either side might have prevailed in a conventional conflict. There was

underlying conditions that made nuclear weapons vital then still exist today. All that has changed are the seats at the table. In the past the United States and its allies felt weak, and not surprisingly they tightly gripped their nuclear weapons. Today, most of those countries feel strong, and – not surprisingly – nuclear weapons suddenly seem anachronistic to them. But the end of the Cold War did not make every country safe; in fact, many of America’s potential adversaries face the same overarching problem today that NATO faced during the Cold War: how to deter and if necessary stalemate an adversary that possesses overwhelming conventional military power. The platitude that nuclear weapons are not well suited to the security threats of the 21st century is incorrect; it is more accurate to say that they are not well suited to the security problems that confront the United States in the 21st century. But for those who fear U.S. military might – or who fear other strong states – nuclear weapons are as helpful as they were for NATO during the Cold War.⁷

Second, weak states face powerful incentives to *use* nuclear weapons if they find themselves in a conventional war against a much stronger adversary. Scholars and policy analysts who study deterrence often claim that no rational leader would use nuclear weapons against a country that could respond in kind – let alone a country that could respond with far greater force. But this is incorrect. Analysts who make this claim conflate

never a time in which NATO could have confidently relied upon conventional forces to defeat a major Pact offensive. For critiques of the excessive pessimism about the conventional military balance during the Cold War, see Alain C. Enthoven and K. Wayne Smith, *How Much is Enough? Shaping the Defense Program 1961-1969* (Santa Monica, CA: RAND Corporation, 1971); John J. Mearsheimer, “Why the Soviets Can’t Win Quickly in Central Europe,” *International Security*, Vol. 7, No. 1 (Summer 1982); Barry R. Posen, “Measuring the European Conventional Balance: Coping with Complexity in Threat Assessment,” *International Security*, Vol. 9, No. 3 (Winter 1984-85), 47-88.

⁷ The seminal work on the links between conventional operations and nuclear escalation is Barry R. Posen, *Inadvertent Escalation: Conventional War and Nuclear Risks* (Ithaca, NY: Cornell, 1991). Writing at the end of the Cold War, Posen notes that “the most common view of how a conventional war could become a nuclear war” focuses on the danger that “had NATO found itself losing a conventional ground battle for control of Western Europe... the United States might have reached for nuclear weapons in the hopes of salvaging its position” (p. 1). But two decades later, the common understanding of the incentives of the “weak” (i.e., those who stand to lose the conventional war) has evaporated. Few national security experts – and it seems few deterrence experts – still remember that it was NATO’s strategy to escalate rather than lose a conventional war. Fewer still have sought to identify the underlying strategic conditions from the Cold War that made intentional nuclear escalation by NATO seem to be a reasonable strategy. And fewer still have examined the current strategic environment to see if those strategic conditions still exist today. We seek to remind scholars, analysts, military planners, and national leaders of what was once a common view; to demonstrate that the underlying conditions and logic which led NATO to plan to use nuclear weapons against the Soviet Union still exist elsewhere today. The same logic that once would have led NATO to use nuclear weapons against the Warsaw Pact may pressure North Korea, Pakistan, China, Russia, or others to deliberately use nuclear weapons today.

the logic of peacetime deterrence with the logic of war. Leaders facing the prospect of imminent defeat have compelling reasons to escalate coercively – with nuclear weapons – to bring about a ceasefire. Coercive nuclear escalation by the weaker side forces the stronger side to choose among several options – all of which are grim. It is because all of those options are unattractive that an adversary will be tempted to escalate in the first place. Viewed through this lens, Pakistan may have powerful, rational reasons to use nuclear weapons if it is losing a conventional war to India; North Korea has powerful reasons to use nuclear weapons coercively, rather than permit its enemies to prevail in a war. And Chinese leaders would face some of these same incentives if their armed forces were suffering a humiliating defeat in a war in maritime East Asia. In short, an escalatory strategy is cold-blooded, but not far-fetched – indeed, it was NATO’s policy for nearly thirty years.⁸

Third, this report shows that the logic of coercive nuclear escalation is well understood by countries around the world. Coercive nuclear escalation is not a theoretical possibility; it is reflected in the defense plans and nuclear employment doctrines of several nuclear-armed states. We identify the conditions under which states would be most likely to build defense plans around doctrines of coercive nuclear escalation; we then sort nuclear-armed countries according to those conditions; finally, we show that those states that should have adopted coercive nuclear doctrines (according to our argument) have actually done so.

Fourth, this report identifies global “hotspots” where plausible conventional conflicts are most likely to trigger dangerous escalatory dynamics. We posit a set of exacerbating conditions – including the prospect of conquest, regime change, and the escalatory nature of certain military operations – which make escalation during conventional war more likely, and then we use those conditions to distinguish the hotspots

⁸ A policy of coercive nuclear escalation – to create stalemate during an unwinnable conventional war – was NATO’s policy from the mid-1960s through the end of the Cold War. Prior to the 1960s, NATO believed it could win a nuclear war, and so it had a different nuclear doctrine: immediate escalation of a conventional conflict, not to coerce, but rather to destroy the enemy’s nuclear force and win. For a detailed discussion of the evolution in U.S. and NATO war plans, see Keir A. Lieber and Daryl G. Press, *Nuclear Weapons and International Politics* (unpublished book manuscript), chapter 4. See also Gregory Pedlow, “The Evolution of NATO Strategy, 1949-69,” in Gregory W. Pedlow, ed., *NATO Strategy Documents, 1949-69*, and accompanying documents, available online at <http://www.nato.int/archives/strategy.htm>.

which pose high risks of escalation from those that pose lower levels of risk. We find that most of the world's most dangerous conflicts – i.e., those that create the greatest incentives for combatants to use nuclear weapons – involve the United States: including war on the Korean Peninsula, conflicts in maritime East Asia, and (in the future) war in the Strait of Hormuz. To be sure, an India-Pakistan conflict would trigger dangerous escalatory dynamics, but a South Asian conflict – which has appropriately attracted considerable attention because of the grave risks of escalation – appears no more dangerous (and, in fact, may be less combustible) than several quite plausible future U.S. wars .

Why do so many other analysts reach a different conclusion about the likelihood of deliberate nuclear escalation? One possibility is that scholars and other analysts typically think about *peacetime* nuclear deterrence (preventing a surprise nuclear attack), rather than wartime deterrence (deterring nuclear escalation during conventional wars), the exception being the extensive literature on escalation risks during an India-Pakistan war.⁹ But surprisingly, even scholars who understand the difficulty of deterring escalation during a conventional war when applied to South Asian security dynamics, argue elsewhere that rational leaders would never use nuclear weapons against the United States.¹⁰ But if analysts believe that Pakistan (the weak) could use nuclear weapons to prevent conventional defeat (even though Pakistan cannot win a nuclear war), why would the same analysts dismiss the possibility that North Korea, or in the future Iran, or possibly China, would use nuclear weapons in an escalatory fashion against a strong nemesis?

However one explains this apparent contradiction, the bottom line is that the same fears that made vulnerable and fearful countries cling to nuclear weapons in the Cold War will make those weapons essential to the weak and vulnerable in the coming decades.

⁹ For example, see Sumit Ganguly and Devin T. Hagerty, *Fearful Symmetry: India-Pakistan Crises In The Shadow Of Nuclear Weapons* (New Delhi: Oxford University Press, 2005); S. Paul Kapur, "India and Pakistan's Unstable Peace: Why Nuclear South Asia Is Not Like Cold War Europe," *International Security*, Vol. 30, No. 2 (Fall 2005), pp. 127-152; and V. R. Raghavan, "Limited War and Nuclear Escalation in South Asia," *Nonproliferation Review*, Vol. 8, No. 3 (2001), pp. 82-98.

¹⁰ At a recent presentation to U.S. national security analysts and mid-level U.S. government national security officials, we asked, "How many of you believe a state will deliberately use nuclear weapons against the United States within 20 years?" No one raised a hand. We then asked, "How many believe Pakistan would use nuclear weapons if it were losing a conventional war to India?" Roughly two-thirds of the audience raised a hand. When we asked why North Korea would not face the same incentives as Pakistan, no one offered an explanation, and several of the analysts admitted they had simply never thought about the problem in that way. Washington, D.C., September 2012.

Nuclear weapons are the ultimate instruments of stalemate – they are the ultimate weapons of the weak. Viewed through this lens, the end of the Cold War radically changed *who* needed nuclear weapons, but did little to reduce the utility of the weapons.

This report has five main sections. First, it explains the logic of coercive nuclear escalation – why the weak might feel compelled to escalate a conventional war, and why they might hope doing so would grant them the ceasefire they desire. Second, we demonstrate the rationality of that logic by examining the options available to a state seeking to respond to coercive nuclear escalation. Third, we assess the nuclear doctrines of nuclear-weapon states across four decades to determine if states actually act according to the logic developed in the preceding sections. Fourth, we identify the most dangerous global hotspots based on their coercive nuclear escalatory potential. Finally, we discuss the policy implications of our analysis.

THE LOGIC OF COERCIVE NUCLEAR ESCALATION

The core national security problem for many militarily weak countries is straightforward: how to keep powerful enemies at bay. For weak countries, military defeat can be disastrous. In some circumstances, battlefield losses are followed by conquest and harsh treatment of the defeated society: e.g., a brutal occupation, the loss of sovereignty, or in rare cases genocide. But even when those terrible outcomes are not likely, war is often disastrous for the leaders of the defeated. Military planners in weak states – particularly those with adversarial relations with the United States (which has easily vanquished a half-dozen military opponents since the end of the Cold War)¹¹ – must, therefore, address a fundamental question: if war occurs, and conventional victory is impossible, what strategies might create a stalemate and avoid catastrophic defeat?

¹¹ Since 1989, U.S. military forces, supported in some cases by a coalition of allies, defeated the military forces of the following states with minimal U.S. losses: Panama (1989), Iraq (1991), Serbia (1999), Afghanistan (2001), and Iraq again (2003), and the U.S. provided support to the operation that overthrew the Libyan government (2011). Although the U.S. military has had considerable difficulty defeating insurgents, from the perspective of weak governments, the hope that after one's defeat and arrest (or execution) rebels will frustrate the enemy is likely cold comfort.

Escalation and the Fate of Enemy Leaders

Although the United States has a long history of treating defeated enemy societies well – e.g., in Germany, Japan, and more recently Iraq – the leaders of countries that recently fought the United States have suffered severe consequences. In 1989, the United States conquered Panama and arrested its leader, Manuel Noriega. For most Americans, this short war is forgotten. For Noriega, it triggered a calamitous reversal of fortune: he exchanged a life of power and riches for twenty-three years in prison – and counting. Saddam Hussein suffered a worse fate; he lost power, he was humiliated, his sons were killed, and he was hanged in front of jeering enemies. Muammar Qaddafi spent his last days hiding from U.S.-supported rebels before being caught cowering in a culvert. He was then beaten and shot to death. Dozens of Qaddafi loyalists, including his son, were also rounded up and executed.

Even leaders whose countries were never conquered – those that suffered only “limited” defeats – often paid a high price. Bosnian Serb leaders Karadžić and Ratko Mladić are still in prison in the Hague, where Serbia’s former leader, Milošević, died in detention.¹²

More broadly, studies demonstrate that leaders have a powerful, *personal* incentive to force a stalemate on the battlefield rather than accept defeat. One study used data covering more than 80 years of leadership changes around the world and found that those leaders who achieved a *stalemate* in a war were nearly twice as likely to remain in power as those countries that suffered military defeat. Even more tellingly, the leaders of countries who lost were approximately *four times* as likely to be punished – exiled, jailed, or killed – as those who managed to achieve stalemate.¹³

¹² Randal C. Archibald, “Noriega Is Sent to Prison Back in Panama, Where the Terror Has Turned to Shrugs,” *New York Times*, December 11, 2011; Marlise Simmons, “Former Bosnian Leader Begins His Defense at Genocide Trial,” *New York Times*, 16 October 2012; Simmons, “The Hague: Mladic’s Trial Resumes,” *New York Times*, 9 July 2012; Simmons and Alison Smale, “Slobodan Milosevic, 64, Former Yugoslav Leader Accused of War Crimes, Dies,” *New York Times*, 12 March 2006.

¹³ Giacomo Chiozza and H.E. Goemans, *Leaders and International Conflict* (Cambridge: Cambridge University, 2011). The odds of a leader remaining in office for 1 year after suffering a military defeat was 51%, compared to 89% for a leader whose state fought to a draw. The percentage of leaders who remained in office for four years was 24% for “losers” and 42% for those who stalemated. Over the course of four years, 47% of leaders whose country lost wars were “punished” – exiled, jailed, or killed – while only 13% of those who achieved a “draw.” These calculations are based on the data in Chiozza and Goemans, pp. 56-57. For more on leaders and war outcomes, see Alexandre Debs and H. E. Goemans, “Regime Type, the Fate of Leaders, and War,” *American Political Science Review*, Vol. 104, No. 3 (August 2010): 430-45. See also, Giacomo Chiozza and H. E.

Not only do leaders face great pressure to create battlefield stalemate before they suffer irredeemable losses, they must do so quickly. A limited conventional defeat that “merely” destroys a large fraction of a country’s military, or substantially degrades the institutions that ensure “government control” (for example, the leadership’s security force, domestic intelligence services, internal security troops, and party militias), could trigger a wartime or post-war coup. Even if the military and security services remain loyal, the war must end before they are too degraded to suppress uprisings in the wake of the conflict. Furthermore, military operations – especially those conducted by the United States – increasingly involve intense campaigns against enemy command bunkers and other leadership sites, posing direct, daily threats to the leaders, their key political allies, and their families.¹⁴ Leaders who see their military being destroyed, their security services being savaged, and who have bombs raining down upon their command bunkers, may feel great pressure to halt the war as soon as possible.

In short, losing wars is often a terrible outcome. Sometimes it results in horrendous consequences for the defeated society. In the early decades of the Cold War, West Europeans were understandably horrified by the notion of being conquered by the Soviet Union, losing their democratic institutions, and living under a murderous Stalinist tyranny. Today, many Israelis believe that a military defeat at the hands of their neighbors would usher in another tragic era in Jewish history – including genocide and ethnic cleansing. But even when the outcomes of war are unlikely to lead to mass societal suffering among the defeated, enemy leaders (not just the supreme leader, but ruling party officials, military officers, and members of the domestic security services) rightly fear the consequences.

The critical message is this: America’s recent conflicts are considered “regional wars” in Washington; for adversaries there is nothing “regional” or “limited” about them. For the weak, these are existential struggles.

Goemans, “International Conflict and the Tenure of Leaders: Is War Still ‘Ex Post’ Inefficient?” *American Journal of Political Science*, Vol. 48, No. 3 (July 2004): 604-19.

¹⁴ In the 1991 Persian Gulf War, the United States conducted 203 airstrikes on “government control” targets. That effort intensified in the 2003 war: U.S. aircraft struck 1,799 aim points in the “SR” target set, i.e., targets associated with regime survival and political control over the military. An additional 50 strikes were conducted against time sensitive leadership targets (i.e., efforts to target Saddam Hussein and other senior members of the government). See *Gulf War Air Power Survey (GWAPS)*, V. 5, U.S. Government Printing Office, Washington, D.C., 1993; Table 177; and on the 2003 war, “Operation Iraqi Freedom – By the Numbers,” Assessment and Analysis Division, USCENTAF, 20 April 2003, pp. 4, 5, and 9.

Escalation and the Role of Nuclear Weapons

The leaders of weak states face life-and-death incentives to quickly halt wars that are going badly for them. But why are nuclear weapons needed for this mission? Several attributes of nuclear weapons make them uniquely useful for stalemating a stronger enemy. Nuclear weapons are small and hence relatively easy to hide – enhancing their chance of surviving the early stages of a conflict.¹⁵ Furthermore, not many nuclear weapons need to survive: each bomb is so destructive that an adversary who can credibly threaten to deliver even a few weapons against its enemy’s cities would possess a powerful coercive tool.¹⁶ Finally, modern delivery systems – particularly ballistic missiles – allow states to deliver nuclear weapons to their target, even if its enemy controls the ground, air, and sea. In contrast, most conventional weapons become progressively harder to deliver against enemy cities as the enemy gains the upper hand militarily, and they inflict too little damage to shock the winning side into submitting to stalemate. Taken together, these three characteristics mean that even a state on the verge of being vanquished can conceivably destroy the potential victor. The implication: nuclear weapons are the ultimate weapon of the weak.

Not only are nuclear weapons better suited for wartime coercion than conventional alternatives, there are three other considerations that make more useful than other weapons that analysts worry may spread in the 21st century, including cyber, chemical, and biological weapons.

First, although popular culture frequently portrays nuclear weapons as uncontrollably destructive, their effects can be surprisingly calibrated. Weapons designers have created nuclear weapons with widely varying “yields,” allowing mission planners to tailor a strike to create a huge area of destruction or very little – whichever is desired. For example, the largest yield weapon in the current U.S. arsenal releases up to 1,200 kilotons of energy (80 Hiroshimas); the smallest U.S. nuclear weapon can be set to detonate with

¹⁵ A weapon cannot be a good tool for creating stalemate during a losing war if it is likely to be destroyed before it becomes clear that the war is going badly. In later sections of this paper we consider various adversary escalatory strategies, and the trade-offs U.S. adversaries may face between early- and late-employment of nuclear weapons during a conventional war.

¹⁶ These first two points interact: because each weapon is so destructive, a counterforce strike would need to destroy nearly every deliverable weapon to meaningfully limit damage, but that level of success is particularly difficult given that they are relatively easy to hide.

only roughly 0.3 kilotons of explosive power (2% of the Hiroshima bomb).¹⁷ The former would create 250 times the destruction as the latter.¹⁸ Furthermore, by selecting the altitude of detonation, targeters can choose to create enormous amounts of radioactive fallout or virtually none.¹⁹ And perhaps most importantly – from the standpoint of a weak state conducting a coercive campaign – nuclear weapons can be used either slowly or rapidly, or somewhere in between: they can be used to destroy one city today and another tomorrow, or one today and a dozen tomorrow. If fallout is avoided, damage can be meted out in distinct, painful episodes, facilitating coercion. In our popular culture, nuclear weapons are incredibly blunt tools. Some high-yield weapons are. But compared to other instruments of coercion, nuclear weapons offer desperate weak-state leaders tailored escalatory options.²⁰

Another criterion that makes nuclear weapons uniquely suitable for war-ending coercion: the utility of nuclear strikes is not nullified by first use.²¹ Once a cyber weapon is used, the victim (and others) can learn from the computer code and eliminate key

¹⁷ John Malik, *The Yields of the Hiroshima and Nagasaki Explosions* (Los Alamos National Laboratory Report LA-8819), Los Alamos, NM, September 1985; Hans M. Kristensen and Robert S. Norris, “U.S. Nuclear Forces, 2013,” *Bulletin of the Atomic Scientists*, Vol. 69, No. 2 (2013), pp. 77-86; and “The B83 (Mk-83) Bomb,” NuclearWeaponsArchive.org, November 11, 1997, available at <http://nuclearweaponarchive.org/Usa/Weapons/B83.html>.

¹⁸ The high-yield weapon in this example, the U.S. B83 bomb, would produce destructive effects on the ground nearly *sixteen times further* than the lowest yield B61 bomb, resulting in a destructive area on the ground more than 250 times greater. The seminal unclassified work on nuclear effects is, Samuel Glasstone and Phillip J. Dolan, *The Effects of Nuclear Weapons* (Washington, DC: U.S. Government Printing Office, 1977).

¹⁹ Above a given “height of burst,” which is a function of warhead yield, there is vastly reduced local fallout. See Glasstone and Dolan, *Effects of Nuclear Weapons*, chap. 9. For supporting calculations and some examples of the significance of no-fallout airbursts, see Keir A. Lieber and Daryl G. Press, “The Nukes We Need: Preserving the American Deterrent,” *Foreign Affairs*, Vol. 88, No. 6 (November/December 2009); 39-51, as well as the technical appendix to that article, available at www.dartmouth.edu/~dpress.

²⁰ The technical capabilities required to utilize nuclear weapons in a calibrated fashion, as described above, are simple for any state that can produce and deliver a nuclear weapon. Weapons with a yield in the single digits of kilotons – apparently like the devices tested by North Korea – are well suited to “minimal damage” attacks. And even a primitive 20-kiloton weapon, like the first U.S. atomic bombs, would be sufficient to cause massive destructive effects if desired. Controlling height of burst with sufficient accuracy to cause or prevent fallout merely requires simple altimeters, a technology that is easily available to any country capable of firing ballistic missiles.

²¹ Because the victim of a nuclear strike cannot easily take steps to inoculate itself from subsequent attacks, a state using the weapons coercively can enhance the credibility of its threats through an initial strike without nullifying the effectiveness of its remaining weapons. This is an essential quality of a weapon to be used for coercion because, as Thomas Schelling pointed out, coercion works through the fear of *future* pain. Killing one hostage only coerces if there are others who remain in jeopardy. See Thomas Schelling, *Arms and Influence*.

vulnerabilities – reducing the effectiveness of future weapons.²² Similarly, in the aftermath of a biological weapons attack, the victim’s military forces and population would don gas masks and take other steps to reduce their vulnerability to subsequent strikes. Within broader society, public health measures (for example, restrictions on travel and movement, the use of surgical masks, heightened health monitoring, and the isolation of contagious individuals) would reduce the effectiveness of follow-on attacks. But, in contrast, the initial use of nuclear weapons would not nullify the nuclear arsenal to the degree that bio- or cyber-attacks would. Unless the victim of the nuclear attack can reliably shoot down ballistic missiles, which remains a very difficult undertaking,²³ a weak state can use nuclear weapons coercively and still retain the ability to conduct future attacks.

Finally, the effects of nuclear weapons are far more predictable than cyber or bio weapons, an essential attribute for a leader who needs to coerce an immediate end to fighting. Nuclear weapons are more predictable on at least three key dimensions: the functioning of the weapon, the damage it will cause, and the timing of the effects. No one knows whether the *coercive* effect of a nuclear, or biological, or a cyber attack would work, as we discuss below. But leaders under duress could at least be confident that a well-tested nuclear weapon would function; would create a reasonably predictable level of damage (as long as targeters selected a height of burst to prevent fallout); and would detonate at roughly the desired time. By contrast, one cannot know whether a cyber weapon will infect the target computer system – or whether an infection would produce the desired

²² Those who examine the code may not merely learn about the vulnerabilities in the target computer system’s code, they may also learn about technical or organizational vulnerabilities that permitted the malware to be delivered to the target. For instance, computer networks that have no connectivity to the outside world have been penetrated by luring employees with access to unknowingly (or intentionally) use infected flash drives in the otherwise-sealed-off network. But once that vulnerability was exploited, re-attack became more difficult (e.g., workers at sensitive sites were warned about such operations, and in some organizations USB ports have been physically sealed). See Martin Libicki, *Cyberdeterrence and Cyberwar*, (Santa Monica, CA: RAND, 2009), pp. 56-59. For a discussion of these issues in the context of the Stuxnet attack, see Kim Zetter “How Digital Detectives Deciphered Stuxnet, the Most Menacing Malware in History,” *Wired*, July 11, 2011. Available at: <http://www.wired.com/threatlevel/2011/07/how-digital-detectives-deciphered-stuxnet/all/>.

²³ For a description of the enduring problem faced by all exoatmospheric hit-to-kill missile defense systems, differentiating warheads from decoys and debris out of the atmosphere, see George N. Lewis, Theodore A. Postol and John Pike, “Why National Missile Defense Won’t Work,” *Scientific American*, August 1999. The enduring challenge is noted in Defense Science Board Task Force Report, “Science and Technology Issues of Early Intercept Ballistic Missile Defense Feasibility,” U.S. Department of Defense, September 2011.

malfunctions – until the weapon is used.²⁴ In many cases, no one can predict how long it will take for a cyber attack to disrupt the target computers, or assess the unintended consequences of the malware infecting other computer systems. Similarly, biological weapons may take considerable time to spread, to incubate in their victims, to be detected, and to be attributed – all of which must happen before an attack can generate a coercive effect.

During wars, the leaders of the states on the losing side may face life-and-death pressure to rapidly force a ceasefire – even if their enemy is not seeking to conquer them or impose regime change. Conventional weapons provide little leverage in this regard – most of them become progressively more difficult for the weak to employ as the strong gains the upper hand militarily, and they generally inflict too little damage to shock the strong state into submitting to stalemate.²⁵ When NATO faced an overwhelming conventional military threat, it did not plan to stalemate the Warsaw Pact using highly uncertain biological weapons. If the challenge facing a leader is to stop a powerful aggressor *immediately*, then there is currently no substitute for nuclear weapons.

IS ESCALATION RATIONAL? POSING FOUR GRIM OPTIONS

Losing a conventional war could have catastrophic consequences for the defeated society or leaders; but how could a country, facing an overpowering foe, employ nuclear weapons to create stalemate? Wouldn't the use of nuclear weapons by a weak country against a strong one incite a devastating nuclear response, rather than a truce? For example, in a war on the Korean Peninsula, wouldn't North Korean use of nuclear weapons against the Republic of Korea, Japan, or U.S. military forces in the region trigger a devastating U.S. nuclear retaliatory strike? If so, then nuclear escalation would simply turn

²⁴ Note that even *after* a cyber strike, gauging effectiveness is challenging. After years of self-congratulation, evidence is emerging that the most famous offensive cyber attack in history – Stuxnet – was a tactical and strategic failure, even using the most modest definition of success (i.e., temporary reduction in Iran's enrichment of uranium at the Natanz facility). According to IAEA documents, the Stuxnet attack barely reduced Iran's rate of uranium enrichment, which quickly returned to (or exceeded) pre-Stuxnet rates. We thank Jonathan Lindsay for bringing this to our attention.

²⁵ On the limits of coercion using conventional weapons, see Robert A. Pape, *Bombing to Win: Airpower in Coercion and War* (Ithaca, NY: Cornell University Press, 1996); for an insightful critique, see Karl Mueller, "Strategies of Coercion: Denial, Punishment, and the Future of Air Power," *Security Studies*, Vol. 7, No. 3 (Spring 1998): 182-228.

a conventional defeat into an even worse nuclear disaster. So, how could coercive nuclear escalation work?

Working through that hypothetical scenario – a Korean War, five years in the future -- is revealing. A conflict on the Korean Peninsula could erupt through any number of paths, but regardless of how it started, relatively early in the conflict the conventional battle would likely start to favor the U.S.-ROK alliance.²⁶ And according to statements from officials in Seoul and Washington, the alliance would quickly turn from defense to offense, and begin to move north of the DMZ. At that point, leaders in Pyongyang would face a stark choice. They could allow the conflict to continue on its course, and accept a similar fate of Qaddafi and Hussein, or they could ask themselves: what means do we have to force the United States and South Korea to immediately halt offensive operations?

Nuclear escalation could take many possible forms: Pyongyang might begin with just a statement – demanding an immediate ceasefire and threatening nuclear escalation. If North Korea has nuclear weapons married to missiles, it could launch a missile and detonate it harmlessly over the Sea of Japan. If North Korea develops missiles that are accurate enough, it could launch a nuclear strike on a U.S. military base in the region, such as Kadena Air Base on the island of Okinawa, Japan. It could even strike a Japanese or South Korean city. But the most important aspect of a coercive escalatory operation is not the *initial* strike, but the threat of what is to come. Whatever the first step, Pyongyang could then declare that the United States and ROK must cease military operations against North Korea immediately, or else North Korea will destroy half a dozen Japanese cities.²⁷

Some analysts might assume that the United States would respond at this point with a devastating nuclear counter-strike – especially if the North Korean coercive strategy

²⁶ See, for example, Anthony H. Cordesman, “The Korean Military Balance: Comparative Korean Forces and the Forces of Key Neighboring States,” Center for Strategic and International Studies, May 6, 2011; and “The Conventional Military Balance on the Korean Peninsula,” in IISS Strategic Dossier, “North Korea’s Weapons Programmes: A Net Assessment,” International Institute of Strategic Studies, January 21, 2004.

²⁷ Of course, the issuance of such a threat does not mean that North Korea could carry out that operation. U.S. and allied missile defenses would attempt to shoot down North Korean missiles, and the United States and its allies might seek to prevent a follow-up North Korean nuclear attack by launching a conventional or nuclear counterforce strike (as described below). The point here is that the issuance of a coercive nuclear threat by Pyongyang during a conventional war (perhaps in conjunction with a small nuclear strike) would not be irrational; far from “crazy”, such a strategy would mirror NATO’s Cold War plans for coercive nuclear escalation, which were also designed to create stalemate to avert a conventional military defeat.

involved an actual nuclear strike. But it is enlightening to consider carefully the options that a U.S. president would confront in such circumstances. Each of these options is grim.

What options would a U.S. president have if North Korea used nuclear weapons coercively during a conventional war? How would the United States respond, for example, to North Korean nuclear attacks on Kadena Air Base and a Japanese city that killed several thousand Americans and two or three times that many Japanese? How would a U.S. president address Pyongyang's threat to launch further strikes on Japanese cities unless the United States and the ROK accept a cease-fire and halt their military campaign? In such a scenario, four principal courses of action would be available.²⁸

Option One: Punitive Nuclear Retaliation. When many people initially confront the question – “How should the United States respond to a limited, coercive nuclear strike by North Korea on a U.S. military base?” – a common response is a more colorful version of “launch punitive nuclear retaliation.” In other words, one option would be to launch one or more nuclear attacks designed to kill the North Korean regime's leaders and destroy the remaining institutions of the North Korean state. After the retaliatory strike, South Korean and U.S. forces would still march toward Pyongyang as soon as conditions allowed. The purpose of this response would be to send a clear message to the world – nuclear escalation will beget a horrifying response.

The disadvantages of this approach are substantial. First, and most obviously, the United States would be committing mass murder. Hundreds of thousands of North Korean civilians would be killed for acts committed by a small coterie of leaders. Second, nuclear strikes aimed at deeply buried leadership bunkers would require “ground bursts” – detonations well below any altitude that would avert fallout – and would therefore spread highly radioactive material across the region. Depending on the location of the bunkers and the season (which affects wind direction), lethal fallout would likely scatter across

²⁸ To be clear, this scenario is merely intended to illustrate how coercive escalation might work – that is, to show the logic of coercive nuclear escalation by illustrating the terrible dilemmas faced by the victim of a coercive campaign. The details in any scenario are not predictable, and are not central to this analysis. The point here is that coercive escalation has a compelling logic, as NATO, Pakistan, and others have discovered.

South Korea, and possibly Japan or China.²⁹ Finally, a punitive strike would not solve the major dilemma at hand: North Korean nuclear forces would presumably already have been dispersed and *could still carry out* their retaliatory nuclear strikes against Japan. The visceral “bomb them back to the stone age” response is problematic on many dimensions.

Option Two: Conventional Military Response. A second option would be to condemn the nuclear strike, send aid to the people of Okinawa, and accelerate the conventional offensive toward Pyongyang to end the war and capture the North Korean leadership as rapidly as possible. The advantage of this approach is that it reinforces the core of U.S. nuclear policy: by not giving in to coercion, and by not responding in kind, the U.S. response would demonstrate that nuclear weapons are both horrible and useless. The subsequent trials of surviving senior North Korean leaders would demonstrate to the leaders of other weak states that nuclear escalation is not a viable way to escape the calamity of military defeat.

The disadvantages of this strategy are enormous. First, the strategy would accept the risk that North Korea would carry out its threat and launch nuclear strikes against a half-dozen Japanese cities. There is substantial risk that some (perhaps many) of those missiles would leak through missile defenses. Second, and relatedly, this course of action would presumably be implemented over the strenuous objections of Japan’s government. The consequence would likely be the end of the U.S.-Japan alliance. More broadly, if the United States ignores the pleas of a critical ally, and the consequences were the destruction of several of that ally’s cities (in a war in which the ally played no direct role), many U.S. allies around Asia and the rest of the world may rethink their tight military ties to the United States.

Option Three: Counterforce: Disarm, then Defeat. The third option would be to respond to the nuclear attack with a major military strike against known and suspected North Korean nuclear targets to prevent North Korea from launching additional weapons. A counterforce strike could be conducted with conventional weapons, nuclear weapons, or a mixture of the

²⁹ We conducted fallout analysis of various hypothetical U.S. ground burst strikes against North Korea, using a U.S. Defense Department computer model called HPAC, and depending on the target location and season, the radioactive fallout from U.S. strikes might kill more *South Korean* civilians than North Koreans.

two, with respective implications for the promptness of destroying the intended targets and the likelihood of destroying them all. This option, like the others, would rely on imperfect missile defenses to help with any North Korean weapons surviving a U.S. strike. And, as with the first two options, a rapid conventional advance on Pyongyang to conquer the regime and seize any surviving leaders would follow this strategy. The advantage of this option is that it would avoid giving in to nuclear blackmail, and it would take direct action to protect U.S. allies as much as possible.

The disadvantages of this option, however, are substantial. First, a counterforce attack would not be a small operation. It would likely require prompt attacks on scores of targets across North Korea in order to rapidly destroy suspected nuclear storage sites, military command and control, mobile missile garrisons, and tunnel entrances which may be associated with North Korea's nuclear weapons or missile launchers. The nuclear component of the attack might involve several dozen – or more – U.S. weapons. Second, depending upon the details of the U.S. operation, and the location of North Korean targets, the U.S. strikes could kill a large number of North Koreans. (This would probably be the case even if U.S. strikes did not generate regional radioactive fallout, as in the counter-leadership – or punitive – option described above).³⁰ A third disadvantage is that a counterforce strike would probably not destroy every North Korean nuclear weapon; some weapons might survive and be used against U.S. allies. This option, therefore, like the first two, accepts a high likelihood of one or more allied cities being destroyed, along with subsequent damage to the U.S. global alliance network and grand strategy. This option becomes more perilous the closer that North Korea moves toward deploying long-range ballistic missiles that can target U.S. cities, as well as regional allies.³¹

³⁰ It is critical to note that strikes on tunnel entrances and other hardened facilities may not require ground bursts, and appear to be possible without creating significant fallout. Unlike a “punitive” strike designed to kill the leadership (option 1) the nuclear missions in option 3 do not need to destroy deeply buried facilities – but could merely destroy the near-surface elements of those facilities (using air bursts) to disable the weapons or prevent them from being used until teams could seize the sites. Declassified documents reveal that the United States has been planning low-fallout, low-casualty nuclear options for decades.

³¹ Before leaving office, former Secretary of Defense Robert Gates endorsed U.S. intelligence estimates that North Korea was (in 2011) within five years of being able to strike the continental United States with a long-range missile. The December 2012 partial success of a test of a North Korean satellite launch vehicle reflects a big leap forward for Pyongyang, and may have been fueled by increased Iranian technical assistance (Iran's satellite launch program has been far more successful than North Korea's). On the December 2012 North Korean missile launch, see Choe Sang-Hum and David E. Sanger, “North Koreans Launch Rocket in Defiant

Option Four: Ceasefire: Prevent Further Escalation. The argument in favor of accepting a ceasefire is that there is nothing on the Korean Peninsula that is worth fighting a major nuclear war. A nuclear exchange between the United States and North Korea would likely kill large numbers of Koreans (especially if North Korean nuclear sites were near populated areas), and could lead to substantial retaliation against U.S. regional allies. If Japan or other allies in the region were subsequently struck, it might be the end of the U.S. alliance network in East Asia, as well as undermine U.S. nuclear umbrella commitments to dozens of other countries. Advocates of a ceasefire could argue that the North Korean regime would be further isolated by its conduct – for example, China would feel immense pressure to cut off any assistance for Pyongyang after such events – and suggest that the regime would thus soon collapse. Most important, one could argue that the potentially huge political and strategic implications of buckling to nuclear coercion could be mitigated. For example, before accepting the “ceasefire” option, the United States might levy a symbolic U.S. nuclear response (e.g., responding to a North Korean strike on Kadena Air Base with a nuclear response against one or more North Korean military facilities) before halting military operations.³² A globally respected international figure could also be encouraged to make a public plea – on behalf of all humanity – that both sides cease military actions immediately.³³

The downsides of accepting a ceasefire are also very significant. Accepting a negotiated settlement after suffering a nuclear strike (or after receiving an explicit nuclear threat) might be very costly politically – both for the United States and personally for the American president. U.S. leaders would worry about the precedent it set, in which a weak state coerced the ceasefire it needed by threatening or attacking the United States with nuclear weapons. Such a strategy could trigger a new wave of proliferation – not only by

Act,” *New York Times*, December 1, 2012. On Iranian assistance for the North Korean missile program, see John S. Park, “The Leap in North Korea’s Ballistic Missile Program: The Iran Factor,” *NBR Analysis Brief*, December 19, 2012; and Jeffrey Lewis, “Iranians in North Korea?” *ArmsControlWonk.com*, December 5, 2012.

³² To be clear, the U.S. nuclear response in this option would not be designed to kill the North Korean leadership or disarm its nuclear forces (options 1 and 3, respectively). The goal would simply be to provide political cover for the ceasefire.

³³ The United States employed a similar strategy – as a backup plan in case the blockade failed – during the Cuban missile crisis. The White House established a contingency plan to secretly ask the UN General Secretary to intervene and urge both sides to reach a compromise.

adversaries, but also by allies that lose faith in the U.S. nuclear umbrella. And while symbolic escalation and subterfuge might make the “deal” politically palatable in the short term, when the dust settled it would become apparent that coercive escalation had worked.

None of the response options discussed above are attractive. The reflexive course of action in the wake of a nuclear attack on an ally – a devastating nuclear retaliatory strike – is not grounded in a careful assessment of the costs and benefits of that response. A U.S. president might select that option, but nothing about such a decision is preordained. Others believe that the United States would select the counter-force option; once an enemy has used nuclear weapons, a U.S. president would have no alternative to destroying as many of those weapons as possible. (It is noteworthy that current proposals regarding the future of the U.S. nuclear arsenal make the nuclear force less well suited for a counterforce strike.)

All the response options in this scenario are grim, but options three and four would likely dominate the first two. Marching to Pyongyang and simply absorbing additional attacks on Japanese cities – praying that missile defense will work flawlessly – (i.e., option two) seems unviable, as does a punitive counterstrike not specifically focused on disarming the North Korean nuclear arsenal (option one). The wrenching decision for a U.S. president would be whether to order a nuclear counterforce strike to disarm the enemy (option three), or whether to accept a ceasefire with some attempt at saving face (option four). The key factor pushing a U.S. leader toward option three or option four is the likely effectiveness of a counterforce strike. If a president believed that a counterforce strike would leave the enemy with zero – or perhaps a couple – deliverable nuclear weapons, and if he or she believed that it was possible to execute such an attack without killing large numbers of noncombatants (particularly allied civilians), he or she might lean in that direction. On the other hand, if the president believed that a counterforce strike would still permit the adversary to destroy many allied cities – or U.S. cities – he or she might prefer a face-saving symbolic strike followed by a ceasefire.

One can only speculate about what a U.S. president might do under these circumstances. But what should be clear from this illustrative scenario is that an adversary’s coercive nuclear strategy might work: it might induce the stronger state – whomever that might be – to opt for a ceasefire (option four). Why would North Korea – or

Pakistan, China, or (in the future) Iran – believe nuclear coercion might create stalemate? For that matter, why did NATO stake its survival on the belief that it could induce stalemate in the midst of conventional war with the Soviet Union? The answer is clear: if weak states can deploy enough nuclear weapons, or deploy them in a fashion that makes them very difficult to destroy, strong states would likely have few palatable reactions to a coercive nuclear escalatory campaign. In other words, coercive escalation by weak states should be acknowledged as a rational strategy, especially if weaker actors (like Pakistan and, in the past, NATO and Israel) build a force that is sufficiently invulnerable to a disarming, counterforce strike. In short, relatively weak states will face powerful incentives to use nuclear weapons against the strong during a conventional war in order to induce stalemate.

EVIDENCE OF COERCIVE NUCLEAR DOCTRINES

Nuclear weapons have the capacity to be the ultimate tools of stalemate. If weak nuclear-armed states feel sufficiently threatened by a militarily superior foe, they could develop defense plans around the concept of coercive nuclear escalation, and create nuclear doctrines for wartime employment. This report, so far, makes the case that such steps are *logical*. But do countries actually follow this cold-blooded logic?

To explore whether weak states actually employ this logic, we first identify below the conditions under which states would be most likely to build defense plans around doctrines of coercive nuclear escalation. Second, we sort nuclear-armed countries according to those conditions. Finally, we determine whether those states that (according to our argument) should have adopted coercive nuclear doctrines have actually done so.

Two factors should have a powerful effect on whether nuclear-armed states develop coercive nuclear doctrines. First, countries are more likely to view nuclear weapons in this manner if they expect to lose conventional wars. In other words, coercive nuclear doctrines should be far more appealing to the weak than to the strong. Second, these doctrines will be more attractive to states for which the consequences of conventional military defeat are dire. When the United States loses conventional wars – e.g., in Vietnam, perhaps in Afghanistan – it may damage presidential approval, but the republic does not

fall, and leaders are not hung. For other states and leaders, defeat often brings terrible consequences. Many Israelis believe that the consequences of a military defeat to the Syrians or Egyptians would mean the end of sovereignty at best – and genocide at worst. Even countries that do not fear military conquest might worry that a humiliating conventional defeat might trigger uprisings or coups, and the overthrow of the existing regime (often including the death of the leaders themselves). If the United States dealt an overwhelming defeat to the Iranian military during a conflict over the Strait of Hormuz, it is not clear that the Islamic Republic would survive the political turmoil that could follow. Observers of China have noted that the Chinese Communist Party (CCP) no longer bases its legitimacy on communism, but rather on nationalism and evidence that the CCP has made China strong and globally respected. If during a military clash in the Pacific, the United States inflicted a crushing defeat against the Chinese air force and navy, the leaders of the CCP may reasonably question whether their government could survive the humiliation and anger from the people or military. Leaders of nuclear-armed states who fear that conventional military defeat could lead to terrible consequences for themselves or their country would be expected, if the arguments in this report are correct, to be more likely to develop coercive nuclear doctrines than those who do not share this fear.

Figure 1 illustrates our claim graphically and offers a first-cut at identifying strategically relevant dyads along these two dimensions. Each of the two variables we describe is, in reality, continuous: the expected likelihood of defeat in a conventional war could be any value between 0 and 1; and the negative consequences of defeat could range from nothing to total annihilation. But to facilitate coding – and avoid suggesting greater precision than is possible using these variables – we treat each of the variables as if it were binary, thus resulting in four categories. If our argument about coercive nuclear escalation is correct, then the countries represented in the dyads in the upper-right corner – i.e., those nuclear-armed state that expect to suffer conventional defeats over issues of grave importance – should be most likely to adopt coercive nuclear doctrines. Those in the bottom left corner should be least likely. (Because the current strategic circumstances of various NATO allies are so different from each other – with the Baltic countries facing very

different military threats than France or the United Kingdom – we have located Baltic NATO separately from the other alliance members.)³⁴

Figure 1: Which States Are Expected to Adopt Coercive Escalatory Doctrines?

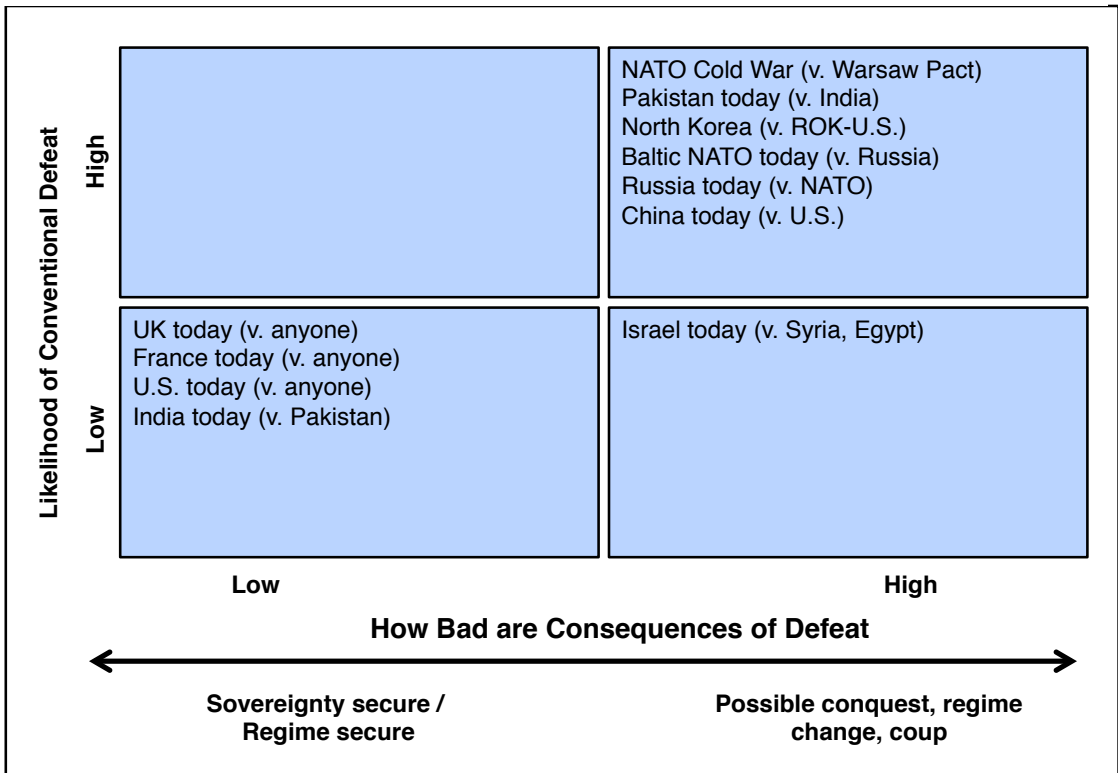
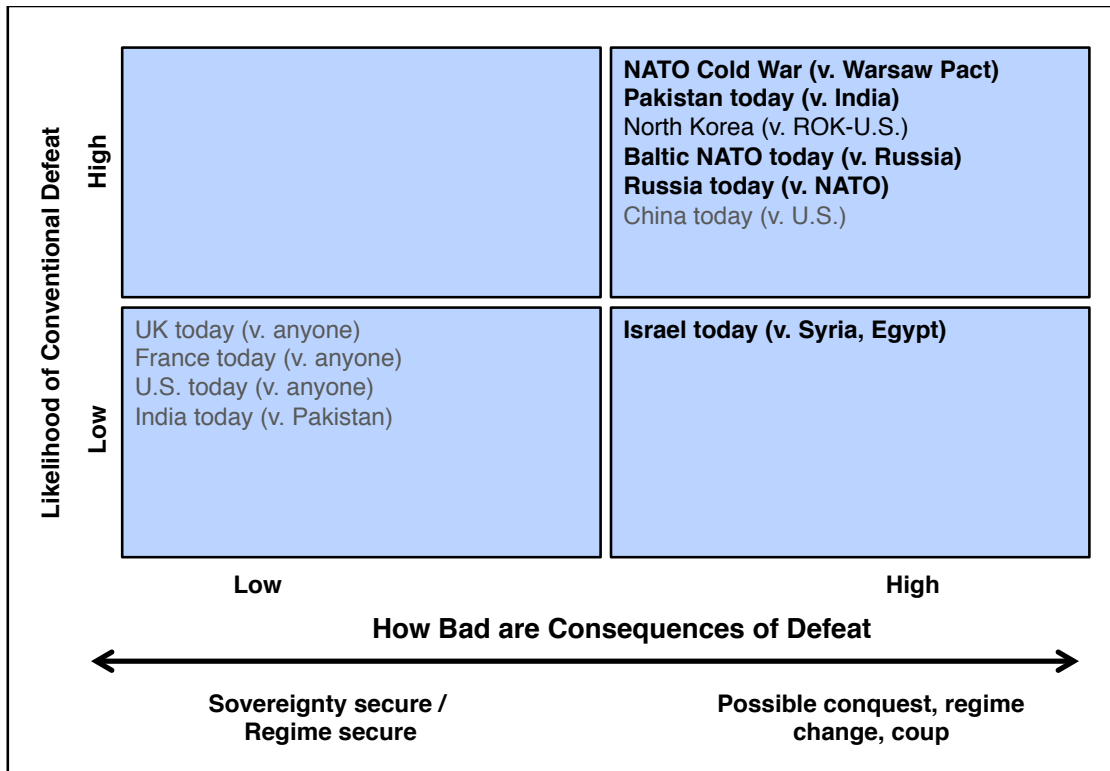


Figure 2 reproduces the first figure, but it also indicates (in bold text) which countries appear to have adopted a coercive nuclear doctrine and possess the theater or battlefield nuclear capabilities to execute it. (As described above, in the case of contemporary NATO, we separate out the Baltic states, because they are located in a different strategic quadrant from the other NATO members, and they have different preferences regarding NATO nuclear doctrine). Figure 2 also highlights (in gray text) the

³⁴ The Baltic countries are not nuclear-armed states, of course, but they are covered by NATO’s nuclear umbrella.

countries that have not articulated doctrines for the coercive use of nuclear escalation. One state – North Korea – is ambiguous about its nuclear doctrine.³⁵

Figure 2: Which States Are Expected to Adopt Coercive Escalatory Doctrines?



³⁵ Critics may object that Figures 1 and 2 should include all states – and locate them along these two dimensions – not merely the nuclear-armed countries. After all, the theory we’ve advanced predicts that any state that perceived a high chance of suffering a costly military defeat would be powerfully inclined to adopt a coercive nuclear doctrine – even if that first required acquiring nuclear weapons. We agree with this logic up to a point, but the critique goes too far. A large body of evidence suggests that proliferation decisions involve a careful balancing of security concerns with a host of factors arising from domestic politics: e.g., the interests of the military organizations (who often oppose these weapons); the interests of various parts of a country’s scientific community; commercial interests, which might fear sanctions and isolation. Even in the domain of security concerns, the logic is far from deterministic because several countries (e.g., South Korea, Taiwan, and Japan) have directly linked their non-proliferation stance to promises of military support by the United States. Acquiring nuclear weapons and adopting coercive nuclear doctrines would mitigate some security concerns for these countries and exacerbate others. In short, we are not offering a theory of proliferation here, but rather an explanation for the adoption of coercive nuclear doctrines by nuclear-armed states. By doing so, we assess the likelihood of deliberate nuclear escalation in the midst of conventional wars.

Overall, Figure 2 suggests that the nuclear-weapon states that worry most about calamitous military defeat tend to develop coercive nuclear doctrines to give them the capability to stalemate their most-threatening adversary. NATO thought this way in the Cold War; Pakistan and Russia do today; and the only members of NATO who face the real possibility of disastrous military defeat are the same ones who most strongly favor retaining NATO's forward-deployed tactical nuclear weapons (B61 bombs deployed in Europe). It is worth noting that North Korea is left un-coded, because it has not publicly articulated enough to identify an explicit nuclear doctrine, though the Pyongyang government has certainly issued statements that suggest a willingness to use nuclear weapons – or other unspecified means – to punish its enemies if it were attacked. China is the clear outlier – the country that avows a “no first use” nuclear doctrine despite its location in the upper-right corner.³⁶

Finally, it is notable that the nuclear-armed states not only sort themselves in the predicted fashion on Figure 2, but also several countries changed nuclear doctrines soon after they moved from one quadrant to another. During the Cold War, when NATO felt unable to defend itself adequately from a major conventional attack, it adopted a coercive nuclear doctrine. When the balance of power shifted – moving most NATO countries from the upper-right to the lower-left quadrants – so did the views of many alliance members about NATO's nuclear doctrine, and even about the legitimacy of the weapons they recently relied upon themselves.³⁷ Russia shifted in the opposite direction. During the Cold War, Russia supported (at least rhetorically) the position of “no first use,” but now that the military balance has shifted sharply against them Russian officials have publicly stated that

³⁶ We recently attended a conference in Washington (2012) in which several U.S. government officials with expertise on China, and who have responsibilities that include U.S.-China nuclear relations, conveyed that they believe China's “no first use” pledges should not be interpreted literally. They indicated that discussions with official Chinese delegations about these issues reinforced the impression that China's actual nuclear policy is more nuanced than “no first use,” and that China's representatives indicated that a range of non-nuclear U.S. military actions might trigger Chinese nuclear response. But, for the sake of coding consistency, we coded China as *not* having a coercive nuclear doctrine.

³⁷ In fact, some statements by current and former U.S. officials to justify the ongoing U.S. effort to delegitimize nuclear weapons and work toward global nuclear disarmament note that the United States and its allies have the world's most powerful conventional forces in the world – implicitly acknowledging that these weapons were once useful because NATO and the U.S. were “weak.” Those statements never draw attention to some darker implications: that weak states will resist efforts to deny them their needed instrument of stalemate as vigorously as NATO rejected Soviet suggestions for a mutual “no first use” pledge during the Cold War, and that efforts to delegitimize these weapons may come at the expense of U.S. allies who still feel some risk of catastrophic military defeat (i.e., Israel).

they rely upon tactical and theater nuclear weapons to balance against the superior military forces of an unspecified powerful alliance.

The overarching argument in the first half of this report is that the same escalation dynamics that existed during the Cold War exist today as well – and they are just as powerful. Nuclear deterrence is not a legacy mission, because states still face the same critical national security threats they faced during the Cold War and throughout history: namely, the leaders of weak states fear that the strong will conquer them or take steps that will lead to their downfall. The high-stakes poker game of international politics has not fundamentally changed – contrary to the claims of many observers. What has principally changed is merely who has the best cards. Those who were weak during the Cold War are now strong; and another set of militarily “weak” countries – such as North Korea, Iran, and even China and Russia – now clutch nuclear weapons to defend themselves from overwhelming military might, just as NATO once did.

The failure of analysts in the West to appreciate the continued value of nuclear weapons reflects a striking lack of strategic empathy. The first rule of good strategy is to develop an understanding of how one’s adversaries see the world, and how they might utilize their resources to achieve their goals. Analysts in the United States who claim that nuclear weapons are essentially irrelevant to the problems of the 21st Century either ignore this dictum or have forgotten what was once better understood: how helpful these weapons can be for stalemating the strong.

IDENTIFYING THE MOST DANGEROUS CONFLICTS

Weak countries have a powerful interest in using nuclear weapons during a conventional war to create a stalemate and prevent catastrophic defeat. And, as we illustrated above, they have historically adopted nuclear doctrines for exactly that purpose. But for U.S. policymakers and senior military leaders, the key question is not about the past but the future: which potential U.S. adversaries and conflicts are most prone to coercive escalation? More broadly, which of the world’s “hotspots” are prone to see conventional wars escalate and become nuclear conflicts?

Plausibility of Conquest

The logic developed throughout this report suggests three conditions that should help identify the most escalation-prone conflicts. First, leaders should be most likely to take the risks associated with nuclear escalation if the war they are waging may lead to the conquest of their country. A state's political and military leaders (and not just the top few) stand to lose power, wealth, the ability to protect their families, and in many cases their own lives – either at the hands of the conquering government or angry domestic rivals. For the conquered society, occupation can be disastrous even if the conqueror has no desire to inflict collective punishment.

The factors that make conquest of the losing state likely in some wars – and less so in others – are varied, and no simple rulebook that can be applied to every case. Nevertheless, the crucial conditions are intuitive, and include factors such as geography (the size of the weaker state's territory, and perhaps the location of key cities), population, the ethno-religious-sectarian identity of the combatants, and the military force structure of the stronger state. For example, if war erupted between China and the United States over Taiwan, there are compelling reasons for the Chinese leadership to be confident that the United States would not seek to conquer China. (“Regime change” as a military goal is distinct from conquest and is discussed below.) China's geographic size is large and its population is vast, making it virtually inconceivable that U.S. conventional military objectives in a war in the Pacific would involve conquering and occupying China. Moreover, U.S. military force structure reflects its comparative advantage in high-tech air-, naval-, and ground-operations, not the mass army approach to war that would be required of a country seeking to take over and conquer a major power. At the other extreme, although Israeli leaders are justifiably confident in the superiority of their conventional forces relative to their neighbors, those same leaders undoubtedly understand that any unexpected conventional defeat – as almost occurred in 1973 on the Golan Heights – would immediately expose Israel to conquest: its small geographic space and population give Israel little strategic depth.

For Pakistan's leaders, the case is less clear-cut. On the one hand, Pakistan is a very large country with a big population; it is roughly forty-five times as big as Israel with nearly

twenty-three times the population. Furthermore, Pakistan's leaders undoubtedly understand that their neighbor India has no desire to conquer and rule over 180 million Pakistani Muslims. On the other hand, most of Pakistan's largest cities – including Karachi, Lahore, Faisalabad, Rawalpindi, and its capital Islamabad – are within approximately 100 miles of the border with India. Pakistan's leaders might reasonably worry that a major conventional war could lead India to seize, or isolate, major Pakistani cities, to be surrendered at some future time of India's choosing – unless Pakistan can use nuclear escalatory threats to prevent this.³⁸

Vulnerability to Regime Change

A second key condition that may affect the propensity of leaders to escalate conventional wars – rather than accept defeat – is their vulnerability to coups or revolutions.³⁹ As we described above, losing power often results in terrible outcomes for a country's elite. To avoid losing power during a war, however, a country's leaders must do more than merely deter a wartime enemy from conquering them; they must also prevent the war from unleashing dynamics within their own country that trigger a coup or revolution – during or after the conflict. Countries whose governments face substantial domestic opposition will, therefore, face intense pressure to coerce an end to hostilities

³⁸ The framework we create here to investigate risks of coercive nuclear escalation is intentionally simple – to allow for easy application – but should not obscure the gradations in the factors we describe. For example, while states that are susceptible to conquest are expected to be more likely to employ coercive escalation than those who have no fear that war will lead to loss of territory, some states face the prospect of loss of key territories – short of conquest. A major Indian conventional offensive might exploit Pakistan's narrowness to cut the major lines of communication between North and South. Similarly, if China's leaders are as committed to Taiwan as their public positions imply, they may see a war that leads to Taiwan's independence as a loss which – while far less than conquest – nevertheless means the loss of valuable territory. The “conquest” factor is a useful heuristic to distinguish higher escalatory risks from lower risks, but such categories and dichotomies should be applied with care.

³⁹ The research project was framed to investigate the incentives of weak states – i.e., defined as those that expect to lose conventional wars – to use nuclear weapons to stalemate their opponents. The research was framed in that fashion because of the value of nuclear weapons as a stalemating device, because of the substantial history of states relying on nuclear weapons to compensate for conventional weakness, and because of the U.S. interest in deterring its “weak” adversaries from escalating. However, the vulnerability of leaders in some countries to coups and revolutions, either during or after wars, and the escalatory pressures that those vulnerabilities create (to coerce a rapid cessation of hostilities) should pressure both weak states and stronger ones to escalate to rapidly end a conflict that threatens their domestic power at home. In other words, there may be escalatory pathways that would lead Russia, China, or other states with domestic stability concerns to escalate a war with a weaker power.

rapidly, before regime opponents are emboldened or before too much damage is done to the regime's internal security forces.

Wars tend to undermine governing regimes in a variety of ways. In many authoritarian regimes, popular uprisings are prevented by "collective action" problems: if every regime opponent rebelled at once, they could overwhelm the regime's internal security forces, but no group wants to be the first: it would be slaughtered, and there is no guarantee that other groups or individuals would follow their lead. Oppressive governments exacerbate these collective action problems by using spies and informants to make coordination against the regime too dangerous.⁴⁰ If a government suffers a major military defeat – even one with merely "limited objectives" – the evidence of disarray among the leadership and regime security forces may embolden domestic opponents to rebel. This dynamic was triggered in the wake of the 1991 Persian Gulf War: the signs of chaos within Saddam Hussein's government, and the appearance that his regime was on its last legs, emboldened Shi'ite groups, principally from Southern Iraq, to rebel against Saddam's rule.

In addition to emboldening regime opponents, the conduct of the war might directly reduce the ability of the regime to defend itself against its opponents. If the war involves attacks on internal security forces, leaders may become unable to defend themselves against a popular uprising, or defend themselves against a military coup, or even against a coup attempt by elements of those security forces. Oppressive governments typically put their most-trusted allies in charge of leadership security forces. If those forces are being targeted and destroyed – and hence the regime's closest allies are being killed – the leadership may face intense pressure to compel a ceasefire immediately. Finally, for many governments, the greatest threat to regime survival comes from the country's own military. If a war results in the devastation of a country's military forces – and the humiliation of the military leadership – the risk of a coup surges. As a result, leaders must compel a ceasefire long before enemy forces start to advance on their capital; they must create a ceasefire before domestic opponents sense weakness, before regime security elements are too

⁴⁰ The seminal work on collective action problems is Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, Harvard University, 1965). On authoritarian regime survival strategies see Daniel L. Byman and Jennifer M. Lind, "Pyongyang's Survival Strategy: Tools of Authoritarian Control in North Korea," *International Security*, Vol. 35, no. 1 (Summer 2010): 44-74.

degraded, and before its military becomes too demoralized and angry at the political leadership.

The implication for regimes that face considerable internal opposition is clear: if a war begins to go badly, find a way to create a battlefield stalemate immediately – or face the prospects of a revolution or coup. The implication for countries that might face weak regimes in war is equally important: adopting even a “limited aims” war plan may not be sufficient to prevent escalation. Inflicting a major conventional defeat on the enemy – like the one inflicted on Iraq in 1991, and the one the United States would seek to inflict in almost any limited war – may cross the enemy’s escalatory red line.

Blinding and Disarming Military Operations

The third key factor that may make leaders more inclined to employ nuclear weapons coercively stems from the style of war waged by their opponents. If leaders are driven to escalate by fear of conquest or post-war regime change, then certain kinds of military operations are likely to exacerbate that fear. Specifically, operations that aim to blind enemy command and control, directly target political leaders and regime security elements, or degrade strategic deterrent forces will intensify adversary incentives to escalate.

Conventional war has changed dramatically over the past three decades as computers have become fully integrated into every facet of warfare. The computerization of weapons and warfare has changed nearly every aspect of combat: e.g., command, communications, reconnaissance, navigation, and the precision with which weapons can be delivered against targets. Increasingly, military forces derive combat effectiveness from their ability to integrate information from multiple sources, make effective decisions, and coordinate the actions of widely dispersed units. Thus, the battlefield payoffs from disrupting an adversary’s command and control system – i.e., severing the links between sensors and commanders and forces, and destroying command sites themselves – have become enormous. Not surprisingly, powerful states like the United States have made such operations the centerpiece of their way of war. The problem is that although this style of warfare can produce one-sided battlefield outcomes, it is also highly escalatory.

Over the past twenty years, every major U.S. military operation has begun with an intense effort to destroy the enemy's command and control. For example, the first five days of U.S. air operations in the 1991 Persian Gulf War focused on degrading the Iraqi military's central nervous system, rather than hacking off its limbs. More than a thousand airstrikes targeted Iraqi surface-to-air radars and missile systems (to allow the United States unfettered access to Iraqi airspace), command posts, electricity, communications, and organs of government control – all aimed at denying the Iraqi leadership “situational awareness” and preventing it from coordinating military forces in the field.⁴¹ Of these strikes, nearly two hundred were launched against Iraq's leadership on the first night of the air war – representing an intense effort to kill the senior members in Saddam's government.⁴² The air war against Serbia (1999) and during the Iraq War (2003) followed a similar pattern.⁴³ Even the wars against enemies with more rudimentary command and controls systems – the Taliban leaders of Afghanistan (2001) and the brief campaign against Libya (2011) – began with attacks on the leadership and their ability to command and control their defense forces.

⁴¹ Data derived from *Gulf War Air Power Survey, Vol. V*, Table 178. Here we count each strike sortie as a single “strike.” The sorties reported here refer to strikes on the categories of “C3,” “electricity,” “government control,” and “SAM,” as reported in GWAPS. The 1,002 sorties over five days represents 26% of all Coalition strike sorties in that time period; on the first day alone, 31% of the strikes on Iraq were directed against these target categories. Evidence suggests that the effort to destroy Iraqi command and control in 1991 was not nearly as effective as is often suggested, but the 1991 air war was fought with very few precision guided munitions. The 1991 air campaign charted the direction for future U.S. air wars. On the effectiveness of the 1991 air war campaign, see Daryl G. Press, “The Myth of Airpower in the Persian Gulf War and the Future of Warfare,” *International Security*, Vol. 26, No. 2 (Fall 2001), pp. 5-44; and Daryl G. Press, “Lessons from Ground Combat in the Gulf: The Impact of Training and Technology,” *International Security*, Vol. 22, No. 2 (Fall 1997), 137-146.

⁴² On the first day of the 1991 air war, there were 193 strikes against Iraqi leadership targets, in which category we include strikes on “C3” and “Government Control” targets. Data derived from *GWAPS, V5*, Table 178. There is no doubt that the purpose was to kill Saddam Hussein and other senior leaders. In an initial briefing on the air war plan, U.S. military planners illustrated the U.S. air war plan as a “bulls eye” with the words “Saddam Hussein” in the center. Concerns that this depiction might suggest that the USAF was violating restrictions against assassination led the war planners to replace the words “Saddam Hussein” on their briefing slides with the word “Leadership.”

⁴³ In the 2003 war, the military efforts against leadership sites were even more intense than in 1991. Whereas the 1991 air war lasted 43 days, whereas the high-intensity air operations in 2003 only spanned roughly 20 days – from March 19th until April 9th when Baghdad fell. In that shortened time, U.S. aircraft struck 1,799 targets with the purpose of “suppression of Iraqi regime's ability to command Iraqi forces and govern State.” Furthermore, unlike in 1991, virtually all these strikes used precision-guided munitions. “Operation Iraqi Freedom – By the Numbers,” Assessment and Analysis Division, USCENTAF, 20 April 2003, pp. 4-5.

In addition to blinding adversaries, sophisticated militaries like that of the United States have a powerful proclivity to target the most lethal weapons systems of their enemies, including weapons of mass destruction. From an operational standpoint, this makes good sense – during a war it seems logical to degrade an enemy’s most lethal weapons. However, attacks on an adversary’s WMD sites and delivery systems also inherently open the door for follow-on operations to overthrow those regimes. Stated differently, if an enemy’s weapons of mass destruction are the ultimate deterrent and guarantee of its regime survival, then efforts to destroy those weapons will pose an existential threat – forcing it to escalate to coerce an end to those attacks. Attacking an enemy’s strategic deterrent assets is, therefore, highly escalatory.

In recent wars, the United States has often sought to destroy the enemy’s strategic assets. In 1991, the U.S. air campaign included intense attacks on Iraqi WMD sites and suspected delivery systems. More than one hundred WMD-related targets were struck on the first night alone, and nearly six hundred WMD targets were attacked during the first five days of the campaign – comprising 15% of all U.S. strikes.⁴⁴ The United States prioritized potential WMD targets in the 2003 war against Iraq as well; the air war plan for Operation Iraqi Freedom identified 1,840 targets associated with delivery systems for Iraq’s (essentially nonexistent) WMD program.⁴⁵

The effective – but potentially escalatory – style of conventional warfare is likely to remain central to U.S. war plans in the coming decades, and it is unlikely to be simply shelved for conflict scenarios involving nuclear-armed enemies. For example, the overarching U.S. concept for military operations against China in the coming decades – “AirSea Battle” – calls for air and missile strikes against large numbers of radars, communications nodes, and other command and control targets across the Chinese homeland.⁴⁶

⁴⁴ Includes strikes on targets identified as “NBC” [nuclear, biological, chemical] and strikes on targets associated with SCUD missiles. The numbers here only cover the first five days of the air war and hence do not include air attacks as part of the “SCUD hunt” later in the war – which arguably were intended to suppress Iraq’s punitive conventional missile strikes on Israel and Saudi Arabia rather than destroy WMD delivery systems. The data is from *GWAPS, Vol. 5*, Table 178.

⁴⁵ This figure counts the targets in the “WD” target sets in the “Joint Integrated Prioritized Target List,” 832 of which were eventually struck. “Operation Iraqi Freedom – By the Numbers,” Assessment and Analysis Division, USCENTAF, 20 April 2003, pp. 4-5.

⁴⁶ Andrew Krepinevich, et al. *Meeting the Anti-access and Area-denial Challenge*. Washington, D.C.: Center for Strategic and Budgetary Assessments, 2003; Michael McDevitt, “The evolving maritime security environment

Furthermore, recent U.S. conventional operations and U.S. air war doctrine suggest that if war erupted in Korea, the U.S.-ROK Combined Forces Command would seek to rapidly degrade North Korean command and control and strategic weapon systems. There is a powerful logic for attacking enemy command and control – such attacks are a key element of the one-sided conventional victories that the U.S. has enjoyed for the past two decades. There is also a powerful logic for rapidly degrading those enemy weapon systems that could cause extreme damage to U.S. allies, forces, and the U.S. homeland. But waging war in this fashion – blinding and disarming the enemy, while destroying his leadership sites – places great pressure on enemy leaders to escalate to force such attacks to stop.

In sum, strong states with sophisticated militaries like the United States will almost inevitably target weaker states' command and control systems, leadership, and strategic assets at the outset of a conventional conflict. This compounds the adversary's fear of not surviving the conflict, thus making nuclear escalation as a means of forestalling defeat more likely.

Escalation Risks in Potential Conventional Conflicts

Table 1 summarizes these dangers in the context of several wars that could plausibly occur in the coming years. The column on the far right aggregates the three worrisome conditions – conquest, regime vulnerability, and the propensity of the combatants to wage conventional war by blinding and disarming the enemy – and indicates the resulting escalatory risks if conventional war were to occur. The darker shade in that far-right column indicates that all three worrisome conditions are present; the lighter shade means that one or two of the dangerous conditions would exist during a conventional war.

in East Asia: Implications for the US-Japan alliance," Honolulu, HI: CSIS Pacific Forum. May 31, 2012; Thomas P.M. Barnett, "Big-War thinking in a small-war era: The rise of the Air-Sea Battle concept," *China Security* 18 (2010). On the escalatory risks of Air Sea Battle, see Raoul Heinrichs, "America's dangerous battle plan," *The Diplomat*, August 17, 2011; Greg Jaffe, "U.S. model for a future war fans tension with China and inside Pentagon," *Washington Post*, August 1, 2012; "Air-Sea battle plan renews old hostility," *Global Times* (China), November 14, 2011. Many analysts and U.S. officials would argue that these operations are a vital necessity; without striking those targets, moving ships into the Western Pacific or flying aircraft from regional bases might be impossible.

Table 1. Nuclear Escalation Risks in Potential Conventional Wars

	NW state expected to lose?	Conquest plausible?	Regime vulnerable?	Blinding / disarming operations?	Coercive escalation risks
U.S./ROK vs. <u>N. Korea</u> (War on peninsula)	Yes	Yes	Yes	Yes	3
U.S. vs. <u>China</u> (Taiwan)	Yes	No/Yes	Yes	Yes	2.5 ⁴⁷
U.S. vs. <u>China</u> (Islands dispute)	Yes	No	Yes	Yes	2
U.S. vs. <u>Iran</u> (Strait of Hormuz)	Yes	No	Yes	Yes	2 ⁴⁸
India vs. <u>Pakistan</u> (Major war)	Yes	No/Yes	Yes	No	1.5 ⁴⁹

Note: Table depicts escalatory incentives for the country whose name is underlined.

Several of the implications from Table 1 are striking. First, although it is widely appreciated within the U.S. national security community that a major war between India and Pakistan would entail dangerous escalatory risks – a judgment we share – the logic developed in this paper and summarized in Table 1 suggests that several plausible U.S. regional wars are even more prone to escalation. The likelihood of escalation seems greatest on the Korean Peninsula: the Pyongyang government has every reason to expect that a major military defeat equals regime change, with calamitous consequences for the existing leadership. Regime change could occur as a result of intentional U.S. / ROK policy – i.e., if leaders in Washington and Seoul choose “regime change” as the war’s desired endstate. But the Pyongyang government might fall even if the U.S. and ROK pursue limited objectives: the damage inflicted on the North Korean military and security services may

⁴⁷ A war over Taiwan would not make leaders in Beijing fear “conquest” in the narrow sense of the term. However, as we discussed above, conquest should not be conceived in a strictly binary sense (i.e., conquered or not). The loss of some highly valued territory, while not as bad as complete conquest and occupation, might entail a major loss to the core interests of a state. If Chinese leaders are to be believed that they see Taiwan as an inseparable part of China, and especially if the people of China feel the same, it may be too costly to leaders in Beijing to accept defeat in a war over Taiwan, especially if the consequences might be Taiwanese independence.

⁴⁸ Iran is not believed to have nuclear weapons. This row indicates the escalatory risks in a future war in the Strait of Hormuz if Iran has subsequently acquired nuclear weapons.

⁴⁹ As described above in the text, the risk of outright conquest of Pakistan by India appears low; however, most key Pakistani cities are very close to the Indian border, so Pakistan’s leaders may reasonably fear limited territorial incursions by India that would isolate critical Pakistani population centers. This is reflected in the “No/Yes” value under the “Conquest plausible?” column.

sufficiently weaken the regime and trigger a coup or revolution. Furthermore, CFC military operations will likely seek to blind the North Korean command and control, destroy leadership sites, and perhaps degrade their strategic weapons. If war erupts on the Korean Peninsula, preventing escalation will be a very difficult challenge.

Second, a conventional conflict in maritime East Asia between the United States and China may entail far greater nuclear escalation risks than is commonly recognized. Because the conquest of China is not plausible, many analysts assume that the escalation risks in a U.S.-China clash are substantially muted. But that optimistic assumption overlooks two critical facts, which are highlighted in Table 1. Namely, China's leadership may not be able to survive the political repercussion of suffering a humiliating conventional military defeat at the hands of the United States, and that the U.S. style of conventional operations – including large numbers of strikes on the Chinese mainland to blind Chinese sensors and degrade military command and control – may exacerbate these escalatory risks.

Finally, Table 1 highlights what might be the greatest danger associated with Iran acquiring nuclear weapons. Even if Iran is deterrable – and hence does not seek nuclear war against the United States or U.S. allies – the dynamics of conventional operations in the Persian Gulf may force the hand of leaders in Tehran. Specifically, operating naval forces in the constrained waters of the Persian Gulf during a war might compel the United States to greatly degrade Iran's air defense network, surface search radars, and military command and control – and there would be powerful pressures on the United States to also degrade the systems that could deliver Iran's nuclear weapons. In the context of decades of U.S.-Iranian hostility, and repeated U.S. statements about the desirability of regime change in Tehran, the pressure on an Iranian government to coerce a rapid end to hostilities would likely be intense. Nuclear escalation – directed against U.S. facilities in the region, or the facilities or cities of U.S. regional allies – would be one of Iran's main options.⁵⁰

In sum, there is a common view within the U.S. national security community that the intentional use of nuclear weapons by a state actor against the United States is very

⁵⁰ The logic of Iranian nuclear escalation, and Tehran's escalatory options, would be directly analogous to North Korea's escalatory logic and options during a conventional war, as described above (pp. 13-26). In the Iran case, potential targets for an initial coercive escalatory strike might include a U.S. military bases (e.g., Al Udeid, or NSA Bahrain) or a city in a regional ally.

unlikely. The logic developed in this study raises profound questions about that view. Since the dawn of the nuclear age, countries and alliances that faced overwhelming conventional adversaries have relied on nuclear weapons, and planned to use them during war, to stalemate their foes. During the Cold War the United States and NATO felt conventionally overmatched and planned to escalate coercively stalemate a war in Europe; today it is North Korea, and China, and Pakistan, and Iran, who are overmatched. The challenge that the United States military faces today – devising ways to wage conventional wars and defeat U.S. enemies without forcing them to escalate – was never solved by the Soviet Union. Soviet proposals for a mutual “no first use” pledge fell on deaf ears because nuclear escalation seemed to be NATO’s only means of thwarting a conventional invasion by the Warsaw Pact. Devising concepts for winning wars without triggering adversary escalation should be a top priority for U.S. conventional war planners; fashioning a conventional and nuclear force structure that is well suited for deterring adversary wartime escalation should be a top priority for U.S. force structure planners.

COUNTERARGUMENTS

Critics might concede that conventional wars between nuclear-armed adversaries would be highly escalatory, yet counter that such wars are unlikely to occur in the first place. In fact, critics might say, the arguments that we present here about the dangers of wartime escalation are exactly the reason that these conventional wars will not occur. As Kenneth Waltz argues, nuclear weapons do not merely deter nuclear attacks; they deter conventional attacks as well. As he explains, launching a major conventional offensive against a nuclear-armed state would be foolhardy; yet, launching a limited conventional attack would be equally senseless – as the small potential gains would be trivial compared to any residual risk of escalation.⁵¹ In short, critics might argue that it is precisely because our arguments about the danger of escalation are correct that these wars will not happen.

The lack of high-intensity conventional war between two nuclear weapon states is evidence on the side of Waltz, but there is worrisome evidence, as well. First, if Waltz is right that the risk of nuclear escalation will reliably deter conventional attacks, then

⁵¹ For example, see Kenneth N. Waltz and Scott D. Sagan, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: Norton, 2003).

conventional attacks on nuclear-armed countries should not occur – yet they do. In some cases these were highly limited conventional operations, in locations whose geography limited the fighting (e.g., Kargil 1999; Falklands 1982).⁵² But on other occasions, countries have launched major conventional military operations that inflicted substantial losses on nuclear-armed adversaries, or which threatened their vital interests. In 1950 China launched a major land attack against U.S. and allied forces on the Korean Peninsula, dealing the United States a major defeat, denying the United States victory on the Korean Peninsula, and killing thousands of U.S. military personnel. Whatever calculations led China's leaders to believe they could inflict such a serious defeat on the United States without prohibitive risk of nuclear escalation surely does not resemble the line of reasoning – and the overwhelming caution – that Waltz expects to observe in states facing nuclear-armed enemies.

Further, the Syrian attack on the Golan Heights at the outset of the 1973 Yom Kippur War reflects a level of risk acceptance that does not jibe well with Waltz's arguments. On October 6, five divisions of Syrian ground forces launched a major surprise attack on Israeli defenses along the Golan Heights. The Syrian ground forces nearly broke through the Israeli line; at the worst moment for Israel, roughly a dozen tanks stood in front of the Syrian Army – and there were no additional Israeli reserves between the Golan Heights and Tel Aviv. (Some accounts of the war claim that Israel took steps during the war to prepare its nuclear arsenal in case the Syrian Army broke through.) Syria was fortunate: its attack on the Golan Heights failed. But their decision process does not match the level of caution one will require if conventional wars against nuclear-armed states are to be banished.⁵³ More recently, the apparent North Korean sinking of a South Korean warship in 2010, or the North's shelling of Yeonpyeong Island near Seoul, could have led to a substantial

⁵² The Kargil conflict in 1999 involved small units fighting to control a handful of mountain peaks in the Kashmir region. The high altitude and mountainous terrain greatly limited the scale of conventional operations. The Falklands war involved Argentina's attempt to take control of the disputed Falklands / Malvinas islands. The nature of the fighting, on the small, remote Islands in the South Atlantic, and in the sea and around them, greatly limited the scope of the fighting. Note, however, that according to Waltz's logic, neither the Argentinians nor the Pakistanis should have attacked: the risk of escalation was low, but so were the potential gains from victory.

⁵³ For a detailed account of the Syrian offensive and the desperate fighting on the Golan Heights, see Trevor N. Dupuy, *Elusive Victory: The Arab-Israeli Wars, 1947-74*.

conventional response by Seoul – triggering war.⁵⁴ Waltz's view may correctly explain Seoul's reluctance to respond to those attacks with force; but it does not explain Pyongyang's willingness to instigate violence and keep walking along the edge of war.

More broadly, the claim that the risk of catastrophe will reliably deter conventional wars seems to contradict much of history. For most of history, starting a war meant risking catastrophe. Leaders who lost surrendered not merely their crowns, but also their heads. In the era of dynastic succession, defeat often meant that one's children were killed as well – to prevent future claims to rule. Throughout history, those who led rebellions – against ancient empires, colonial powers, or even against modern occupiers – usually paid with their lives (and often died gruesomely). And the populations on whose behalf the insurgents rebelled were sometimes slaughtered, to teach others not to emulate their disloyalty. In more modern times, the Japanese who planned Pearl Harbor understood that they were attacking a country with ten times their economic power, and they understood that if the war went badly it meant catastrophe for themselves and Japan. (They were right.) But despite those risks, the Japanese attacked. Germany's leaders understood that they were risking personal and national calamity when they invaded France, and especially when they invaded the Soviet Union. But they attacked anyway. In 1980 Saddam Hussein invaded Iran, a country with three times Iraq's population – a gamble that nearly led to his overthrow and death. If it were true that leaders do not start conventional wars if the possibility of catastrophe looms, human history would be much more pacific.

To be clear, we agree with the premise underlying Waltz's argument: that conventional wars could only occur between nuclear-armed states if leaders were willing to embrace major risks. He does not think that will happen; we see that occurring throughout the pages of history. If leaders were not willing to take enormous risks, China and Syria would not have launched major ground attacks on nuclear-armed states, people would have never rebelled against empires, and few of the major wars of the modern era would have occurred.

⁵⁴ Choe Sang-Hun, "South Korea Publicly Blames the North for Ship's Sinking," *New York Times*, May 19, 2010; Sang-Hun, "South Korea Returns Fire After Shots From North," *New York Times*, August 10, 2011.

CONCLUSION

What are the implications of our analysis and findings? At the most basic level, our report suggests the need for policymakers, analysts, and scholars to reconsider the challenges of nuclear deterrence in the 21st Century and the incentives that U.S. adversaries have to *employ* nuclear weapons in the midst of a conventional conflict. Most scholars and analysts of deterrence dismiss the likelihood of intentional nuclear attack by one state on another, especially the possibility of an intentional nuclear attack by a country against the United States. Similarly, within the U.S. military, regional war planners generally treat conventional conflicts as the “base case” and relegate consideration of escalation to a war plan’s annex. But those analysts and war planners should reconsider why they assume that adversaries will keep their most powerful weapons on the sidelines, even as those adversaries suffer terrible military defeats. Historically, weak states with nuclear weapons planned to use them in an escalatory fashion to prevent military defeat – and in fact, that was NATO’s strategy throughout most of the Cold War. Even today, the strategy of stalemating nuclear escalation is a core part of Russia’s and Pakistan’s stated nuclear doctrine, and it is also probably Israel’s doctrine if that state were to suffer an unexpected military collapse. If the risk of wartime escalation is high, as we have argued here, then analysts – both inside and outside of government – need to develop richer theories of intra-war deterrence and escalation control during regional conflicts.

In addition to this call for analytical reinvigoration, our analysis makes two critical recommendations for U.S. defense planners to mitigate the coming dangers. First, we urge the reevaluation of existing regional war plans – and conventional concept of operations (CONOPS) – to assess their suitability for waging conventional war against nuclear-armed adversaries without triggering escalation. Second, this analysis suggests that as the United States considers the future size and shape of its nuclear arsenal, the challenges of intra-war deterrence and escalation control should be paramount considerations. Each of these issues is discussed briefly below.

Implications for War Plans and Conventional CONOPS

The first recommendation of this analysis is that the critical goals of escalation prevention and escalation control must be worked into the very core of U.S. regional war plans, at least

when facing nuclear-armed adversaries. This recommendation has at least two implications.

First, when creating plans against nuclear-armed adversaries, U.S. regional commands should develop both limited and decisive military options, to provide alternatives for U.S. political leaders. In many cases, limited contingency plans may already exist. However, what is essential – and perhaps lacking – is ensuring that the limited options are not merely limited in the *endstates* they seek, but that they are also limited in the *operations* they entail. In particular, limited war plans designed to prevent adversary escalation – by demonstrating that the enemy leadership will survive the war – should probably not seek to destroy the enemy’s national-level command and control, directly target senior enemy leaders, or seek to destroy adversary strategic forces. Those would all be logical operations in a war designed to achieve decisive objectives, but they are counter-productive in a limited war.

This simple observation – that military operations must be consistent with campaign objectives – may seem obvious, but ensuring this consistency given the complexity of modern military forces is a substantial challenge. In 1991, for example, the United States conducted a limited war to eject Iraqi forces from Kuwait, while leaving Saddam Hussein’s regime in power (to dissuade him from using his chemical and biological weapons, and to avoid the costs of occupation). But although the Coalition’s goals were limited, the air operation involved hundreds of strikes against Iraqi command and control and senior leadership targets. U.S. air operations in 1991 made sense from the perspective of destroying Iraqi military capabilities, but were inconsistent with the overarching objective of leaving the Iraqi regime in power – and signaling that restraint to the Iraqi leadership.⁵⁵ The essential point is that the United States requires both limited and decisive military options, and that the limited plans must be internally coherent – i.e., limited not only in their goals but also in the nature of the operations.

⁵⁵ Similar contradictions could arise in a future war on the Korean Peninsula. A limited Combined Forces Command (CFC) war plan might seek to avoid North Korean escalation by having CFC ground forces advance only a few kilometers north of the DMZ – remaining far south of Pyongyang. But if the CFC air war plan entails air strikes throughout North Korea to blind adversary command and control, target senior leaders, and degrade its strategic forces, adversary leaders may reasonably interpret these operations as part of a decisive – not limited – campaign.

The second, related, implication is the need for concepts for conventional operations (CONOPS) that can produce the favorable, one-sided conventional engagements that the United States has come to expect without degrading the adversary's national-level command and control or directly targeting enemy leadership. The new American way of war – destroying enemy command and control – is a central reason why the United States has been able to produce such favorable battlefield outcomes in past decades. Limiting U.S. attacks on adversary sensors, command sites, communications hubs, and leadership may be essential for avoiding escalation, but those restrictions would come at a cost, perhaps a steep one, in terms of U.S. battlefield effectiveness. The challenge is for U.S. military planners to develop CONOPS that will enable the United States to create one-sided conventional victories, and yet leave the enemy's senior leadership with sufficient situational awareness to see that U.S. objectives are truly limited.

To be clear, the development of limited war plans does not imply that limited war is always the best approach when confronting nuclear-armed adversaries. In some cases, wars may be triggered by events that compel U.S. leaders to pursue decisive victory, conquest, and/or regime change – even if the enemy has nuclear weapons. Furthermore, restricting U.S. conventional operations and, in particular, withholding attacks on enemy strategic weapons involves major risks. But our overarching point is simple: if the analysis in this paper is sound, then future adversaries have a powerful incentive to use nuclear coercion to stalemate U.S. conventional military power. Given that reality, the United States should develop both limited and decisive military options for wars against nuclear-armed adversaries: limited options to try to prevent adversary escalation, and decisive options for those circumstances in which escalation prevention has already failed, is deemed impossible, or is a lower priority than achieving decisive victory. Half-steps in this direction – such as contingency plans that are limited in the endstates they seek, but are not limited in the operations they entail – may pose the greatest dangers of escalation by obscuring the escalatory potential of a regional conflicts.

[Implications for U.S. Nuclear Force Structure](#)

A second major implication of this study is that proposals for the future of the U.S. nuclear arsenal should be assessed against the deterrence mission that, based on this

analysis, seems to be both “most demanding” and “most likely”: preventing and mitigating escalation during a conventional conflict.⁵⁶ Public debates about the future of the U.S. nuclear arsenal often assess the force’s adequacy solely against the missions of peacetime assurance and peacetime deterrence. But nuclear deterrence must succeed all the time – not just during peace. Nuclear deterrence must succeed even when U.S. enemies are engaged in conventional wars and fighting for their lives.

The analysis in this report of U.S. options in the face of adversary nuclear escalation – the “four grim options” discussed above (pp. 19-25) – suggests that the two primary choices for U.S. leaders (accepting a cease-fire or conducting a disarming strike) become only one option, ceasefire, unless the United States has palatable disarming strike capabilities. Stated differently, unless the United States has palatable disarming strike options, nuclear coercion against the United States during a conventional war will likely succeed, and thus deterring a coercive strike will be very difficult. Ensuring that the United States can respond effectively to nuclear coercive threats is thus the foundation of the U.S. deterrent, and the foundation of U.S. efforts to assure its allies.

A credible deterrent in the context of a conventional war should give U.S. leaders a range of retaliatory options, including the ability to respond to nuclear attacks with either conventional or nuclear strikes, to retaliate with strikes against an enemy’s nuclear forces rather than its cities, and to minimize casualties. Deterrence during conventional wars would thus be enhanced by an arsenal that included capabilities to conduct prompt and accurate strikes, using high- or low-yield weapons, against enemy nuclear forces. This is not a call for brand new nuclear capabilities: the foundation for this flexible deterrent already exists. The question, however, is whether those flexible retaliatory options will be preserved in the force as the arsenal shrinks – especially in the face of proposals to consolidate from a triad to a dyad, and to greatly reduce arsenal size.

In short, if the United States hopes to deter adversary nuclear escalation during future conventional conflicts, it needs to ensure that the threat of its own nuclear operations is credible to adversaries. If deterrence fails, and the United States must defend

⁵⁶ See, for example, Keir A. Lieber and Daryl G. Press, “The Nukes We Need: Preserving the American Deterrent,” *Foreign Affairs* (November/December 2009), pp. 39-51.

its forces and the forces and populations of regional allies, then a robust and flexible U.S. nuclear force structure would be a vital necessity.

Taking a step back, the findings from this report may be startling for most defense and international security analysts – but they should not be surprised. Historically, we know that weak countries have planned to use nuclear weapons coercively to stalemate the strong. We know that the United States and its NATO allies were resolved to do exactly this when they felt weak. We have contemporary public statements by several so-called “weak” countries that confirm that they currently view their nuclear weapons in this manner, and plan to use their weapons to stalemate powerful enemies. And we know that U.S. conventional CONOPs envision the United States fighting conventional wars by blinding our enemies and, in many cases, targeting adversary strategic weapon systems.

And yet, among many in the U.S. nuclear weapons community, the disarmament community, and more broadly across the U.S. military, it is a standard assumption that no country would dare use nuclear weapons against the United States. To the contrary, our findings suggest that the deterrence challenges ahead are far more difficult than is generally imagined, and the deterrence mission in particular requires far more attention than it has recently been given.