Conventional War and Escalation

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The most critical question about nuclear weapons in the 21st century is the simplest: will they be used again? In particular, is it sufficiently plausible that countries will deliberately strike each other with nuclear weapons to merit real concern about inter-state nuclear deterrence? Many analysts would answer those questions with a simple "no." According to an increasingly common view, states are highly unlikely to use nuclear weapons at all, extremely unlikely to use them against others who can retaliate in kind, and it's virtually implausible that they would use them against the United States – the world's preeminent military power. No other act would be as foolhardy. To an increasing degree, therefore, nuclear weapons are viewed as stale leftovers from the Cold War, and nuclear deterrence is seen as a "legacy" mission. Cold War era nuclear arsenals, strategies, war plans, alert postures, deterrence puzzles, and worst-case scenario planning appear to be relics of a bygone era.[1]

Of course, even those analysts who are confident that countries will not deliberately use nuclear weapons recognize an array of contemporary nuclear dangers. For instance, terrorists might acquire nuclear weapons or materials, or accidents may lead to unwanted detonations; or states may start inadvertent nuclear wars. But none of those dangers can be effectively mitigated through nuclear deterrence. Terrorist acquisition is terrifying precisely because terrorists are presumed to be difficult to deter.[2] Accidents cannot be prevented through deterrence.[3] And

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[1] 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.

[2] 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 Given Nuclear Weapons to Terrorists," *International Security*, Vol. 38, No. 1 (Summer 2013), pp. 80-104.

[3] A powerful arsenal might even increase the odds of adversary accidents – by driving an adversary to adopt risky deployment postures to ensure the survivability of its arsenal. For example, to ensure that the U.S. arsenal could not be destroyed by a Soviet first strike, the United States adopted potentially risky procedures such as placing nuclear-armed bombers on airborne alert, deploying submarines at sea with the capacity to independently fire their weapons,

deterrence is a poor solution to the problem of inadvertent war, which by definition does not result from deliberate decisions favoring conflict. According to this view, the nuclear dangers of the 21st Century can only be mitigated through non-proliferation, de-legitimization, and eventual abolition. Even those who acknowledge that nuclear weapons continue to play a residual deterrent role generally 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 likelihood of intentional nuclear attacks – and hence the challenges of interstate nuclear deterrence – are much greater than is commonly recognized. This article supports this claim by making four principal arguments: First, nuclear weapons are just as salient today as they were in the past. During the Cold War, nuclear weapons were valuable because one set of countries (members of the North Atlantic Treaty Organization, or NATO) lacked the conventional military power to defend themselves from the Soviet Union and its allies. Nuclear weapons allowed the "weak" side to deter the "strong" one.[4] And had war erupted, nuclear weapons would have given the weak side its best hope of fighting the strong side to a stalemate.[5]

The Cold War is over, but the underlying conditions that made nuclear weapons vital still exist today. All that has changed are the seats at the table. Many of America's potential adversaries face the same problem today that NATO once faced: how to deter and if necessary stalemate an adversary thatt possesses overwhelming conventional military power. The platitude that nuclear weapons are not well suited to the security threats of the 21st century is incorrect; for those countries 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.[6]

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and implementing tightly coupled command and control systems poised to react quickly (e.g., with missile launches) on warning of an incoming Soviet strike. All of those steps increased the chance of accidental nuclear use. For example, [Sagan on the bombers and accidents at Thule; Blair on ICBM PAL codes]. See Bruce G. Blair, *Command and Control* (Brookings, 1985); Bruce G. Blair, *The Logic of Accidental Nuclear* War (Brookings, 1993); Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton University Press, 1993).

[4] In this article, "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.

[5] 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 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.

[6] 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

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. For deterrence to work, it is insufficient that the consequences of action (e.g., using nuclear weapons) be bad; the consequences of restraint must be acceptable. 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.[7]

Third, the logic of wartime nuclear escalation is not hypothetical or based on "worst-case" guesses about how countries might wield their nuclear forces. To the contrary, it shaped the defense plans and nuclear employment doctrines of several nuclear-armed states throughout history and continues to do so today. 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.

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.

[7] 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 chapter 3 of this book. 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.

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Fourth, we argue that three aspects of modern warfare exacerbate the incentives for the weak to escalate conflicts rather than accept battlefield defeat. Specifically, the nature of conventional warfare in the information age is highly escalatory. The result is that conventional conflicts among nuclear-armed states will unleash multiple, reinforcing escalatory dynamics – fueled both by the desperation of the weak, and the military choices of the strong.

Why do so many 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.[8] 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.[9] But if analysts believe that Pakistan (the weak) would 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 make those weapons essential to the weak and vulnerable in the coming decades. 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 article has four main sections. First, it explains the logic of deliberate 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 examine the nuclear doctrines of nuclear-weapon states across four decades to determine if states actually act according to the logic developed in the preceding section. Third, we describe the aspects of modern warfare that exacerbate escalation dynamics. Fourth, we address an important counterargument and discuss some of the implications of our analysis.

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[8] 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.

[9] 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.

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Desperation of the Weak: 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)[10] – must, therefore, address a fundamental question: if war occurs, and conventional victory is impossible, what strategies might create a stalemate and avoid catastrophic defeat?

Escalation and the Fate of Enemy Leaders

Although the United States often treats defeated enemy societies well, 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.[11]

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.[12]

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[10] 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.

[11] 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.

[12] Giacomo Chiozza and H.E. Goemans, *Leaders and International Conflict* (Cambridge: Cambrudge 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

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.[13] 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 point 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.

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

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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 caluculations 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. 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.

[13] 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.

of a conflict. 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. 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. The biggest weapon in the current U.S. inventory would destroy roughly 100 times the area that the Hiroshima bomb destroyed; the smallest would destroy 10% of the area of the Hiroshima weapon.[14] Furthermore, by selecting the altitude of detonation, targeters can choose to create enormous amounts of radioactive fallout or virtually none.[15] And perhaps most importantly – from the standpoint of a weak state conducting a coercive campaign – nuclear weapons can be used either slowly or rapidly: 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.[16]

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[14] The Hiroshima bomb detonated with roughly the power of 16 kilotons of TNT. By comparison, the U.S. B83 bomb would release up to 1,200 kilotons, and the lowest yield B61 would release 0.3 kilotons. Weapons effects scale with explosive yield to the 1/3 power, so the B83 would have approximately 10 times the lethal radius as the Hiroshima bomb, while the B61 would have 30% of the Hiroshima bomb's lethal radius. Areas of destruction increase as a function of lethal radius squared, leading to the figures in the text. See 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. 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).

[15] 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.

[16] 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

Another criterion that makes nuclear weapons uniquely suitable for war-ending coercion: the utility of nuclear strikes is not nullified by first use.[17] Once a cyber weapon is used, the victim (and others) can learn from the computer code and eliminate key vulnerabilities – reducing the effectiveness of future weapons.[18] 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,[19] a weak state can use nuclear weapons coercively and still retain the ability to conduct future attacks.

Finally, the effects of nuclear weapons detonated above the fallout threshold 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 malfunctions – until the weapon is used.[20] In many cases, no one can predict how long it will take for a cyber attack

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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.

[17] 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*.

[18] 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/.

[19] 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.

[20] 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

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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.[21] 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.

The Logic of Deliberate Escalation: 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 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.[22] 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 Qadaffi 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?

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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.

[21] 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.

[22] 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.

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.[23]

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 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.[24]

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

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[23] 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.

[24] 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.

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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 South Korea, and possibly Japan or China.[25] 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 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

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[25] 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.

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).[26] 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.[27]

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.[28] 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.[29]

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[26] 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.

[27] 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 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.

[28] 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.

[29] 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.

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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 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 article, 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 article 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.

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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.)[30]

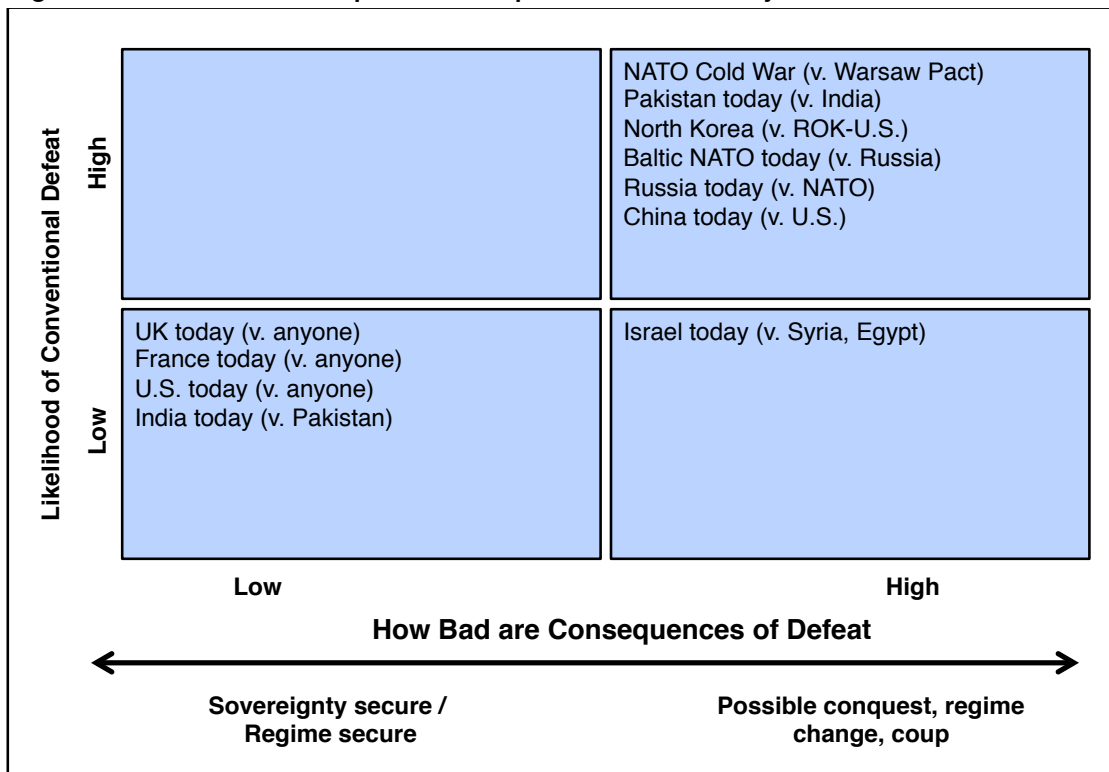**Figure 1: Which States Are Expected to Adopt Coercive Escalatory Doctrines?**

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 countries that have not articulated doctrines for the coercive

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[30] The Baltic countries are not nuclear-armed states, of course, but they are covered by NATO's nuclear umbrella.

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use of nuclear escalation. One state – North Korea – is particularly reticent about sharing information about its nuclear doctrine.[31]

Figure 2: Which States Are Expected to Adopt Coercive Escalatory Doctrines?
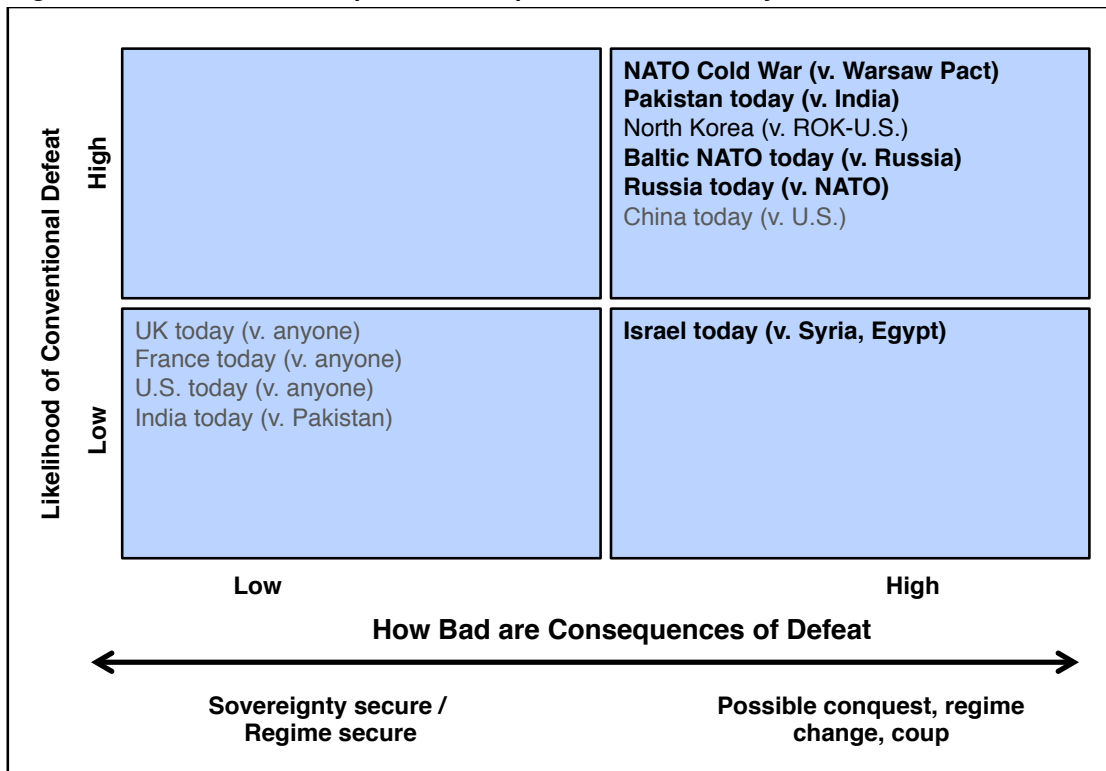
Overall, Figure 2[32] suggests that the nuclear-weapon states that worry most about calamitous military defeat tend to develop coercive nuclear doctrines to give them the capability to stalemate their most-threatening adversary. NATO thought this way in the Cold War; Pakistan and Russia do today; and the only members of NATO who face the real possibility of disastrous military

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[31] 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.

[32] [An annotated description of the nuclear doctrines of each state in Figure 2, supported by interviews of U.S. government officials, will be included separately in a forthcoming Appendix.]

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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.[33]

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.[34] 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 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 article 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

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[33] We recently attended a conference in Washington (2012) in which several U.S. government officials with expertise on China, have participated in conversations about nuclear doctrine with Chinese officials, 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.

[34] 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).

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.

Actions of the Strong: Escalation and Modern War

The principal danger of nuclear escalation stems from the desperation of the weak. But the actions of the "strong" matter, too, and may greatly exacerbate the likelihood of escalation. How can we assess those risks? What actions by the strong increase the likelihood of nuclear escalation during a conventional war? What actions would reduce those risks?

We start with a simple theoretical framework for thinking about escalation incentives. Building on the discussion above, we assume that a leader's need to escalate during a war is driven by his assessment of the likelihood of him surviving and retaining power after the conflict. If this assumptions is correct, then actions by the strong during a war which increase the risks to the enemy leaders' survival and authority would push the enemy toward escalation – not out of spite, but to force the strong to desist. Conversely, actions that increase the "weak" leaders' chance of surviving the war in power would lessen his need to escalate.

This conceptual rational-actor model – like all useful models – simplifies a complicated reality. In the real world, a jumble of factors motivates leaders, including conscious preferences and subconscious feelings (such as vanity, insecurity, anger, desire, and fear). Critics of our analysis might argue that although the premise underlying our simple model – that leaders wish to live and rule – is probably true, our simplifying assumption treats all rulers as similar, when they are not, and it reduces a stew of motivations into two simple goals: stay alive and stay in power.

These critics are right, but the model we employ is nevertheless useful because it sets a *minimum* standard for what strong countries must do if they wish to prevent escalation. Military campaigns that seek to leave an adversary leader alive and in power may still fail to prevent escalation because leaders may by driven by other overriding motivations. But a military campaign that threatens those two core objectives should be expected to trigger escalation. Stated differently, even a plan for "limited war" may trigger escalation. But a military operation *designed* to topple enemy regimes, kill enemy leaders, or by extension destroy the forces that the enemy leaders rely upon to ensure their survival – i.e., the enemy's strategic deterrent – should be expected to provoke escalation.

On the basis of this simple model, the risks that future conventional wars will escalate and trigger nuclear conflicts are startlingly high. In the section below we use a range of theories, evidence from recent conventional wars, and interviews with senior U.S. military and civilian officials to conclude that the nature of modern warfare is highly escalatory – and that the United States, and perhaps other countries, have adopted policies that exacerbate the dangers of escalation.

War in the Information Age

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. As many observers have noted, modern high-tech warfare can be devastatingly effective against conventionally armed foes.[35] What has gone unnoticed, however, is that this high-tech style of warfare is also highly escalatory.

The computerization of warfare has had three overarching effects on combat. First, military forces now derive their effectiveness, more than ever before, from their ability to function as part of a network. Sensors, data processing facilities, commanders, and shooters are often widely dispersed; increasingly, generating combat power depends on a military's ability to integrate information from multiple sources, make effective decisions, and then coordinate the actions of widely dispersed forces.[36] Second, and following directly from the first point, the payoffs from disrupting an adversary's "command and control" network have soared. For example, China's newest anti-ship missiles are fearsome weapons, capable of destroying a war ship nearly 2,000 miles away on the open ocean – but only if every link in the sensor-processing-command-shooter chain is intact.[37] Severing or even delaying these links renders the missile system useless. Third, powerful states now have an unprecedented capacity to degrade an enemy's "command and control" system: thanks to long-range precision weapons, and possibly also through unconventional means (e.g., offensive cyber attacks). It would be an exaggeration to say that warfare is now entirely about degrading enemy command and control; rather, those operations typically open the door for decisive force-on-force engagements. But the efforts to gather and utilize information, coordinate actions among many units, and deny that intelligence and coordination to others, is a bigger part of modern warfare than ever before.[38]

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[35] [Cites.]

[36] [Cites.]

[37] China's long-range anti-ship missile systems require near-real-time information on enemy ship location from some combination of satellites, drones, submarines, and long-range radars. The signals from those sensors are processed at some distant command site, where targets and their locations are assigned to individual missile launchers. Attacks on the sensors, or the command locations where the signals are processed, or on the communication links between the sensors, command, and shooters, would vastly reduce the effectiveness of the weapon system. Similarly, integrated air defenses – China's and those of other countries – are effective because they integrate information from many dispersed sensors to identify air targets and allocate them to a dispersed set of shooters. In an age in which fewer "line-of-sight" attacks are conducted, operations that can sever sensors, command, and shooters can vastly reduce the effectiveness of a modern military. On China's anti-ship ballistic missile, see [Cites].

[38] Another signature aspect of modern warfare is the increased dispersal of combat units. This is a necessity given the growing lethality of precision strikes, but it is also an opportunity stemming from the growing ability of forces to support each other from greater distance (thanks to improved communication, and the speed and accuracy of long-range strikes). These changes did not occur overnight, and they do not appear to be short-lived. The United States military has been working since the 1970s to learn how to use precision weapons most effectively on the battlefield. The advent of precision bombs allowed the U.S. Air Force to develop novel strategies for affecting the battlefield: instead of merely bombing enemy troop concentrations, fighter aircraft could use early precision weapons, plus electronic jammers, to disrupt enemy command and control. Instead of destroying a few armored vehicles, and effective air strike could disrupt an entire enemy campaign. John Boyd. OODA loop. For a description of the

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 them from coordinating their military forces in the field.[39] 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.[40] The air war against Serbia (1999) and during the Iraq War (2003) followed suit.[41] 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.

The problem is that although this style of warfare can be very effective at producing one-sided battlefield outcomes, it is also highly escalatory. If preventing escalation requires assuring enemy leaders that they will survive and remain in power after the war – if they do not escalate – then military campaigns must demonstrate that those promises will be met. In other words, these campaigns must allow leaders to see that their enemy's military objectives are limited, and that their own critical political control organizations are not being destroyed. Attacks designed to cause the enemy's command and control system to collapse, deny enemy leaders situational awareness of the battlefield, and kill the enemy leadership itself, undermine those goals. Attacks

development of these views and doctrines within the U.S. Air Force, see Lambeth, *The Evolution of American Airpower*. Others.

[39] 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* 26 (2001), pp. 5-44; and Press, "Lessons from Ground Combat in the Gulf: The Impact of Training and Technology," *International Security* 22 (1997), 137-46.

[40] 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 indicated that they illustrated the U.S. air war plan as a "bullseye" 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." Cite.

[41] In the 2003 war, the military efforts against leadership sites was 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.

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on enemy leadership, in particular, undermine escalation control. But attacks that spare these targets substantially reduce the effectiveness of conventional military forces.

The effective – but escalatory – style of conventional warfare is not going away, and is not shelved when dealing with nuclear-armed enemies. The over-arching U.S. concept for military operations against China in the coming decades, called "Air Sea Battle," calls for U.S. air and missile strikes against large numbers of radars, communications nodes, and other command and control targets across the Chinese homeland.[42] A senior U.S. Navy planner, defending the concept of Air-Sea Battle, told us, "If we fight China, we've got to do it" – meaning the U.S. military has to attack command and control sites in China. "If we don't strike those targets, we can't move ships [into the Western Pacific]. I'm not sure we can operate our air [from regional bases] either."[43]

Nor, apparently, is the U.S. planning for restrained conventional operations to prevent escalation on the Korean Peninsula. We interviewed U.S. military officers who plan operations on the Korean Peninsula, as well as officers who were recently in command positions in Korea. We asked a group of air war planners: "What types of targets would be in your plan, but were removed to avoid escalation?" Their answer: nothing. One of them explained: "We pick targets with two goals: kill red and protect blue" – that is, to destroy enemy forces and protect our own. We asked them if there was flexibility in the plan to allow the United States to avoid striking North Korean command and control, leadership, and radars – or limit U.S. air operations geographically. They were skeptical. "It's a really small airspace," said one officer. About the prospect of removing command and control and leadership targets from the war plan, one officer quipped, "That *is* the plan" – meaning that the strikes on those types of targets constitute the core of the air operation.[44] We interviewed a U.S. Air Force officer soon after he returned from a command position in Korea about the nature of the U.S. air war plan. We described to him the first few days of the U.S. air campaign in 1991 against Iraq, and the heavy focus on air defenses, command and control, and leadership, and suggested that it might mirror U.S. planning for the Korean Peninsula. "Yep, that's the plan. It's just how we fight."[45]

The Lure of Attacks on Strategic Assets

A second aspect of warfare that will exacerbate the incentives of the weak to use nuclear weapons, and inhibit efforts to control combat, is the powerful tendency among military organizations to strike the most lethal weapons systems of their enemies. If the hope for preventing escalation is based on assuring adversary leaders that they can retain power as long as

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[42] 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 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.
[43] Discussion with authors, Airlie, VA, 2011. [April 28, 2012.]
[44] Discussions at PACAF 2012.
[45] Discussion in Cambridge, MA, 2010.

they do not use weapons of mass destruction, then attacks on their WMD sites and delivery systems clearly open the door for follow-on operations to overthrow them. Stated differently, if an enemy's weapons of mass destruction are its leaders' "get out of jail free" cards, then efforts to destroy those weapons will pose an existential threat – forcing him to escalate to coerce an end to those attacks. Attacking an enemy's strategic deterrent assets is, therefore, highly escalatory. The problem is that military organizations in general, and the U.S. military as a case in point, have a powerful proclivity to target those weapons during war.[46]

The military logic for attacking an enemy's strategic assets – whatever weapons it holds in reserve as its ultimate deterrent threat[47] – is straightforward. During war, military organizations seek to destroy the enemy's military, and they logically place a high priority on neutralizing those enemy forces that threaten to inflict the greatest damage. The notion of leaving intact an enemy's most potent weapons is deeply counterintuitive for most military planners. This resistance toward restraint during combat is rooted in fundamental ideas about the nature of warfare. Carl von Clausewitz argued that warfare tends to escalate to extremes, and his views have been internalized by many Western militaries, including that of the United States.[48] Restraint has come to be seen as a recipe for defeat. If war is likely to escalate, then sparing an enemy's most lethal weapons systems is foolish. Those systems should be attacked at the very outset of a war, before they have been used, and when (in many cases) they are most vulnerable.

A second source of resistance to sparing an enemy's strategic weapons systems is a deep underlying skepticism about deterrence within military organizations. Keen observers of military organizations have often noted that militaries tend to prefer offensive to defensive operations.[49] The side on the offense gets to choose the time, location, and pace of attack, and thereby impose its war plan on the enemy. To many military thinkers, defense fights on the enemy's terms – it surrenders the initiative. Whereas offensive operations seek victory, defensive operations merely seek to avoid defeat.

But the mission that militaries abhor more than either is deterrence.[50] While defense, at least, involves preventing an adversary from inflicting damage, deterrence requires accepting a condition of perpetual vulnerability. Deterrence succeeds if the enemy *chooses* not to attack. The notion of relying upon deterrence and accepting one's vulnerability – even in the midst of a war – rather than striking and neutralizing the enemy weapons systems, is anathema to most military planners. For many of them, deterrence is perhaps an appropriate strategy for peacetime, but once the bullets start flying, military operations must be directed at victory.

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[46] Our arguments in this section parallel the analysis in Posen, *Inadvertent Escalation*. He notes that intentional conventional attacks designed to alter the nuclear balance of power are clearly escalatory – so much so that their consequences should not be considered to be "inadvertent" escalation – and are hence beyond the scope of his study. (p. 2; and the discussion in *Inadertent Escalation* in chapter 4. In this section, we focus on the escalatory consequences of conventional operations against an adversary's strategic forces, not merely to alter the balance of power but to completely disarm the adversary. As we demonstrate in the paragraphs below, what was once understood to be highly escalatory is now simply "standard practice" among U.S. conventional war planners.

[47] As discussed earlier, nuclear weapons have attributes that make them ideal for this mission: being a regime's final deterrent threat. However, non-nuclear states may rely on other weapons for this purpose, such as biological or (less usefully) chemical weapons.

[48] Carl von Clausewitz, *On War*.

[49] Snyder, SVE, Posen.

[50] Cite.

The reluctance to rely upon deterrence once shooting begins can be seen in U.S. military plans during the Cold War. Throughout the four decades of confrontation, U.S. nuclear war plans remained focused on so-called "counterforce" attacks: destroying Soviet nuclear weapons. In the 1950s, when the United States believed it could win a nuclear war, its plan for fighting the Soviet Union called for a massive nuclear disarming strike against every known Soviet nuclear target – and every "Sino-Soviet Pact" airfield that could possibly launch a bomber.[51] But even later in the Cold War, when the Soviets had achieved nuclear stalemate and the prospect of winning a nuclear war had become remote, NATO military plans still called for intense conventional attacks on Soviet nuclear forces. For example, in the 1980s, NATO's plans called for operations against the Soviet "northern flank," including operations by U.S. attack submarines to sink Soviet ballistic missile submarines at sea.[52]

In the post-Cold War world, each time the United States fights a regional war, a major element of the air campaign is 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.[53] The United States prioritized potential WMD targets in NATO operations against Serbia in 1999, and once again in 2003 against Iraq – the air war plan for Operation Iraqi Freedom identified 1,840 targets associated with the delivery systems for Iraq's (nonexistent) WMD program.[54]

This emphasis on neutralizing adversary strategic assets is undiminished today. Among the highest priorities of the U.S. Department of Defense are the development and improvement of sensors, weapons systems, and doctrines to facilitate the destruction of enemy strategic weapons. The effort to neutralize those forces spans all four services of the U.S. military, and includes every domain of warfare – including ballistic missile defenses, anti-submarine warfare programs, long loiter-time UAVs, prompt global conventional strike systems, offensive cyber operations, accurate nuclear weapons, and a broader range of efforts designed to allow the U.S. military to identify and rapidly target mobile missile launchers. The military is explicit about the purpose of these efforts: to defeat enemy WMD – because they have no confidence that wartime deterrence will hold. A U.S. Air Force officer who had recently held a command position on the Korean peninsula told us, "We plan to hit North Korean nuclear facilities from day one [of a conflict]." When we suggested that those attacks might force Pyongyang to use its weapons, he said, "But

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[51] See Chapter 4.

[52] Posen, *Inadvertent Escalation*, chapter 4; and John J. Mearsheimer, "A Strategic Misstep: The Maritime Strategy and Deterrence in Europe."

[53] 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.

[54] 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.

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we assume they're going nuclear anyway. So we might as well destroy them as quickly as possible."[55]

When we discussed escalation risks on the Korean Peninsula with a Pentagon official whose responsibilities include defense policy in that region, he suggested that the problem was not as great as we imagined, because "We'll be turning off their nuclear weapons on the first day of the war."[56] He used the words "turning off" in a deliberate fashion (i.e., rather than more typical terms, like "destroying" or "suppressing"), suggesting that the scope of U.S. counterforce efforts may be broader than we envision. More importantly, his response is another piece of evidence that defeating enemy WMD – i.e., neutralizing the weapons that guarantee the enemy's survival – is simply a matter of course in U.S. regional war plans.[57]

The presumption that the job of the military is to neutralize or destroy the enemy's most lethal weapons systems during war does not indicate some pathology within the U.S. military. Rather, it is based on a Clausewitzian understanding of the nature of warfare that is shared by many militaries around the world. Additionally, the direction of technology will make enemy strategic assets an even more alluring target in the future. Real-time target intelligence from a range of sensors, stealthy aircraft and missiles, and highly precise weapons systems (plus unconventional military means) will make targeting enemy strategic forces seem easier and more attractive.

The Limits of Control

A third major hurdle standing in the way of escalation control lies in the fundamental difficulties that civilian and military leaders face in seeking to control military operations. Preventing escalation by carefully limiting conventional operations – for example, striking certain targets but leaving others off-limits, or advancing to certain lines but not beyond – demands a level of fine-grained control over military operations that is at odds with the nature of modern warfare. To a large degree, "controlled warfare" is an oxymoron. In addition to the "fog" and "friction" that are a constant presence in warfare, senior civilian and military leaders lack the in-depth understanding of the details of military plans that is essential for ensuring that plans – even at the tactical level – are consistent with the critical goal of escalation control. Furthermore, during crises or wars, the nature of military organizations and the complexity of modern warfare make it impossible for senior civilian or military leaders to exercise fine-grained control over operations. As a result, efforts to avoid escalation by fighting in a highly restrained manner, which would signal restraint to the enemy, can be undermined by tactical decisions on the battlefield.

One major hurdle to waging controlled, limited war is that senior civilian and military leaders often lack the in-depth knowledge of war plans required to ensure that the operational details align with overarching strategic goals. Senior leaders are understandably focused on strategy;

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[55] Discussion in Cambridge, MA, 2010. Discussions in 2013 with U.S. military officers who are directly involved in Korea plans confirmed that this approach to conventional war on the Peninsula has not changed.

[56] Discussion at Pentagon, 2012.

[57] As an important caveat, we do not get the sense that this is true with respect to regional war plans against China – we have never heard anything that suggests that U.S. conventional forces would intentionally target China's nuclear forces. As discussed in the previous section, of course, the nature of U.S. conventional plans for China contingencies would be escalatory because of the intensity of the effort against command and control sites, but we have no reason to suspect that intentional strikes on Beijing's nuclear forces are part of the plan.

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lower-level commanders are appropriately focused on tactics. But there is frequently insufficient attention across those domains to ensure that tactical choices are consistent with strategic objectives.[58] To some extent, the separate domains of senior leaders and battlefield commanders are necessary. Those in leadership positions lack the time – and few civilians have the expertise – to go through war plans line by line and interrogate each tactical choice. Moreover, many experts would consider the micromanaging of war plans by senior leaders to be inappropriate, arguing that civilian leaders should leave operational details to the military, and that military leaders outside the theater should avoid second-guessing the decisions of local commanders.[59] But in wars in which a key strategic objective is preventing escalation – which is to be accomplished by restraining one's military operations (and signaling restraint to the enemy) – many battlefield decisions have strategic consequences. Unless senior leaders know what is in a war plan, they cannot determine whether tactics and strategy are coherent, or whether the trade-offs between battlefield effectiveness and escalation prevention have been made in line with their preferences.

A second major hurdle to escalation prevention is that when war erupts, finely calibrated control over military operations is impossible. Modern conventional combat is so complex, and requires the coordination of so many people, that military organizations by necessity rely on standard operating procedures (SOPs). Military doctrine establishes a right way to suppress enemy air defenses; to protect one's warships from enemy submarines; degrade an enemy's military command-and-control. When civilian authorities order the military to conduct a military mission, commanders build complex operations on top of the foundation of the SOPs. But as a result, leaders, especially civilian leaders, often do not appreciate the military implications of their orders, making control of operations far more difficult.

The Cuban missile crisis provides many of the canonical examples of standard operating procedures impeding careful civilian control of the military.[60] The White House developed a plan with two key components to defuse the crisis. First, U.S. leaders sought to buy time – by avoiding actions that would create an imminent clash between U.S. and Soviet forces, and which might therefore rapidly escalate to war. To that end, a blockade was selected as the initial U.S. reaction, rather than airstrikes on missile sites, or an or invasion of Cuba. Furthermore, the location of U.S. naval forces implementing the blockade was subsequently adjusted during the crisis to delay the interception of Cuba-bound ships. The second principle component of the White House's strategy: begin military preparations for war, which the Soviets would observe, to pressure the Soviets to back down.

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[58] In most military operations, this division of labor between leadership and battlefield commanders is appropriate. A battlefield commander's tactical decisions – e.g., how to assault a bridge, which aircraft will strike which enemy targets – would not be expected to have strategic implications for the war meriting the attention of high-level leadership. However, in a war in which a primary goal is to avoid escalation, tactical decisions about which targets to strike, where to fly, and what radars to jam, can have strategic consequences, and directly affect war outcomes.

[59] Cites on civ-mil relations. Cohen?

[60] In recent years, the history of the Cuban missile crisis has been refined, corrected, and amended based on increased availability of documents detailing key perceptions and decisions during the crisis. The new material does not contradict either the point made here about SOPs, nor the examples offered here. See for example, XXX. For an older version of these events which makes this point, see. Allison…

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The problem was that some of the policies the White House chose to implement its strategy triggered SOPs that contradicted their core objectives. As part of the naval blockade of Cuba, the U.S. Navy – following SOPs – dropped depth charges (underwater explosives) near Soviet submarines. This SOP, unknown to the White House, contradicted the goal of avoiding a clash between U.S. and Soviet forces, triggering a heated argument in which Secretary of Defense Robert McNamara demanded to know who had authorized the U.S. Navy to drop depth charges on Soviet submarines, only to be told by the Chief of Naval Operations: you did.[61] The problem was that McNamara did not know what, exactly, the President was setting in motion when he ordered the Navy to blockade Cuba. In a second incident, President Kennedy ordered the Strategic Air Command (SAC) to raise the alert level of U.S. nuclear forces during the crisis, to signal the Soviets of U.S. seriousness. Unfortunately, officials in the White House did not know that the Strategic Air Command's SOPs called for them – upon an alert – to send aircraft into Soviet airspace to gather pre-strike reconnaissance on nuclear targets.[62] Once again, efforts to wield military forces in a calibrated fashion to signal an opponent led to military actions that the leaders did not desire – and believed were counter-productive.[63]

More recent examples demonstrate the enduring nature of this problem. In the 1991 war against Iraq, the overarching U.S. objective was to conduct a limited offensive to eject Iraqi forces from Kuwait, and heavily damage the Iraqi military—but not conquer Iraq. These limited objectives were critical for two reasons: because, as US officials explained, they did not want the United States to occupy Iraq; and because they were trying to deter Iraq from using its stocks of chemical and biological weapons. The problem is that the two highest priority targets in the U.S. air campaign were, as described above, Saddam Hussein and the other most-senior Iraqi leaders, as well as Iraq's WMD and delivery systems. We may never know why Saddam Hussein did not respond by using WMD in 1991, but as an example of an effort to limit war for the purpose of preventing escalation, the U.S. air operation illustrates the grave problems ensuring that military operations are consistent with political objectives.

The problem of ensuring the integration of military operations and strategic objectives endures today. When we spoke with civilian officials in the U.S. Defense Department about war plans for the Korean peninsula, they explained that, while escalation is always a risk, steps were being taken to mitigate those dangers. Specifically, the Guidance on the Employment of Forces (GEF) – the principal directive from the Joint Chiefs of Staff that guides combatant commanders for the construction of their war plans – directs the Combined Forces Command in Korea to create plans that would achieve U.S. wartime objectives, one of which is to avoid escalation. However, when we talked to air war planners in the theater, and asked them what operations they had rejected out of escalatory concerns they said: nothing. More pointedly, when we asked military officers who oversee war planning for the Pacific whether U.S. concepts of conventional operations might pressure adversaries to escalate, they dismissed these concerns. One officer responded, "That's not our job." Another officer explained, "Our job is to win the conventional fight. If the bad guy

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[61] [NOTE: Check newest history on this. Did this really happen, or one of the many myths of Cuban Missile Crisis?]

[62] The Air Force additionally went ahead with a scheduled ICBM test at Vandenberg Air Force Base, because no one had ordered them to abstain from actions that might be misperceived as the launch of a nuclear strike.

[63] For an account of the reactions by senior Kennedy Administration officials upon learning of these unwanted provocative steps, see…[On blockade, see Kennedy Tapes; and source on McNamara CNO dispute.]

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goes nuclear, the President's got other people to call to deal with that." In other words, although the leadership has identified escalation prevention as a key goal, that objective does not appear to be guiding actual war planning.

Unfortunately, the problem in controlling military operations is neither insubordination nor incompetence – those problems would be easier to fix. The real problem is more fundamental. Military operations are so complex that they defy fine-grained control. And leaders feel it is inappropriate and impractical to pour over the tactical details of war plans and second-guess their battlefield commanders. From the perspective of trying to "win the conventional fight," a division of labor that leaves strategy to the leadership, and operational details to battlefield commanders, is sound. If, however, a critical goal of military operations is to achieve desired military objectives while exercising restraint, and thereby demonstrating one's willingness to leave the enemy alive and in power, then the impediments to carefully controlled conventional operations may fatally undermine efforts to prevent escalation.

In sum, the nuclear escalatory dangers raised by conventional war are far greater than is commonly recognized. At a fundamental level, weak states face powerful incentives to escalate against strong states. And several factors stemming from the nature of modern warfare exacerbate this danger. Strong states with sophisticated militaries like the United States will inevitably target weaker states' command and control systems and strategic assets at the outset of a conventional conflict. This compounds the weaker regime's fear of not surviving the conflict, and thus makes nuclear escalation as a means of forestalling defeat more likely. Moreover, efforts by stronger states to restrain such attacks for the purpose of controlling adversary escalation are likely to be frustrated by the inherent difficulty of calibrating military operations in wartime. In the United States, military and political leaders appear either unaware of the extent of the problem or ill equipped to address it within the normal chains of command. The efforts these leaders might try to institute to avoid provoking nuclear escalation are essentially incompatible with the modern approach to conventional operations adopted by the U.S. military, which is highly (if unintentionally) escalatory.

The Most Dangerous Conflicts

The logic developed here suggests three conditions that should help identify the most escalation-prone conflicts: (1) those in which nuclear armed states are vulnerable to conquest; (2) those in which their leadership is vulnerable to overthrow; and (3) in which nuclear armed states are likely to face an enemy waging warfare using modern (blinding and disabling) operations.

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 probably include 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, it is inconceivable that the United States would ever try to conquer China – for many reasons. For Pakistan's leaders facing a major military offensive by India, the case is less clear-cut. On the one hand, Pakistan is a large country with a big population, and 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,

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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.[64]

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.[65] To avoid losing power, 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.[66] Countries whose governments face substantial domestic opposition will, therefore, face intense pressure to coerce an end to hostilities rapidly, before regime opponents are emboldened or before too much damage is done to the regime's internal security forces.[67] Furthermore, 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 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.

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[64] 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.

[65] 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.

[66] See for example the uprisings 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.

[67] 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. 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.

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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. For the reasons we discussed above, 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. Conflicts in which one or more of the combatants have conventional doctrines that rely on such blinding attacks will be particularly prone to escalation.

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.

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[68]
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[69]
India vs. <u>Pakistan</u> (Major war)	Yes	No/Yes	Yes	No	1.5[70]

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 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.

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[68] A war over Taiwan would not make leaders in Beijing fear "conquest" in the narrow sense of the term, but it would raise the risk of the loss of highly valued territory (Taiwan). 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.

[69] 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.

[70] 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.

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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.[71]

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.[72] 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 conventional attacks on nuclear-armed countries should not occur – yet they do. In some cases these were highly limited

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[71] 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.

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

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conventional operations, in locations whose geography limited the fighting (e.g., Kargil 1999; Falklands 1982).[73] 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.[74] 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 conventional response by Seoul – triggering war.[75] 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.

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[73] 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 are 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.

[74] 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*.

[75] 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.

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.

Conclusion

What are the implications of this article? One set of implications follows from the first half of this chapter – on the incentives of the weak to escalate. Most scholars and analysts of deterrence dismiss the likelihood of intentional nuclear attack by one state on anther, and especially dismiss the possibility of an intentional nuclear attack by a country on the United States. Similarly, within the U.S. military, U.S. regional war plans treat conventional war as the "base case" and – at most – consider the consequences of nuclear escalation in annexes to the plan. But those scholars, analysts, and war planners should be pushed to explain why they believe that adversaries will keep their most powerful weapons on the sidelines, even as they suffer terrible military defeats. Historically, weak states with nuclear weapons planned to use them in an escalatory fashion to prevent military defeat. Even today, that strategy is 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 the field of political science needs to develop richer theories of escalation control in regional conflict. Furthermore, those who are planning U.S. nuclear force structure for the coming decades must re-focus on the deterrence mission, and evaluate proposed force structures against the requirements for the most demanding – *and most likely* – conditions for nuclear deterrence: preventing escalation during a conventional conflict.[76]

With respect to the second half of the chapter – on the escalatory nature of modern war and the difficulties of controlling military operations – the implications are less straightforward. The accumulated experience of U.S. military planners is that destroying the enemy's command and control is essential for producing major military advantages on the battlefield, and is the sort of one-sided military outcome that the United States has come to expect. Dropping those targets from various war plans would come at a steep cost: in terms of wartime casualties and the prospects for victory. Even worse, if war were likely to escalate in any case, leaving an adversary with its most lethal weapons would be a grave mistake. But attacking an enemy's command and control capabilities while striking its strategic deterrent weapons is virtually tantamount to forcing the enemy to escalate.

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[76] 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.

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What is clear is that these decisions – attacking or sparing enemy command and control and strategic forces – have *strategic* consequences and should be debated – and decided – at the highest levels of government. Currently these decisions are apparently being made *de facto* without substantial political oversight by conventional war planners who are simply doing their job: planning to "kill red and protect blue," in the words of one. Senior government officials may not have the flexibility to modify complex conventional war plans in the midst of a major crisis or the first days of war; they need to understand now the benefits and risks of fighting conventional war in the manner those conventional military planners prefer. And political leaders should have sufficiently rich military options available to them to allow them to tradeoff those costs and benefits exactly as they prefer

In 2011, the U.S. military ran a political-military "war-game" to explore the dynamics of a U.S.-China air- and naval-clash in the Pacific. Former senior U.S. officials played the U.S. decision makers, and U.S. military officers played the key U.S. military roles. U.S. government experts with substantial knowledge of China, its political leadership, and its military played China's leaders.

According to one account of the game, during an early move the United States conducted a set of conventional military strikes against Chinese long-range sensors and command-control targets – a reasonable move given the Air-Sea Battle plan – to help the United States win the air and naval engagements. The China team perceived the U.S. conventional strikes to be highly escalatory and elected to use nuclear weapons. But the "umpires" for the game disallowed China's move. On the next move of the game, the U.S. Pacific Command continued to execute its conventional war plan, and China again elected to use nuclear weapons. Again the umpires disallowed China's move. This apparently happened on at least three moves of the game.

Arguably the most alarming aspect of this story is not what happened during the game – i.e., that a group of China experts in the U.S. government thought that Beijing would use nuclear weapons given the nature of planned U.S. military operations. What is most alarming is that the official report describing the war game never mentioned China's repeated decisions to cross the nuclear threshold. Because the umpires ruled out the move, it never happened. Hence, what should have been the most important finding from the game – the potential link between U.S. conventional war plans and China's incentives to use nuclear weapons – was not highlighted as a central finding of the exercise. Based on our own conversations with U.S. military planners, the goal of preventing escalation is not deeply embedded in U.S. conventional war planning in the Pacific region, and probably not elsewhere either.

Taking a step back, the findings from this chapter should be startling for most defense and international security analysts. 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 planned 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. We have war games that suggest that potential U.S. adversaries – like China – would face powerful incentives to escalate if we conduct conventional operations against them as we currently plan. And we know that U.S. conventional war plans – across the Pacific and in other

theaters as well – envision the United States fighting by blinding our enemies and, in many cases, targeting adversary strategic weapon systems.

And yet, in the U.S. nuclear weapons community, the disarmament community, and among many in the U.S. military, it is a standard assumption that no country would dare use nuclear weapons against a state that can retaliate, and certainly not against the United States. To the contrary, the findings of this chapter suggest that the deterrence challenges ahead – given current U.S. foreign policy – are far more difficult than is generally imagined, and the deterrence mission in particular requires far more attention than it has recently been given.

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