

The Commitment Trap

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Why the United States Should Not Use Nuclear Threats to Deter Biological and Chemical Weapons Attacks

Should the United States threaten to use nuclear weapons in retaliation for an adversary's use of chemical or biological weapons? The U.S. government has a clear policy on this matter: it is deliberately unclear about its plans. In March 1996, Secretary of Defense William Perry explained: "For obvious reasons, we choose not to specify in detail what responses we would make to a chemical attack. However, as we stated during the Gulf War, if any country were foolish enough to use chemical weapons against the United States, the response will be 'absolutely overwhelming' and 'devastating.'"¹ The purpose of this U.S. policy—which has become known as the "calculated ambiguity" doctrine—was underscored by Secretary of Defense William Cohen in November 1998: "We think the ambiguity involved in the issue of nuclear weapons contributes to our own security, keeping any potential adversary who might use either chemical or biological [weapons] unsure of what our response would be."²

The doctrine's proponents, both inside and outside the U.S. government, claim that such a threat to respond asymmetrically—retaliating with nuclear weapons in response to a chemical or biological weapons attack—is an unfortunate necessity. They argue that, because the United States has foresworn the option of retaliating in kind, nuclear weapons threats are the only strong deterrent preventing so-called rogue nations from using their newly acquired chemical or biological arsenals.³ The calculated ambiguity doctrine, however,

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1. *Convention on Chemical Weapons* (Treaty Doc. 103–21), Hearing before the Committee on Foreign Relations, U.S. Senate, 104th Cong., 2d sess., prepared statement by William J. Perry, March 28, 1996, p. 123.

2. Quoted in Dana Priest and Walter Pincus, "U.S. Rejects 'No First Use' Atomic Policy: NATO Needs Strategic Option, Germany Told," *Washington Post*, November 24, 1998, p. A24.

3. The United States is constrained by its obligations under the Biological Weapons Convention (BWC) and the Chemical Weapons Convention (CWC) neither to possess nor to use chemical and biological weapons. The United States unilaterally destroyed its biological weapons stocks in the

is deeply controversial because the U.S. government, and the governments of other nuclear weapons states, have made commitments, most recently before the 1995 Nuclear Non-Proliferation Treaty (NPT) extension conference, that they will neither use nor threaten to use nuclear weapons against any nonnuclear member state of the NPT.⁴ Efforts to back away from such promises, critics argue, undercut these global commitments, legitimize nuclear weapons threats, and encourage nonnuclear states to develop the bomb to deter their dangerous neighbors.

The U.S. calculated ambiguity doctrine raises two crucial questions. Is the threat of U.S. nuclear retaliation credible and effective against states that possess chemical weapons (CW) and biological weapons (BW)? Are such U.S. nuclear threats harmful to global efforts to inhibit the proliferation of nuclear weapons? This article addresses these issues and argues that the current debate has virtually ignored what is arguably the most important question about U.S. nuclear weapons doctrine: will the U.S. government's calculated ambiguity policy increase or decrease the likelihood that nuclear weapons will be used in combat? I conclude that the current policy is misguided because it increases the likelihood that the United States will use nuclear weapons, in an inappropriate manner, in future military conflicts. The calculated ambiguity doctrine should therefore be replaced with a stronger commitment to respond to the use of chemical or biological weapons with prompt and devastating conventional retaliation.

I develop this argument in five parts. First, I analyze the existing debate on the subject, showing that the arguments of both supporters and opponents of the U.S. calculated ambiguity doctrine contain logical inconsistencies and inadequate evidence. Second, I present the existing evidence about the nature and effectiveness of U.S. retaliation threats against Saddam Hussein during the 1991 Gulf War and draw lessons from that experience for future crises involv-

1970s and is scheduled to complete the destruction of its existing chemical weapons and production facilities, under the rules of the CWC, no later than 2007.

4. There is only one declared exception to this U.S. government commitment. In 1995, Secretary of State Warren Christopher, on behalf of the U.S. government, stated that the United States "will not use nuclear weapons against any non-nuclear-weapons states party to the treaty on the Non-Proliferation of Nuclear Weapons except in the case of an invasion or any other attack on the United States, its territories, its armed forces, or other troops, or on a state toward which it has a security commitment carried out or sustained by such a non-nuclear-weapons state in association or alliance with a nuclear-weapon state." Department of State, statement of Secretary of State Warren Christopher, April 5, 1995. For analysis of the international legal standing of these commitments, see George Bunn, "The Legal Status of U.S. Negative Security Assurances to Non-Nuclear-Weapons States," *Nonproliferation Review*, Vol. 4, No. 3 (Spring-Summer 1997), pp. 1-17.

ing adversaries armed with chemical and biological weapons. Third, I explain why the United States cannot make its nuclear threats credible without simultaneously increasing the risk that its nuclear weapons will be used in the event of a chemical or biological attack. The central argument is that the current nuclear doctrine creates a “commitment trap”: threats to use nuclear weapons in response to a chemical or biological attack are credible, because if CW or BW are used despite such threats, the U.S. president would feel compelled to retaliate with nuclear weapons to maintain his or her international and domestic reputation for honoring commitments. The increase in the probability of U.S. nuclear retaliation is both the deterrent benefit of current doctrine and its gravest potential cost. In the fourth part of the article, I analyze how deterrence might fail, despite such threats, and discuss possible U.S. responses. This section focuses particular attention on a hidden risk: that U.S. nuclear threats increase the likelihood that other states will use chemical and biological weapons by accident, through unauthorized action, or in response to a false warning of attack.

Fifth, in the conclusion, I discuss the implications of these arguments for U.S. nuclear weapons doctrine and present an alternative declaratory policy that emphasizes the role of conventional retaliation. U.S. nuclear threats cannot enhance deterrence of chemical and biological attacks without also increasing the probability that U.S. leaders will be compelled to use nuclear weapons when they otherwise would choose not to. Historical evidence and the logic of deterrence theory thus lead to a discomfiting conclusion: the United States should not threaten to retaliate with nuclear weapons despite the possibility, and indeed *because* of the possibility, that such threats are a credible deterrent against adversaries armed with chemical or biological weapons.

The Existing Debate

The current debate—in Washington, at North Atlantic Treaty Organization meetings, and in the scholarly community—on whether the United States should threaten to use nuclear weapons in retaliation for an enemy’s use of BW or CW has been narrow in framework and exceedingly thin on empirical evidence. Two conventional wisdoms exist concerning nuclear threats and chemical or biological weapons use: the deterrence hawks’ position and the nonproliferation doves’ position. The proponents of these two schools take opposite positions on both of the key questions concerning the United States’ calculated ambiguity doctrine.

On the one hand, deterrence hawks argue that nuclear weapons threats—whether clearly articulated or presented with calculated ambiguity—are effective, indeed sometimes necessary, for deterrence in military crises with BW- and CW-armed states.⁵ Deterrence hawks also maintain that such threats are not harmful to global nuclear nonproliferation efforts, because states are seen to pursue nuclear weapons programs purely based on their regional security concerns and are therefore not influenced by U.S. nuclear doctrine.⁶ On the other hand, nonproliferation doves argue both that nuclear threats are not effective as deterrents except against another state's nuclear weapons and that such threats have had or will soon have detrimental effects on the global nonproliferation regime. Threats to use nuclear weapons in response to a CW or a BW attack are inherently incredible, the doves argue, because it is simply inconceivable that a U.S. president would order nuclear retaliation except as a response to nuclear attack against the American homeland or U.S. troops deployed overseas.⁷ Moreover, many nonproliferation doves argue that explicit threats or even hints of nuclear retaliation are unnecessary, because “existential deterrence”—the impossibility of knowing for sure that devastating retaliation would not occur—would still exert a powerful influence. U.S. nuclear threats, they argue, also encourage nuclear proliferation by legitimizing expanded roles for nuclear weapons, thereby providing an additional rationale for their acquisition by new nuclear proliferators. As George Bunn has maintained, “If the United States, having the most powerful and technologically advanced conventional forces in the world, insists that it must have nuclear weapons to

5. Prominent examples include Richard K. Betts, “The New Threat of Weapons of Mass Destruction,” *Foreign Affairs*, Vol. 77, No. 1 (January/February 1998), p. 31; Richard N. Haass, “It’s Dangerous to Disarm,” *New York Times*, December 11, 1996, p. A21; Keith B. Payne, “Post-Cold War Requirements for U.S. Nuclear Deterrence Policy,” *Comparative Strategy*, Vol. 17, No. 3 (July–September 1998), pp. 265–266; Robert G. Joseph, “Deterring Regional Proliferators,” *Washington Quarterly*, Vol. 20, No. 3 (Summer 1997), pp. 167–175; David C. Gompert, “Rethinking the Role of Nuclear Weapons,” *Strategic Forum*, No. 141 (May 1998), pp. 1–4; and Gompert, Kenneth Watman, and Dean Wilkening, “Nuclear First Use Revisited,” *Survival*, Vol. 37, No. 3 (Autumn 1995), pp. 27–44.

6. For example, Franklin Miller, the principal assistant U.S. secretary of defense, has argued that U.S. doctrine does not affect proliferant states, because “any proliferant is going to develop nuclear weapons based on their own desires to either dominate their region or respond to their neighbor’s development programs.” Quoted in Brian Hull, “Overkill Is Not Dead,” *New York Times Magazine*, March 15, 1998, p. 84. See also Gompert, Watman, and Wilkening, “Nuclear First Use Revisited,” p. 39.

7. Adam Yarmolinsky and Mark P. Schlefer, “Two Wrongs,” *Foreign Affairs*, Vol. 77, No. 3 (May/June 1998), pp. 158–159; George Bunn, “Expanding Nuclear Options: Is the U.S. Negating Its Non-Use Pledges?” *Arms Control Today*, Vol. 26, No. 4 (May/June 1996), pp. 7–10; and Bunn and Wolfgang K.H. Panofsky, “The Doctrine of the Nuclear Weapons States and the Future of Nonproliferation,” *Arms Control Today*, Vol. 24, No. 6 (July–August 1994), pp. 3–9.

retaliate against a chemical attack, what about much less powerful countries much closer to likely sources of chemical weapons? How can they be persuaded that they do not need *nuclear* weapons to counter their potential antagonist's use of chemical weapons?"⁸ These two positions are presented in Table 1.

There are, however, a number of reasons to be dissatisfied with the current state of this debate about U.S. nuclear doctrine. First, both positions contain logical inconsistencies. The hawks, for example, maintain both that specific U.S. nuclear threats—or even hints about such retaliation plans—will strongly deter potential aggressors and that U.S. nuclear threats in general will have no influence on other potential proliferants. Yet it is by no means clear how U.S. doctrine could be so influential in one setting, but not in the other. On the other side of the debate, the doves maintain both that explicit asymmetric threats are incredible, and that the mere existence of nuclear weapons—existential deterrence produced by the impossibility of knowing what a nuclear power will do if attacked—will continue to have a useful deterrent effect. It is unclear, however, how one ambiguous threat (against CW and BW) can have absolutely no credibility while the other ambiguous, even existential, threat (against nuclear weapons) has attached to it some automatic and irreducible amount of credibility.

Second, one should always be suspicious of debates in which both parties insist that their position provides the best solution to all dimensions of a complex problem. It is common for individuals and groups to avoid value trade-offs by insisting that their preferred policy is the best answer for dealing with all aspects of a problem and will not create any significant costs.⁹ Avoiding analyses of trade-offs, however, is very problematic in this case, because the available evidence suggests that both schools of thought are half-right. The logic and evidence presented below suggest that the hawks are right about the effectiveness of the asymmetric deterrence strategy; U.S. nuclear weapons can be a credible and potent threat against chemical and biological weapons use. Logic and evidence also suggest, however, that the doves are right about the negative effects on nuclear nonproliferation; the broader impact of the U.S.

8. Bunn, "Expanding Nuclear Options," p. 10 (emphasis in original). See also Thomas Graham, Jr., and Douglas B. Shaw, "Nearing a Fork in the Road: Proliferation or Nuclear Reversal?" *Nonproliferation Review*, Vol. 6, No. 1 (Fall 1998), pp. 70–76; and Hans M. Kristensen, "Nuclear Futures: Proliferation of Weapons of Mass Destruction and U.S. Nuclear Strategy" (Washington, D.C. and London: British American Security Information Council, March 1998), pp. 5–6.

9. Robert Jervis, *Perception and Misperception in International Politics* (Princeton, N.J.: Princeton University Press, 1976), pp. 128–142.

Table 1. Two Conventional Wisdoms.

	Deterrence Hawks	Nonproliferation Doves
Deterrence Effects	Nuclear threats are effective—indeed sometimes necessary—to deter chemical and biological weapons.	Nuclear threats are both ineffective and unnecessary to deter chemical and biological weapons.
Nuclear Proliferation Effects	U.S. nuclear threats do not encourage proliferation, because states proliferate in response to regional security concerns, not U.S. declaratory policy.	U.S. nuclear threats encourage proliferation by legitimizing nuclear weapons and suggesting that other states need nuclear weapons to deter chemical and biological weapons.

policy will encourage other potential proliferants to develop nuclear weapons, with similar doctrines, and the forces to support them. If both schools of thought are half-right, then it is essential to assess the trade-off between two important goals: the short-term deterrent benefits derived from nuclear threats against the long-term damage to the nuclear nonproliferation regime. This has not yet been done, and indeed the bifurcated nature of the current debate discourages serious analyses of trade-offs between these two policy objectives.

Third, even if one accepts that there is a difficult value trade-off to be made between the goal of deterring chemical and biological attacks and the goal of preventing further nuclear proliferation, inadequate evidence exists to make accurate estimates of the weight of the effect of U.S. nuclear doctrine on achieving or not achieving these two goals. Although the evidence and arguments presented below do suggest that nuclear threats can be credible deterrents against chemical and biological attacks, it is not possible to know precisely to what degree deterrence is strengthened against specific adversaries by such statements of U.S. doctrine and intent. Similarly, although studies of nuclear proliferation decisions have shown that the debates inside potential nuclear states have sometimes been influenced by U.S. nuclear policy and doctrine statements, it is not possible to predict the exact strength of such U.S. influence in each potential nuclear state.¹⁰

Finally, and most important, the existing debate has simply not focused on what should be the most important question determining future U.S. nuclear

10. See Mitchell Reis, *Bridled Ambition: Why Countries Constrain Their Nuclear Capabilities* (Washington, D.C.: Woodrow Wilson Center Press, 1995); George Perkovich, *India's Nuclear Bomb* (Berkeley: University of California Press, 1999); and Scott D. Sagan, "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security*, Vol. 21, No. 3 (Winter 1996/97), pp. 54–86.

doctrine: will the stated doctrine increase the likelihood of nuclear weapons being used, when they would not have been otherwise used, in future military conflicts? In this article, I argue that the current U.S. nuclear doctrine increases exactly this danger and that the long-term diplomatic and strategic costs of any such use of nuclear weapons by the United States would be exceedingly high.

The Gulf War: Setting the Record Straight

The term “calculated ambiguity” was coined by former Secretary of State James A. Baker, who used it to describe the Bush administration’s policy, which he believed successfully deterred Saddam Hussein from using Iraqi chemical and biological weapons during the 1991 Gulf War.¹¹ Baker is far from alone in holding this view. Leading defense policy analysts, biological weapons specialists, and scholars of the Gulf War have uncritically accepted this position.¹² This view is also widely held within the U.S. government. In 1995, for example, officers at the U.S. Strategic Command cited what they saw as successful nuclear deterrence in the Gulf War as a reason for maintaining nuclear war plans to retaliate against chemical or biological weapons threats.¹³ In November 1998, a “senior official” in the Clinton administration also justified a strong deterrent threat to “obliterate Iraq” if it attempted to use chemical or biological weapons by noting that Saddam Hussein “heeded such warnings in the 1991 Gulf War.”¹⁴

Because so much of the support for the current policy stems from this particular interpretation of the Gulf War experience, it is important to review the evidence about U.S. threats and their effects. The existing evidence does not support the widespread view that Saddam Hussein was clearly deterred from using BW and CW by U.S. nuclear threats.¹⁵ Instead, a close look at the history of U.S. threats and Iraqi responses leads to three different conclusions.

11. James A. Baker, III, with Thomas M. DeFrank, *The Politics of Diplomacy: Revolution, War, and Peace, 1989–1992* (New York: G.P. Putnam’s Sons, 1995), p. 359.

12. Daniel Byman, Kenneth Pollack, and Matthew Waxman, “Coercing Saddam Hussein: Lessons from the Past,” *Survival*, Vol. 40, No. 3 (Fall 1998), p. 132; Leonard A. Cole, *The Eleventh Plague* (New York: W.H. Freeman, 1997), p. 127; and Lawrence Freedman and Efraim Karsh, “How Kuwait Was Won: Strategy in the Gulf War,” *International Security*, Vol. 16, No. 2 (Fall 1991), p. 26, n. 72.

13. U.S. Strategic Command, “Essentials of Post-Cold War Deterrence” (1995), p. 6, originally cited in Kristensen, “Nuclear Futures,” p. 17.

14. Quoted in Steven Erlanger, “U.S. Set to Give Up Arms Inspections for Curbing Iraq,” *New York Times*, November 8, 1998, sec. 1, p. 1.

15. For examinations of the Gulf War threats, albeit with conclusions that differ from mine, see William M. Arkin, “Calculated Ambiguity: Nuclear Weapons in the Gulf War,” *Washington Quarterly*, Vol. 19, No. 4 (Autumn 1996), pp. 3–18; Avigdor Haselkorn, *The Continuing Storm: Iraq*,

First, we simply do not know what effect, if any, the U.S. nuclear threats *and* accompanying threats to overthrow the Baghdad regime had on Iraqi behavior. Second, while President George Bush was very cautious in maintaining ambiguity about possible U.S. responses to Iraqi BW or CW use, other U.S. officials were less ambiguous, going beyond the official doctrine and making stronger statements suggesting nuclear retaliation. Third, the publication of U.S. leaders' memoirs from the period, which reveal that Bush had decided not to respond to chemical or biological attacks with nuclear retaliation, creates a dilemma for future U.S. decisionmakers. If U.S. officials believe that nuclear weapons threats are necessary in a future crisis, these Gulf War revelations will encourage them to make such threats more explicit, fearing that more ambiguous statements would appear to adversaries as bluffing again with nuclear weapons.

What threats did senior U.S. officials make during Desert Storm, and what was their intent? We now know, from numerous officials' memoirs, that senior U.S. leaders had decided that they would not use nuclear weapons even in response to an Iraqi use of unconventional weapons, but that they would nevertheless cautiously plant some seeds of doubt in the mind of Saddam Hussein for the sake of deterrence. As President George Bush and National Security Adviser Brent Scowcroft note in their joint memoirs:

What if Iraq used chemical weapons? We had discussed this at our December 24 meeting at Camp David and had ruled out our own use of them, but if Iraq resorted to them, we would say our reaction would depend on circumstances and that we would hold Iraqi divisional commanders responsible and bring them to justice for war crimes. No one advanced the notion of using nuclear weapons, and the President rejected it even in retaliation for chemical and biological attacks. We deliberately avoided spoken or unspoken threats to use them on the grounds that it is bad practice to threaten something you have no intention of carrying out. Publicly, we left the matter ambiguous. There was no point in undermining the deterrence it might be offering.¹⁶

In his memoirs, James Baker similarly recalled the negative decision on potential nuclear retaliation and added an important point about an additional deterrent threat:

Poisonous Weapons, and Deterrence (New Haven, Conn.: Yale University Press, 1999), pp. 51–85; and Barry R. Posen, "U.S. Security Policy in a Nuclear-Armed World, or: What If Iraq Had Had Nuclear Weapons?" *Security Studies*, Vol. 6, No. 3 (Spring 1997), pp. 1–31.

16. George Bush and Brent Scowcroft, *A World Transformed* (New York: Knopf, 1998), p. 463. See also Colin L. Powell with Joseph Perisco, *My American Journey: An Autobiography* (New York: Random House, 1995), p. 486.

The President had decided, at Camp David in December, that the best deterrent to the use of weapons of mass destruction by Iraq would be a threat to go after the Ba'ath regime itself. He had also decided that U.S. forces would not retaliate with chemical or nuclear weapons if the Iraqis attacked with chemical munitions. There was obviously no reason to inform the Iraqis of this.¹⁷

A January 9, 1991, letter from George Bush to Saddam Hussein activated this strategy:

The United States will not tolerate the use of chemical or biological weapons or the destruction of Kuwait's oil fields and installations. Further, you will be held directly responsible for terrorist actions against any member of the coalition. The American people would demand the strongest possible response. You and your country will pay a terrible price if you order unconscionable actions of this sort.¹⁸

Baker later recalled that, at his meeting with Iraq's then foreign minister and current deputy prime minister Tariq Aziz, he "deliberately left the impression that the use of chemical or biological agents by Iraq could invite tactical nuclear retaliation."¹⁹ What is notable in the record of this meeting, however, was the clarity of the nonnuclear elements of the U.S. threat, especially contrasted against Baker's reluctance to even mention the words "nuclear weapons":

If the conflict starts, God forbid, and chemical or biological weapons are used against our forces, the American people would demand vengeance. We have the means to exact it. With regard to this part of my presentation, this is not a threat, it is a promise. If there is any use of weapons like that, our objective won't be only the liberation of Kuwait, but also the elimination of the current Iraqi regime, and anyone responsible for using those weapons would be held accountable.²⁰

It proved difficult, however, for all U.S. officials to toe the line on ambiguity, with some senior leaders making more direct threats. For example, during the Desert Shield phase of the conflict, Gen. H. Norman Schwarzkopf secretly proposed to the Joint Chiefs of Staff that the United States send "a demarche to Baghdad" stating that "if you use chemicals, we're going to use nuclear

17. Baker, *The Politics of Diplomacy*, p. 359.

18. *Weekly Compilation of Presidential Documents*, published by the Office of the Federal Register, National Archives and Records Administration, Washington, D.C., January 12, 1991, Vol. 21, No. 3, p. 44.

19. Baker, *The Politics of Diplomacy*, p. 359.

20. *Ibid.* This statement conforms closely to the Iraqi minutes of the Baker-Aziz conversation as published in Foreign Broadcast Information Service—Near East and South Asia Daily Reports (hereafter FBIS-NES) 92-009, January 14, 1991, p. 27.

weapons on you.”²¹ Despite the Bush administration’s decision not to make such direct threats, however, Schwarzkopf attempted to plant fear in Saddam Hussein’s mind about U.S. nuclear responses, stating at a January 30 press conference that “if Saddam Hussein chooses to use weapons of mass destruction, then the rules of this campaign will probably change—and I think that’s as it should be.”²² Lt. Gen. Walter Boomer (the U.S. Marine Corps commander in theater) also responded to a reporter’s question about possible U.S. responses to an Iraqi chemical attack by asserting that “it’s going to be something worse, something terrible,” although he later admitted that he “just made that up.”²³ Finally, although Secretary of Defense Richard Cheney was careful to remain highly ambiguous in all his statements of U.S. intent, he nevertheless underscored the possibility of nuclear retaliation by Israel: “I assume he [Saddam Hussein] knows that if he were to resort to chemical weapons that that would be an escalation to weapons of mass destruction, and that the possibility would then exist, certainly, with respect to the Israelis, for example, that they might retaliate with unconventional weapons as well.”²⁴

President Bush, however, despite calls from some U.S. politicians and former military officers for him to make explicit nuclear threats against Iraq, maintained his position on the need to keep nuclear threats highly ambiguous.²⁵ Thus, when asked at his February 5 news conference about responses to a potential chemical attack, Bush replied that “I think it’s better to never say what option you may be considering or may or may not do.” Instead, he simply stated that “he [Saddam Hussein] ought to think very carefully about doing that [using chemical weapons]—very, very carefully. And I will leave that to a very fuzzy interpretation.”²⁶

21. Quoted in Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (Boston: Houghton Mifflin, 1993), p. 86.

22. CENTCOM (Central Command) transcript, news briefing by Gen. H. Norman Schwarzkopf, Riyadh, Saudi Arabia, January 30, 1991. Vice President Dan Quayle erred in the opposite direction, telling the press on February 1, 1991, that “I just can’t imagine President Bush making the decision to use chemical or nuclear weapons under any circumstances.” Quayle quickly returned to the chosen policy: “But you never rule options—any options—out.” White House transcript, Vice President Dan Quayle on CNN “Newsmaker Saturday,” February 2, 1991, cited in Arkin, “Calculated Ambiguity,” p. 6.

23. Quoted in Molly Moore, *A Woman at War* (New York: Scribner’s, 1993), p. 318, originally cited in Posen, “U.S. Security in a Nuclear-Armed World,” p. 19, n. 33.

24. Transcript, CNN’s *Evans and Novak*, February 2, 1991.

25. See “Quote Unquote,” *Independent* (London), January 5, 1991, p. 12; and “Former Generals Urge Bush to Threaten Iraq with Nuclear Strike,” Reuters, January 9, 1991.

26. *Public Papers of the Presidents of the United States, George Bush*, 1991, Bk. 1, January 1–June 30, 1991 (Washington, D.C.: U.S. Government Printing Office [U.S. GPO], 1992), p. 109.

What were the effects of such ambiguous U.S. nuclear threats? According to senior Iraqi sources, the U.S. statements were critical to Saddam Hussein's decision not to use chemical or biological weapons during the war. Gen. Wafiq al-Samarrai, the head of Iraqi Military Intelligence, later claimed that Saddam was convinced that the United States would retaliate with nuclear weapons if the Iraqis used CW or BW:

We told him (Saddam) very clearly that should he use chemical weapons they [the Americans] will use their nuclear weapons. I do not think Saddam was capable of taking a decision to use chemical weapons or biological weapons, or any other type of weapons against the allied troops, because the warning was quite severe and quite effective. The allied troops were certain to use nuclear arms and the price will be too high and too dear.²⁷

When evidence gathered by United Nations Special Commission (UNSCOM) inspectors in 1995 forced senior Iraqi officials, including Tariq Aziz, to acknowledge that Iraq had developed biological warheads to fit on Scud missiles during the Gulf War, these officials also stated that the reason such weapons were not used was the U.S. nuclear threat. According to Rolf Ekeus, then the UNSCOM director: "Iraqi officials claimed they decided not to use the weapons after receiving a strong but ambiguously worded warning from the Bush administration on January 9, 1991, that any use of unconventional warfare would provoke a devastating response."²⁸

There are, however, three important reasons to be suspicious about these Iraqi reports about Saddam Hussein being deterred by U.S. nuclear threats. First, as Ekeus has noted, when these statements were made, it was in Saddam Hussein's strategic interest to portray himself as the victim of Western nuclear threats; such a portrayal might engender international public sympathy, especially in the Arab world, and encourage support from those governments opposed to U.S. policy toward Iraq.²⁹ Second, it may have been in Saddam Hussein's domestic political interest to maintain that U.S. nuclear threats, rather than the more direct U.S. commitment to remove him from office, deterred him from using chemical or biological weapons. As one unidentified Arab diplomat has noted, "The regime had to explain to its military command-

27. *Frontline* interview with General Wafiq al-Samarrai (henceforth cited as al-Samarrai interview) at www2.pbs.org/wgbh/pages/frontline/gulf/oral/samarrai/1.html and www2.pbs.org/wgbh/pages/frontline/gulf/oral/samarrai/3.html.

28. R. Jeffrey Smith, "U.N. Says Iraqis Prepared Germ Weapons in Gulf War," *Washington Post*, August 26, 1995, p. A01. See also *Frontline* interview with Tariq Aziz, Iraqi foreign minister, at www2.pbs.org/wgbh/pages/frontline/gulf/oral/aziz/3.html.

29. See Arkin, "Calculated Ambiguity," p. 9.

ers why it was pulling back from the brink, so it looked a lot better to say that it was sparing the Iraqi people from nuclear holocaust than to admit that the leaders were worried about their own skins.³⁰ Third, it is crucial to remember that the January 9, 1991, Bush letter, to which the Iraqis referred, did not threaten a devastating response only in retaliation to Iraqi use of chemical or biological weapons; Bush also listed Iraqi support for terrorist activities or the destruction of the Kuwaiti oil fields as actions that would cause the U.S. public to “demand the strongest possible response.” Although Iraq did not use chemical or biological weapons during the war, Saddam Hussein did order terrorist attacks against U.S. targets, and Iraqi special forces did set fires throughout the Kuwaiti oil fields.³¹ It is therefore by no means self-evident that U.S. deterrent threats were effective in January 1991, because two of the three actions that Bush said the United States would “not tolerate” were actually taken by Iraq during the last days of the Gulf War.

In short, the evidence is inconclusive about the effects of U.S. nuclear threats in the 1991 Gulf War.³² Ambiguous threats produced ambiguous results. The commonly held view that nuclear deterrence worked in the Gulf War should therefore be tempered by an acknowledgment of that central uncertainty. In addition, two other lessons may be equally important. First, despite the pressures of war and statements of lower-level U.S. officials suggesting that nuclear weapons would be used in response to Iraqi CW or BW use, President Bush stuck to the policy of making only highly ambiguous threats, refusing to make stronger commitments. Second, it may be more difficult for future American leaders to limit the character of U.S. nuclear threats. Because key Bush administration officials have acknowledged that they were *not* planning to order the use of nuclear weapons if Iraq used chemical or biological weapons, future U.S. leaders, if they continue to rely on nuclear weapons for such purposes, will have an extra incentive to make their nuclear threats more explicit to avoid the impression of following the Bush administration’s policy of making a nuclear “bluff” for the sake of deterrence.

30. Joseph Fitchett, “Nuclear States See Vindication: Threat of Annihilation Deterred Iraq, They Say,” *International Herald Tribune*, September 12, 1995.

31. On Iraqi support for terrorist attacks, see al-Samarrai interview; Andrew W. Terrill, “Saddam’s Failed Counterstrike: Terrorism and the Gulf War,” *Studies in Conflict and Terrorism*, Vol. 16, No. 3 (July–September 1993), pp. 151–171; and Hearings, United States Senate Committee on the Judiciary, Terrorism and America: A Comprehensive Review of the Threat, Policy, and Law, 103d Cong., sess. 1, April 21–22, 1993, p. 32. On the Kuwaiti oil field fires, see T.M. Hawley, *Against the Fires of Hell: The Environmental Disaster of the Gulf War* (New York: Harcourt Brace Jovanovich, 1992).

32. For an analysis of the effects of Israeli nuclear deterrence threats on Saddam Hussein, see Shai Feldman, “Israeli Deterrence and the Gulf War,” in J. Alpher, ed., *War in the Gulf: Implications for Israel* (Jerusalem: Jerusalem Post Press, 1992), pp. 184–208.

Deterrence Theory and the Commitment Trap

Because there is so little firm historical evidence on which to judge whether and how nuclear threats can deter chemical or biological attacks, it is especially important to review the logic of deterrence theory concerning this issue. It is often said that uncertainty of response is necessary for deterrence to work. But this is not true. What is necessary is for a potential attacker to estimate that the probable costs of retaliation are unacceptably high. Deterrence is a product of capability and credibility: deterrence will succeed if the expected costs of punishment multiplied by the estimated probability that the deterrent threat will be implemented exceeds the expected gains from the aggression.

When U.S. leaders say that they might use nuclear weapons in retaliation to a chemical or biological attack, how does this influence the subjective estimate by an adversary that the United States will actually use its nuclear arsenal? This is a crucial, but rarely analyzed, question. Table 2 presents the factors that can logically influence an adversary's calculations about the credibility of threats. The most important observation about this list is that the strength of most of these factors can and should be estimated in advance: in other words, their impact on the probability of a state retaliating in a certain way is independent from any declarations made during a crisis by state leaders about their intent. The physical *capability* of the state to respond can be known ahead of time. The strength of the first four components of *credibility*—the perceived interests at stake, the costs of counter-retaliation, the state leaders' general reputation, and the legitimacy of the response—should be estimated ahead of time as well. The logic behind this observation is that in any bargaining situation, leaders have incentives to misrepresent their intent to increase the pressure on the adversary to back down, and both actors know this. For example, threats about possible nuclear use could be deliberately designed to alter an adversary's perception of one's own interests at stake or military effectiveness estimates, but the strategy is an obvious one and therefore such signals could easily be dismissed as calculated deceptions. In short, a state leader's hints that he or she might order the use of nuclear weapons should not influence other leaders' perceptions of the first state's general reputation, vital interests, views on legitimate action, or estimated military reprisal costs, because such threats are transparent signals, not reliable indicators of intent.³³

33. For a discussion of the difference between signals and indices, see Robert Jervis, *The Logic of Images* (Princeton, N.J.: Princeton University Press, 1970), pp. 18–40.

Table 2. Components of Credibility.

1. Perceived interests at stake. Are they considered vital or not by U.S. leaders?
2. The estimated military costs of counter-retaliation. If the United States follows through on its nuclear threat, what could happen in response in a counter-retaliatory strike?
3. General reputation. Is the leader's general reputation one of being strong or weak, tough-minded or vacillating?
4. Legitimacy. What is the international legitimacy of the action? Would carrying out a threat create significant international opprobrium?
5. The reputation costs of not following through on threats. What are the perceived costs to the president's domestic reputation, or the United States' international reputation, if the president does not follow through on threats if deterrence fails?

Logically, it is the table's fifth factor, and only the fifth factor, that should be significantly changed when a U.S. leader makes an explicit or ambiguous nuclear threat. Such threats increase the capability to deter precisely because they increase the likelihood that the leader will feel compelled—for both reasons of his or her domestic political interests and the state's international reputation—to follow through on retaliatory threats if the action to be deterred occurs despite the threat.³⁴ In short, a president's deterrent threat does not just *reflect* a commitment to retaliate; it *creates* a commitment.

This commitment factor is both the strength and the danger of U.S. nuclear threats. An adversary's fear that the U.S. president would have sufficient incentives to follow through on such threats is what makes them credible; but unless one assumes that deterrence will be successful in all cases, the threat also increases the likelihood that the United States will use nuclear weapons in scenarios in which it otherwise would not have done so. Risk and deterrence go hand-in-hand as a consequence of commitment: a state cannot get the extra measure of deterrence that comes from making threats without also accepting some extra risk of having to implement that threat if deterrence fails. U.S. nuclear threats thus both decrease the likelihood that CW and BW will be used and increase the likelihood that U.S. nuclear weapons will be used if deterrence fails.

34. For analyses of how commitments influence domestic and international reputations in different contexts, see James D. Fearon, "Domestic Political Audiences and the Escalation of International Disputes," *American Political Science Review*, Vol. 88, No. 3 (September 1994), pp. 577–592; Thomas C. Schelling, *Arms and Influence* (New Haven, Conn.: Yale University Press, 1966), pp. 43–50; and Robert Jervis, "Domino Beliefs and Strategic Behavior," in Jervis and Jack Snyder, eds., *Dominoes and Bandwagons: Strategic Beliefs and Great Power Competition in the Eurasian Rimland* (New York: Oxford University Press, 1991), pp. 20–50.

CUBA AND THE COMMITMENT TRAP IN ACTION

We do not have examples of nuclear weapons being used after 1945 with which to evaluate how often this commitment trap phenomenon occurs or whether it really could produce nuclear retaliation. In more general terms, however, concerns about commitment and reputation have been crucial factors influencing U.S. presidents' decisions to intervene militarily in past crises when U.S. deterrent commitments have been challenged. Scholars examining crisis behavior, for example, disagree about the wisdom of statesmen placing so much importance on reputation; but they agree that empirically U.S. and other leaders do precisely that.³⁵ Once U.S. presidents have made commitments, their personal reputation and that of the nation are believed to be at stake.

The October 1962 Cuban missile crisis provides the strongest example of a president believing that he was compelled by previous threats to implement dangerous actions that he otherwise wanted to avoid. The threats of reaction that President John F. Kennedy made prior to discovering the existence of the missiles in Cuba were quite ambiguous; nevertheless, Kennedy felt that they were seen *by others* as reflecting a commitment and thus had to be treated as such. Kennedy made two specific public statements on the subject in September 1962. On September 4, he warned that "the gravest issues would arise" if "offensive ground-to-ground missiles" were placed in Cuba; and in a September 13 press conference, he stated that "if Cuba should possess a capability to carry out offensive actions against the United States . . . the United States would act."³⁶

Once the Soviet missiles in Cuba were discovered in October, however, Kennedy quickly concluded that his public statements had effectively tied his hands, virtually forcing some kind of serious U.S. military response:

Last month I said we weren't going to [allow it]. Last month I should have said that we don't care. But when we said we're not going to, and then they go ahead and do it, and then we do nothing, then I would think that our risks increase.³⁷

35. See Jonathan Mercer, *Reputation and International Politics* (Ithaca, N.Y.: Cornell University Press, 1996); and Daryl G. Press, "The Roots of Credibility: How Decision Makers Assess Their Adversaries' Credibility during Crises," Ph.D. dissertation, Massachusetts Institute of Technology, forthcoming.

36. Quoted in McGeorge Bundy, *Danger and Survival: Choices about the Bomb in the First Fifty Years* (New York: Random House, 1988), p. 393.

37. Ernest May and Philip Zelikow, *The Kennedy Tapes: Inside the White House during the Cuban Missile Crisis* (Cambridge, Mass.: Harvard University Press, 1997), p. 92. On October 18, in the Executive Committee of the National Security Council (ExCom), Secretary of State Dean Rusk echoed this argument: "On September 4 you said: There is no evidence . . . of the presence of

On October 19, President Kennedy and Gen. Maxwell Taylor spelled out the implications of this logic:

Taylor: I think we'd all be unanimous in saying that our strength in Berlin, our strength anyplace in the world, is the credibility of our response under certain conditions. And if we don't respond here in Cuba, we think the credibility is sacrificed.

President Kennedy: That's right. That's right. So that's why we've got to respond.³⁸

Key decisionmakers thus apparently believed that the United States "had" to respond, because President Kennedy had made a deterrent threat that had not been successful. The argument was presented plainly in Kennedy's October 22 speech announcing the naval quarantine of Cuba: the Soviet placement of missiles in Cuba was "in defiance of American and hemispheric policy . . . [and] a deliberately provocative and unjustified change in the status quo which cannot be accepted by this country if our courage and our commitments are ever to be trusted again by either friend or foe."³⁹ The speech that Kennedy did not give (but which had been drafted), announcing the U.S. attack on Cuba, was even more blunt. If this option had been chosen, Kennedy planned to announce that "this morning I reluctantly ordered the armed forces to attack and destroy the nuclear buildup in Cuba," an attack that was "necessary both to remove the immediate offensive threat to the Americas and to make crystal clear to the Soviet Union that the United States means what it says."⁴⁰

It is disturbing to note that despite his belief that previous deterrent threats had committed the United States to actions that might otherwise be undesirable, President Kennedy nevertheless made another risk-prone threat in his October 22 speech announcing the quarantine. In that speech, Kennedy declared that "it shall be the policy of this nation to regard any nuclear missile launched from Cuba against any nation in the Western Hemisphere as an attack by the Soviet Union against the United States, *requiring a full retaliatory response upon the Soviet Union.*"⁴¹ This threat may have reduced the likelihood

offensive ground-to-ground missiles. Were it to be otherwise the greatest issues would arise. Now that statement was not made lightly at the time. And it was intended as a clear warning to the Soviet Union that these were matters that we will take with the utmost seriousness. I think also that we have to think of the effect on the Soviets if we were to do nothing. Now suppose that they were to consider this a major backdown, then this would free their hands for almost any kind of intervention that they might want to try in other parts of the world." *Ibid.*, p. 127.

38. *Ibid.*, p. 177.

39. *Ibid.*, p. 278.

40. Synopsis of president's speech (n.d.), Theodore Sorensen Papers, John F. Kennedy Library.

41. May and Zelikow, *The Kennedy Tapes*, p. 279.

that Nikita Khrushchev would order the launch of a single missile from Cuba, but it also increased the pressure the U.S. president would feel to respond with a full SIOP (single integrated operational plan) retaliation if a deliberate or accidental missile strike from Cuba, or a false warning of a strike, occurred anyway.⁴²

In short, the most serious nuclear crisis of the Cold War was precipitated by a commitment trap problem. Moreover, President Kennedy made another dangerous retaliatory commitment, for the sake of deterrence, in his October 22 speech. The commitment trap appears to be easy to recognize in retrospect, but difficult to anticipate and avoid in advance of crises. Indeed, with respect to military intervention in regional crises, U.S. leaders have often believed that they must respond to deterrent failures because they fear that other U.S. commitments would otherwise appear less credible.⁴³ This kind of problem is likely to be a critical issue in future U.S. conflicts against adversaries armed with chemical and biological weapons.

THE CLINTON ADMINISTRATION AND THE SLIPPERY SLOPE TOWARD COMMITMENT

A central reason why Clinton administration officials have tried to keep U.S. nuclear threats ambiguous in peacetime is to escape this commitment conundrum. The calculated ambiguity doctrine is designed to provide some “wigggle room” and minimize the risk of precommitment to nuclear responses. There are, however, serious logical and practical problems with this gambit. The logical problem, as I have suggested, is that the United States cannot have it both ways: the credibility of any nuclear threat is dependent upon the degree to which foreign leaders believe that the president would feel compelled to follow through on such threats if his or her “bluff” were called. Nuclear threats may usefully remind adversaries of the destructive power of U.S. nuclear *capabilities*; but their effects on the estimated *credibility* of the deterrent cannot be divorced from the estimated probability that the threat will be implemented if necessary. The practical problem with the effort to practice calculated ambiguity is that the U.S. government has not proven capable of acting with the discipline necessary to avoid statements that serve to commit the United States to retaliate with nuclear weapons after deterrence failures. This point is best seen in a review of the evolution of the Clinton administration’s policy on

42. For examples of such dangers, see Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, N.J.: Princeton University Press, 1993), pp. 117–155.

43. See Mercer, *Reputation and International Politics*, pp. 2–5, for many examples of concerns about credibility and reputation influencing U.S. military intervention decisions.

detering the use of chemical and biological weapons. The apparent object of the changes in declaratory policy and war plans guidance was to maintain some ambiguity about potential nuclear retaliation. Some Clinton administration officials' statements, however, crossed the line that separates ambiguity and commitment.

During the 1995 NPT extension conference, as noted earlier, the United States explicitly recommitted itself not to use nuclear weapons against nonnuclear states party to the NPT, except in circumstances in which they were part of an attack in conjunction with a nuclear power. Soon after these "negative security assurances" were made, however, U.S. intelligence agencies and the Department of Defense became increasingly concerned about the chemical and biological weapons programs in potential adversaries such as Iraq, Iran, North Korea, and Libya and raised questions within the bureaucracy about whether these U.S. assurances had been wise. The resulting bureaucratic battles produced incidents that demonstrate how difficult it is for the U.S. government to maintain the ambiguity desired in this official nuclear policy. The first incidents were the result of U.S. intelligence reports in early 1996 that Libya was constructing an underground facility, near Tarhunah, that was suspected to house a large chemical weapons plant. Secretary of Defense Perry stated in early March that the United States would not permit such a facility to be built and then tried to carefully follow earlier precedents when, during Senate hearings on the Chemical Weapons Convention, he issued his warning that "if any country were foolish enough to use chemical weapons against the United States, the response will be 'absolutely overwhelming' and 'devastating.'"⁴⁴ Perry, however, also apparently misspoke during the hearings. His written statement, prepared for the record, correctly stated the Pentagon's position that "we do not need *chemical weapons* to provide an effective deterrent or to deliver an effective response to CW," but in his verbal testimony, he stated that *conventional* responses were also not necessary, thereby implying that the United States would rely only on nuclear weapons to retaliate after chemical attacks.

How will we deal with the risk that a nonparty or violator might use chemical weapons against us? Fundamentally, we believe that the ability to retaliate *with conventional weapons* is no longer a necessary element in countering chemical

44. *Convention on Chemical Weapons* (Treaty Doc. 103-21), Hearing before the Committee on Foreign Relations, U.S. Senate, 104th Cong., 2d sess., prepared statement by William J. Perry, March 28, 1996, p. 124.

weapons. And this is because we have an effect[ive] range of capabilities to protect against, to deter, or to retaliate against the use of chemical weapons.⁴⁵

The furor produced by Perry's statements was compounded a month later, when Harold Smith (the special assistant to the secretary for nuclear, chemical, and biological programs), apparently acting on his own authority, stated that the new B-61 nuclear bomb was needed to destroy the Tarhunah facility: "We could not take it out of commission using strictly conventional weapons. If we wanted to destroy [Tarhunah], the B-61 will be the nuclear weapon of choice."⁴⁶ Smith's statement, assigning a specific weapon to a specific target and hinting at a preventive attack, not just retaliation, produced so much negative reaction that Pentagon spokesmen were forced to move to the opposite extreme, explicitly stating that "there is no consideration of using nuclear weapons" against the plant.⁴⁷ Thus, ironically, what began as an effort to encourage ambiguity about possible U.S. nuclear responses ended with a public denial of such considerations.

Concerns about the future of U.S. nuclear doctrine also produced a bureaucratic battle in early 1996 about whether the United States should sign the protocols to the Treaty of Pelindaba, which created an African Nuclear-Weapon-Free Zone (ANWFZ). The Pelindaba treaty protocols, like those of other nuclear weapons-free zone agreements, require signatories to pledge not to use or threaten to use nuclear weapons against any member state of the ANWFZ. U.S. State Department officials wanted to sign the protocols without reservation; Defense Department officials wanted to reserve the right to threaten or use nuclear weapons against Libya. In the end, after a decision at the highest levels, U.S. officials signed the protocols "without any reservations," but then issued a unilateral interpretation that the protocol "will not limit options available to the United States in response to an attack by an ANWFZ party using weapons of mass destruction."⁴⁸ This interpretation was justified under the legal doctrine of "belligerent reprisal," according to which if a state violates an international agreement another may retaliate by violating

45. *Ibid.*, p. 124 and p. 121 (emphasis added).

46. Robert Burns, "U.S. Said to Have No Non-Nuclear Way to Destroy Suspect Libyan Plant," Associated Press, April 23, 1996; and Art Pine, "Only A-Bomb Could Destroy Libya Plant, Scientist Says," *Los Angeles Times*, April 24, 1996, p. A7. For reactions to Perry's testimony, see Spurgeon M. Keeny, Jr., "Nuclear Policy in Disarray," *Arms Control Today*, Vol. 26, No. 3 (April 1996), p. 2; and Carole Giacomo, "Controversy Rages over Perry Nuclear Comments," Reuters, May 3, 1996.

47. Charles Aldinger, "U.S. Rules Out Nuclear Attack on Libya Plant," *Washington Post*, May 8, 1996, p. A32.

48. Press briefing by Robert Bell, Office of the White House Press Secretary, April 11, 1996.

a different agreement, provided that the second violation is both proportionate to the first and necessary to stop the unlawful activity.⁴⁹ The belligerent reprisal doctrine was also used to justify changes in the U.S. nuclear war plan guidance, issued in December 1997, which ordered military planners to target nonnuclear states that are suspected to have chemical or biological weapons.⁵⁰

Although the 1997 nuclear targeting guidance and the 1996 ANWFZ decisions were consistent with the United States' policy of calculated ambiguity, subsequent statements by senior officials were more direct in threatening nuclear retaliation. The most dramatic example was the March 1998 declaration by the commander in chief of the U.S. Strategic Command, Gen. Eugene Habiger, to a group of reporters: "We now have a policy that's articulated that says nuclear weapons will be used in response to rogue states using weapons of mass destruction."⁵¹ A senior Clinton administration official then told reporters during the February 1998 crisis over Iraq's expulsion of UNSCOM inspectors that "it is U.S. policy to target nuclear weapons if there is any use of weapons of mass destruction," one of a series of statements that prompted a protest from Russian President Boris Yeltsin.⁵² A very provocative statement—one that not only hinted at nuclear weapons use, but also suggested that a preemptive strike and not just retaliation was being considered—was issued by an unidentified "senior American official" during the November 1998 bombing campaign against Baghdad: "If he [Saddam Hussein] tries to use weapons of mass destruction, he should know that we will obliterate Iraq."⁵³

The reasons for such misstatements of U.S. policy are rarely clear. They could be simple slips of the tongue; or they could be deliberate, but individual, trial balloons to see how others in the bureaucracy react; or they could be part of a concerted effort to push the administration toward a firmer stance on this nuclear doctrine issue. What is clear, however, is that such misstatements are picked up by the U.S. and foreign press as if they are official U.S. policy on

49. For the best analyses of the ANWFZ controversy and the belligerent reprisal doctrine, see Harold A. Feiveson, ed., *The Nuclear Turning Point: A Blueprint for Deep Cuts and De-Alerting of Nuclear Weapons* (Washington, D.C.: Brookings, 1999), pp. 271–275; and Bunn, "Expanding Nuclear Options."

50. R. Jeffrey Smith, "Clinton Directive Changes Strategy on Nuclear Arms," *Washington Post*, December 7, 1997, p. A1.

51. Quoted in Bill Gertz, "China's Nukes Could Reach Most of U.S.," *Washington Times*, April 1, 1998, p. A1.

52. Quoted in "U.S. Policy Allows Nuclear Weapons," *Baltimore Sun*, February 1, 1998, p. 31A; and Michael Specter, "Standoff with Iraq: The Russians," *New York Times*, February 5, 1998, p. A6.

53. Steven Erlanger, "U.S. Set to Give Up Arms Inspections for Curbing Iraq," *New York Times*, November 8, 1998, pp. A1, A12.

the issue.⁵⁴ Such statements thus create a risk of a commitment trap, increasing the likelihood that senior officials believe that the United States' reputation is now on the line. Statements by lower-level officials matter because the risk of commitment is largely independent of the intent of U.S. leaders; it is the result of their perception of adversaries' and allies' perceptions of U.S. commitments and intent.

Deterrence Failures Despite Credible Threats

If the argument presented here is correct—that U.S. threats to retaliate with nuclear weapons in response to chemical and biological weapons attacks are credible because they place the United States' reputation on the line—why is this not an unabashedly good thing? Most advocates of the calculated ambiguity doctrine assume that it is, and therefore conclude their analysis with a simple and comforting thought: the security of the United States and its allies will be enhanced if U.S. nuclear threats reduce the likelihood of adversaries using chemical or biological weapons. Yet this is not necessarily so. There is, after all, an important distinction between saying that a threat is highly credible and saying that it is effective all the time, against all adversaries, under all circumstances. U.S. nuclear threats would definitely have an overall positive effect only if they were successful 100 percent of the time. Yet because such threats both decrease the likelihood of a chemical or biological attack (but not to zero) and increase the likelihood of U.S. nuclear retaliation (but not to certainty) if deterrence fails, a more difficult net assessment is necessary. Any assessment of current nuclear doctrine must weigh the benefit of the decrease in the probability of chemical and biological attacks against the residual probability of deterrence failure, the probability of a U.S. nuclear response, and the long-term costs of such a U.S. nuclear response.

54. In the Habiger case, for example, his statement that "nuclear weapons will be used," but not his later effort to accurately reflect the calculated ambiguity doctrine, was picked up by the press. See Gertz, "China's Nukes Could Reach Most of U.S."; and Gen. Eugene Habiger interview with the Defense Writers' Group, Washington, D.C., March 31, 1998. It is also possible, of course, that these statements do reflect a firm U.S. government policy decision to retaliate with nuclear weapons after a biological or chemical attack and that the ambiguity added in "clarifications" is merely a diplomatic fig leaf used to hide the fact that the United States has reneged on its negative security assurances. If such a monumental decision had been made ahead of time by the president, however, it is likely that more clear and consistent nuclear threats would be issued to maximize the chances that deterrence would succeed.

It is disturbing that most advocates of using U.S. nuclear weapons to deter chemical and biological attacks simply ignore this crucial issue. Instead, they assume either that nuclear threats will succeed 100 percent of the time, or that they will succeed except in cases in which potential enemies are “undeterable,” because they are irrational, suicidal, or otherwise incapable of being dissuaded from aggression by even firm threats of overwhelming destruction. The first assumption is unwarranted: even believable threats can fail for reasons discussed below. The second assumption may well be proven to be accurate in some future cases, as the history of the Aum Shinrikyo cult’s terrorist use of anthrax, botulinum toxin, and sarin gas in Tokyo reminds us.⁵⁵ But it is not clear how nuclear weapons doctrine is relevant for deterring such adversaries. Defense, not deterrence, would be necessary when confronting irrational enemies who either welcome a nuclear apocalypse or are, for whatever reason, oblivious to any level of threatened destruction.

What is relevant, however, is to think through how deterrence might fail *despite* the United States’ having made a credible threat to retaliate with nuclear weapons. Although it is not possible to assign relative probabilities to such scenarios, five general types of “rational deterrence” failures can be identified. First, it is possible that a strong U.S. threat to retaliate is credible, but comes too late, after a decision to launch a chemical or biological attack has already been made. President Kennedy’s threat to respond to the Soviet missile emplacement in Cuba is the classic case of this type of deterrence failure: his threat came well after the Kremlin decision to send the nuclear-armed missiles had been made and implementation had begun. Second, it is possible that an adversary’s leadership could believe that its attack was below the threshold of chemical or biological use that would trigger a U.S. nuclear response. In this case, the U.S. commitment to use nuclear weapons in retaliation to a *catastrophic* chemical or biological attack would be feared, but the adversary would design the attack to produce smaller casualty figures in an attempt to avoid such retaliation. There is nothing irrational about such a strategy; whether it would work—technically or politically—is, however, another matter. Third, an adversary could believe that the source of the attack would not be known and that U.S. nuclear retaliation would therefore not occur. This is an especially serious danger with biological weapons, which could be delivered covertly and

55. On the Aum Shinrikyo, see David E. Kaplan and Andrew Marshall, *The Cult at the End of the World* (New York: Crown, 1996); and Jessica Stern, “Terrorist Motivations,” in Peter R. Lavoy, Scott D. Sagan, and James J. Wirtz, eds., *Planning the Unthinkable: How New Powers Will Use Nuclear, Chemical, and Biological Weapons* (Ithaca, N.Y.: Cornell University Press, 2000).

which might be masked as a natural outbreak of infectious disease.⁵⁶ A fourth, though related, deterrence failure scenario is a “catalytic” biological attack: a scenario in which one adversary delivers biological weapons against U.S. troops overseas or against the U.S. homeland, but does so in a manner designed to make the U.S. government think that a different enemy instigated the attack. The general problem of “catalytic nuclear war” received attention during the Cold War, as U.S. strategists feared that third parties armed with nuclear weapons might attempt to instigate a nuclear war between the United States and the Soviet Union.⁵⁷ This danger has not been as well analyzed with respect to biological weapons, however, despite the existence of potential U.S. adversaries—Iran and Iraq are only the most obvious cases in point—that are also adversaries of each other and might therefore be interested in instigating a U.S. attack on their rival.

The fifth and final type of rational deterrence failure is an “accidental” chemical or biological attack caused by the unauthorized use of such weapons by a military commander, or a deliberate launch of such weapons, after a false warning of a nuclear attack. This type of deterrence failure is worth analyzing in more detail here, both because it has been virtually ignored in the debate about current U.S. nuclear doctrine and because it is a danger that may be significantly increased by U.S. nuclear weapons threats. One unanticipated result of U.S. statements that increase adversaries’ fears of nuclear retaliation may be to simultaneously increase their fears of nuclear “decapitation” through U.S. nuclear weapons’ first strikes or preemptive attacks. This fear would, in turn, increase the likelihood that an adversary with chemical or biological weapons would both delegate command authority over such weapons to senior military officers in the field *and* issue specific orders to retaliate immediately if the capital city is destroyed with nuclear weapons. Some form of predelegation of national command authority may be implemented for a variety of reasons in different states: as part of normal leadership succession procedures, as a result of leaders’ fears of massive conventional attacks on the capital, because of concerns about leadership assassination, or simply as a precaution once any adversary has nuclear weapons capabilities that could

56. See Joshua Lederberg, ed., *Biological Weapons: Limiting the Threat* (Cambridge, Mass.: MIT Press, 1999), especially chaps. 2, 10–13.

57. See Henry S. Rowen, “Catalytic Nuclear War,” in Graham T. Allison, Albert Carnesale, and Joseph S. Nye, Jr., eds., *Hawks, Doves, and Owls: An Agenda for Avoiding Nuclear War* (New York: W.W. Norton, 1985), pp. 148–163; and Arthur Lee Burns, *The Rationale of Catalytic War* (Princeton, N.J.: Center for International Studies, 1959).

destroy the national government in the capital city. The risk-prone combination of predelegation of authority *and* the issuance of orders to retaliate immediately with chemical or biological weapons, however, is likely to be put in place (and is likely to be implemented) only when leaders fear a nuclear decapitation strike that would both destroy the existing government and warrant extreme retribution.

The current policy of maintaining ambiguity about what kind of U.S. retaliation would occur, however, could greatly increase fears about nuclear first use, in part because the policy also permits some ambiguity about when “retaliation” would occur. The already-cited November 1998 preemptive threat by a “senior American official” to “obliterate Iraq” if Saddam “*tries* to use weapons of mass destruction” is the most dramatic case in point.⁵⁸ A declassified 1995 U.S. Strategic Command report on U.S. nuclear doctrine—which states that “we must be ambiguous about our response (or preemption) if what we value is threatened”—could encourage similar fears.⁵⁹ To the degree that such U.S. doctrinal statements increase fears about decapitation, then adversaries’ leaders will be further encouraged to delegate authority to use chemical and biological weapons to officers lower down in the chain of command, and those officers will be more prone to retaliate promptly if they believe that a U.S. nuclear attack has occurred.

U.S. defense analysts are generally insensitive to this command-and-control problem, because they assume that the leaders of new proliferators would never delegate authority for the use of chemical or biological weapons to subordinate officers due to fears of coups or insubordination. The evidence on predelegation in the case of Iraq, however, supports my argument, not that more sanguine view. Emerging evidence from the Gulf War suggests that Saddam Hussein felt compelled by military necessity to predelegate authority to use biological and chemical weapons to senior officers in a special military unit, and ordered that such weapons be used only in the event of a nuclear attack on Baghdad.⁶⁰ Saddam’s speeches clearly show that he was worried about a nuclear decapitation threat and sought, at a minimum, to deter it

58. Erlanger, “U.S. Set to Give Up Arms Inspections for Curbing Iraq,” p. A1 (emphasis added).

59. U.S. Strategic Command, “Essentials of Post-Cold War Deterrence,” p. 7.

60. The following two paragraphs are based on evidence presented in Timothy V. McCarthy and Jonathan B. Tucker, “Saddam’s Toxic Arsenal: Chemical and Biological Weapons and Missiles in the Gulf War,” in Lavoy, Sagan, and Wirtz, *Planning the Unthinkable*. The interpretation of the evidence, however, is my own.

through declarations that predelegation existed for a retaliatory strike in retribution for an attack on Baghdad. As the Iraqi leader explained to a delegation of U.S. senators in April 1990:

If Israel uses atomic bombs, we will strike at it with the binary chemical weapon. I reiterate now that if Israel does this, we will do that. We have given instructions to the commanders of the air bases and missile formations that once they hear Israel has hit any place in Iraq with the atomic bomb, they will load the chemical weapons with as much as will reach Israel and direct it at its territory. For we might be in Baghdad holding a meeting with the command when the atomic bomb falls on us. So to make the military order clear to the air and missile base commanders, we have told them that if they do not receive an order from higher authority and a city is struck with an atomic bomb, they will point toward Israel any weapons capable of reaching it.⁶¹

Although the evidence gathered by UNSCOM inspectors in Iraq does not suggest that all “air and missile base commanders” held independent authority to use chemical weapons, it is consistent with the possibility that limited delegation existed for the special Scud missile unit that held twenty-five warheads filled with botulinum toxin, anthrax, and aflatoxin and fifty chemical warheads. Iraqi authorities have also claimed that this special military unit had the authority to use these Scuds if Baghdad was destroyed by nuclear weapons, and UNSCOM gathered some evidence that the BW warheads were mated to a handful of these missiles.

A leader’s decision to delegate the authority to use chemical or biological weapons may be a reasonable response to the fear of a decapitation attack, but it inevitably raises the risks of accidental uses of such weapons. Two incidents from the 1991 Gulf War dramatically illustrate these dangers. First, on January 28, 1991, when the United States bombed a large ammunition bunker outside of Basra, the explosion was so large that both the Soviets (using their infrared satellite monitors) and the Israelis (who were receiving downlinks from the U.S. satellites) contacted Washington to ask if U.S. forces had just detonated a nuclear weapon.⁶² Second, on February 7, 1991, when U.S. forces used a “Daisy Cutter” BLU-82 bomb, an SAS British commando behind the lines reportedly

61. “Saddam Hussein Addresses U.S. Senators,” Baghdad Domestic Service, April 16, 1990, in FBIS-NES-90-074, April 17, 1990, p. 7. Saddam may have tried to remind U.S. officials of this threat during the war. See “‘Mother of Battles’ Airs Saddam CNN Interview,” Baghdad Mother of Battles Radio Network, February 2, 1991, in FBIS-NES, February 6, 1991, p. 21.

62. Eliot A. Cohen, *Gulf War Air Power Survey*, Vol. 2, Pt. 1 (Washington, D.C.: U.S. GPO, 1993), p. 281.

saw the large explosion and announced on an open (unclassified) radio, "Sir, the blokes have just nuked Kuwait."⁶³

Given these occurrences during the Gulf War, it should not take too much imagination to think through similar, realistic scenarios in which the special security officers in charge of biological or chemical weapons might believe that the conditions under which they were predelegated authority to use their weapons had in fact come into effect.⁶⁴ At an operational level, the risks produced by an adversary's predelegation of authority raise difficult questions about U.S. military targeting policies, conventional and nuclear, concerning attacks against an enemy's command, control, and communications.⁶⁵ At a strategic level, the predelegation problem even raises questions about whether the net effect of U.S. nuclear threats is to increase or decrease the probability that chemical or biological weapons will be used against the U.S. homeland, military forces, or other targets.

IF DETERRENCE FAILS . . . THEN WHAT?

What would be the likely and the appropriate American response if U.S. nuclear threats fail to deter chemical or biological weapons use? What would be the likely strategic consequences of an American nuclear response? Most of the advocates of using U.S. nuclear threats for this purpose have failed to address these crucial questions, and the few exceptional analysts who have been willing to start "thinking the unthinkable" have not focused on the potential effects of U.S. doctrinal statements on U.S. decisions or on the consequences of U.S. nuclear use on the decisions of future proliferators. Indeed, even the best analyses of potential U.S. responses to chemical or biological weapons attacks focus on immediate operational and political factors that

63. ITV News Bureau, "A Psy-Ops Bonanza in the Desert," April 18, 1991; Douglas Waller, "Secret Warriors," *Newsweek*, June 19, 1991, p. 24. One additional bizarre false-warning incident occurred on the U.S. side during the Gulf War, when a disk jockey in St. Louis, as a protest against the war, deliberately broadcast an emergency bulletin announcing that the United States had been hit by a nuclear weapon. See "Disk Jockey Falsely Reports Nuclear Attack," *New York Times*, January 31, 1991, p. A20.

64. The history of World War II provides examples of both leaders retaliating after accidental attacks and leaders practicing restraint. On these incidents, see Jeffrey W. Legro, "Military Culture and Inadvertent Escalation in World War II," *International Security*, Vol. 18, No. 4 (Spring 1994), pp. 108–142; and Frederick M. Sallagar, *The Road to Total War* (New York: Van Nostrand Reinhold, 1969), pp. 181–182.

65. During the Gulf War, for example, the United States attempted to "decapitate" Iraq with conventional bombing attacks against command-and-control points where Saddam was believed to be located. See Bush and Scowcroft, *A World Transformed*, p. 463; and Atkinson, *Crusade*, pp. 272–274.

could (and should) influence any U.S. president's decision about whether to use nuclear weapons in response to a chemical or biological attack: the level of destruction inflicted by the attack, the potential for continued destructive attacks, U.S. public and congressional opinion, the position of allied coalition members in the conflict, the advice of senior U.S. military leaders, and the degree to which U.S. national interests are perceived to be at stake in the specific regional conflict.⁶⁶ It is at least equally important, however, to think through the longer-term strategic considerations that should influence these momentous decisions.

The greatest danger created by U.S. nuclear threats is that they provide an incentive to respond with nuclear weapons, for the sake of maintaining the reputation for honoring one's commitments, to attacks that otherwise would be responded to with conventional retaliation only. The problem here is one of degree: it is unlikely that any U.S. president would respond with nuclear weapons to a very small-scale chemical or biological weapons attack; yet a president's belief that his or her statements, or those of subordinate officials, had created a commitment in the eyes of allies and future adversaries could tip the balance between nuclear and conventional response in more serious contingencies. Indeed, it is difficult to imagine a more important or valid reason for using nuclear weapons in response to chemical or biological weapons attacks. Yet, because this strategic rationale for U.S. nuclear use is largely self-constructed, its strategic benefits must be measured against its strategic costs.

Defense analysts who focus exclusively on battlefield effects of U.S. nuclear weapons use miss the point. The direct military effects of any U.S. nuclear response to a chemical or biological attack will depend to a large degree on the scope and target of the U.S. nuclear strike; U.S. nuclear retaliation could be large or small and could be aimed against an adversary's capital city, an air base, chemical or biological weapons production plants, conventional military forces in the field, or other valued targets. The broader strategic consequences of any U.S. decision to use nuclear weapons, however, are likely to be independent of the number of nuclear weapons detonated, the kind of nuclear weapon(s) used, the targets destroyed, or even the context in which nuclear

66. See Brad Roberts, "Rethinking How Wars Must End: NBC War Termination Issues in the Post-Cold War Era," in Victor Utgoff, ed., *The Coming Crisis: Nuclear Proliferation, U.S. Interests, and World Order* (Cambridge, Mass.: MIT Press, forthcoming); and Utgoff, "Nuclear Weapons and the Deterrence of Biological and Chemical Warfare," Occasional Paper No. 36 (Washington, D.C.: Henry L. Stimson Center, October 1997), pp. 7-9.

weapons were used. The first use of any nuclear weapon in combat since World War II would be a norm-shattering event throughout the world, and the twin facts that a nuclear weapon was used and that it was the United States that used it would surely be highly salient to most observers. Although there is relatively little evidence that can be used to predict how other governments would react—for the fortunate reason that the United States has not detonated nuclear weapons in conflict since August 1945—the evidence that does exist concerning the views of leaders in potential proliferators about U.S. nuclear weapons use against biological threats suggests that many would push for their own nuclear weapons.⁶⁷ One likely victim of such a U.S. nuclear strike would therefore be the global nuclear nonproliferation regime. The many modern industrial states that have the capability to build nuclear weapons, but have thus far chosen not to, would have to reevaluate that position in the harsh light of U.S. nuclear weapons use.⁶⁸

There is obviously enormous uncertainty concerning these matters, and considerable scholarly research and renewed expert debate are warranted. But it is important to recognize that the current U.S. nuclear doctrine of calculated ambiguity has already been adopted without this specific issue being raised, much less debated. Advocates of the current nuclear policy have not thoroughly analyzed the long-term consequences of U.S. nuclear weapons use, because they have assumed that U.S. nuclear threats will never have to be implemented because they will be credible.⁶⁹

Conclusion: Issuing Unambiguous Conventional Threats

The U.S. government should not make deterrent threats that it would not want to implement if deterrence fails. A new U.S. declaratory policy, setting forth an

67. U.S. nuclear threats during the Gulf War, for example, prompted then president of India's Congress Party Rajiv Gandhi to issue his first conditional, public support for India to test and deploy nuclear weapons, in the event of U.S. nuclear weapons use. See "Cong-I Cautions Government on Gulf Issue," *Indian Express*, February 12, 1991, p. 1; and "Rajiv Fears Use of N-Arms," *Hindustan Times*, February 12, 1991, p. 20.

68. It has been estimated that thirty states have the technical capability to develop nuclear weapons within a few years of a political decision to do so. See Steve Fetter, "Verifying Nuclear Disarmament," Occasional Paper No. 29 (Washington, D.C.: Henry L. Stimson Center, October 1996), p. 38; and Scott D. Sagan, "The Causes of Nuclear Proliferation," *Current History*, Vol. 96 (April 1997), pp. 151–156.

69. An important exception is David Gompert, who has argued that "actual U.S. nuclear retaliation for a biological attack . . . would not imperil the Nation and its global interests, let alone human viability. And it would make it less likely that *any* WMD [weapons of mass destruction] would

unambiguous commitment to retaliate with a devastating conventional weapons response to any chemical or biological weapons attack, would best serve that principle. The current doctrine presenting calculated ambiguity about possible nuclear weapons retaliation creates risks of a commitment trap, in which U.S. leaders would feel compelled to use nuclear weapons after a biological or chemical attack because they believe that adversaries and allies perceive that the U.S. reputation for honoring its commitments was at stake. Instead of the current doctrinal ambiguity, U.S. leaders should state, loudly and often, that “the United States does not need to use its nuclear arsenal to punish any enemy who uses chemical or biological weapons against us or our allies. Our conventional weapons retaliation will be certain, swift, and devastating.”

This recommended change in U.S. policy would produce three benefits and entail one cost. First, the allusion to U.S. nuclear capabilities may remind potential adversaries of the ultimate sanction that will remain lurking in the background of U.S. diplomatic and military threats, regardless of the declarations or intent of U.S. political leaders. But by keeping nuclear weapons far in the background, U.S. leaders could avoid slipping toward commitments that they should be reluctant to keep. Given the relatively low casualty figures expected in chemical weapons attacks, it is difficult to imagine a chemical attack that would be so harmful to U.S. interests that a nuclear response would ever be warranted. It is possible to imagine a biological attack—for example, the release of a deadly agent in an urban area killing thousands of U.S. or allied citizens—that would be so devastating that U.S. leaders would contemplate nuclear retaliation regardless of previous intentions. But that one worst-case scenario is also the one contingency in which an adversary would be most likely to fear nuclear weapons retaliation regardless of what U.S. officials stated about American nuclear doctrine ahead of time.

Second, an unambiguous statement on conventional retaliation leaves open the option of using supplementary legal deterrent threats, which could be tailored to the crisis at hand, in ways that are effectively ruled out by current doctrine. The United States may wish to threaten to overthrow an adversary’s regime by military force, as it did during the Gulf War, if chemical or biological

ever be used again—at least against the United States.” This assumes, however, that a new wave of nuclear proliferation would not occur as a result of U.S. nuclear use, or that such proliferation would not “imperil” U.S. global interests, or that such new nuclear weapons would not be used against the United States. See Gompert, “Rethinking the Role of Nuclear Weapons,” p. 3 (emphasis in original).

weapons are used. This policy option is not ruled out by either doctrine (the current calculated nuclear ambiguity doctrine or the proposed unambiguous conventional retaliation), but such threats should also be made only if the United States has the ability and the will to carry them out if necessary. A similar threat would emphasize the sanctions of international law: to declare that leaders who threaten to use or do use chemical or biological weapons are war criminals who have violated international norms and should be brought to justice. This potential sanction, which could be enforced through a mixture of U.S. and multinational means, would be effectively ruled out if the U.S. government insists that it has the right, despite its previous international obligations, to threaten or use nuclear weapons whenever it sees fit.

Third, it will be easier to enforce a stronger degree of discipline over the signals presented and the statements given by the U.S. bureaucracy if government policy is unambiguous in threatening devastating conventional retaliation. As both incidents during the Gulf War and during the Clinton administration demonstrated, ambiguity is not a natural resting place for military planners or Defense Department officials. Misstatements of policy, whether inadvertent or deliberate, risk creating perceptions of commitments. It will still be necessary for presidents of the United States to be disciplined in their statements, avoiding the temptation to make threats, in the name of deterrence, that they would never want to carry out. Under this proposed policy, however, discipline within Washington bureaucracies and military organizations would certainly be easier to maintain.

Any final policy judgment on this issue must take into account both the great uncertainties involved in predicting the crisis and wartime behavior of adversaries, as well as the difficult set of value trade-offs that exist between the goal of deterring chemical and biological attacks and the goal of preventing further nuclear proliferation. Given this set of complexities, it should not be surprising that reasonable people adopt different policy prescriptions. What is not reasonable, however, is for the United States to continue to maintain the calculated ambiguity doctrine without a more vigorous and informed debate about all of the policy's costs and benefits.

There will be a cost to emphasizing conventional retaliation: the extra margin of deterrence that comes from costly commitments would be lost. Given the horrible consequences that could result from an adversary using chemical or biological weapons, even a small decrease in the United States' current ability to deter such attacks is a cost that it should be reluctant to pay. But reluctance to accept one set of obvious costs should not lead the United States to ignore

other, more hidden, dangers. Wisdom on this subject should therefore begin with the recognition that some reduction in deterrence of deliberate chemical and biological attacks today may be a price worth paying to avoid the even greater harm of the use of nuclear weapons, by the United States and other states, in the future.