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CHAPTER 1 **A Bet Portrayed as a Certainty:
Reassessing the Added Deterrent
Value of Nuclear Weapons**

Benoît Pelopidas

“Concepts, first employed to make things intelligible, are
clung to often when they make them unintelligible.”

*William James*¹

The Argument

A world free of nuclear weapons has been seen as an exercise in utopian dreaming.² It took the credentials of realists like Secretaries Shultz, Perry, and Kissinger and Senator Nunn to bring this goal back to the front of the

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1. William James, “The compounding of consciousness,” in *The Writings of William James: A Comprehensive Edition*, ed. J. J. McDermott (Chicago: University of Chicago Press, 1977), 560. (Original work published in 1909.)
 2. Harold Brown and John Deutch, “The Nuclear Disarmament Fantasy,” *Wall Street Journal*, November 19, 2007; Harold Brown, “New Nuclear Realities,” *The Washington Quarterly* 31, no. 1 (Winter 2007–2008). This framing of the discussion in terms of reality versus utopia or fantasy is topical and can be found in most countries. In the French case, for example, one of the leading articles against this goal was Tiphaine de Champchesnel, “Un monde sans armes nucléaires. L’utopie du zéro” (A World without Nuclear Weapons: The Utopia of Zero), *French Yearbook of International Relations*, vol. 11, 2010. This builds on my op-ed, “Why nuclear realism is unrealistic,” *Bulletin of the Atomic Scientists*, September 26, 2013.

US political scene.³ But framing the discussion in terms of utopia versus reality is deceptive because in actuality both supporters and critics of this goal hold to a vision of the world as they think it ought to be. On the one hand, setting a goal of a world without nuclear weapons while there are still approximately seventeen thousands of them in the world today is clearly ambitious.⁴ On the other hand, those who reject this goal and want to continue to rely on the threat of nuclear retaliation have to assume that this strategy will work perfectly until the end of days.⁵ There is no third future.⁶ Either nuclear weapons remain in numbers higher than necessary to create a global-scale disaster and we have to rely on deterrence and hope for the best or we reach very low numbers or zero and the issue then will be to make sure that they are not rebuilt. Even if a

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3. Martin Senn and Christoph Elhardt, "Bourdieu and the bomb: Power, language and the doxic battle over the value of nuclear weapons," *European Journal of International Relations* 20, no. 2 (June 2014): 316–340.
 4. See Ploughshares Fund's report based on the compiled estimates of Hans Kristensen and Robert Norris for the *Bulletin of the Atomic Scientists*, December 2012, <http://www.ploughshares.org/sites/default/files/resources/Stockpile-Report-082814.pdf>.
 5. We are much more demanding with nuclear weapons used for deterrence than we are with any other technology: they are not allowed to fail once if failure means the launch of a nuclear weapon. Moreover, proponents of nuclear deterrence expect the strategy of deterrence to work forever. It is worth repeating that the original proponents of nuclear deterrence combined with a focus on sovereign states saw this as a "tentative, second-best, and temporary" solution. See Daniel Deudney, *Bounding Power: Republican Security Theory from the Polis to the Global Village* (Princeton: Princeton University Press, 2007), 247.
 6. A third future would contemplate the breaking of the so-called nuclear taboo and the conventionalization of the use of nuclear weapons. It would not only require that the weapons are used but that this use leads to a move away from deterrence toward preventive war as a strategy. This is only one possible consequence of the use of nuclear weapons and, so far, it is not considered likely. See Mark Fitzpatrick, "The World After: Proliferation, Deterrence and Disarmament if the Nuclear Taboo is Broken," Institut Français des Relations Internationales, Proliferation Paper 31 (Spring 2009); and George H. Quester, *Nuclear First Strike: Consequences of a Broken Taboo* (Baltimore: Johns Hopkins University Press, 2006).

credible missile defense system could be built, it would not constitute a third future; it would just be another parameter in the choice between these two futures.⁷

Proponents of a world without nuclear weapons use the rhetoric of only two possible futures: either getting to zero or nuclear proliferation.⁸ But getting to very low numbers versus trusting nuclear deterrence forever reflects a more fundamental truth. This depiction of future choices does not make any assumption about the pace of proliferation or the connection between nuclear disarmament and nuclear proliferation.

If the only two available futures are getting to zero (or very low numbers) and relying on luck forever, which future ought to be realized? This is not a question of realism or utopia. It is a question of political choice: we either wager on perpetual luck or we wager on the ability of people to adjust to new international environments. Which future do you choose as a goal before putting your forces into the battle to “bring the ‘is’ closer to the ‘ought’”?⁹ Maybe the proponents of nuclear deterrence assume that a

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7. The current projects about missile defense do not intend to replace nuclear deterrence but to complement it, contrary to President Ronald Reagan’s original idea. So even if a credible missile-defense system could be built, the reliance on nuclear deterrence would still exist. And the jury is still out on whether missile defense would facilitate the elimination of nuclear weapons. A good approach to this debate can be found in Tom Sauer, *Eliminating Nuclear Weapons: The Role of Missile Defense* (New York: Columbia University Press, 2011).
 8. A recent example of this common argument can be found in Scott Sagan, “A call for global nuclear disarmament,” *Nature* 487, (July 5, 2012): 31. He writes, “The choice is . . . between a world free of nuclear weapons or one with many more nuclear states.”
 9. This is George Shultz’s expression in Harry’s Last Lecture on May 19, 2009, at Stanford University: “The power of the ought,” borrowing the title of Max Kampelman’s presentation for the twentieth anniversary of the Reykjavik Summit on October 11, 2006, at the Hoover Institution. See also Steven P. Andreasen, “Introduction: Closing the Gap Between the ‘I’ and the ‘Ought,’” in *Reykjavik Revisited: Steps Toward a World Free of Nuclear Weapons*, ed. George P. Shultz, Steven P. Andreasen, Sidney D. Drell, and James E. Goodby (Stanford: Hoover Institution Press, 2008).

civilization-destroying disaster will happen before nuclear weapons are used, so that their priorities lie elsewhere, but this bet is not made explicit or maybe they imply that future nuclear weapons use is inevitable and can be limited. Those are debatable assumptions which should be made explicit and become part of the conversation. Once this is done and the proponents of nuclear deterrence acknowledge the fundamental problem of global nuclear vulnerability, the burden of proof will be shared more equally and the ethical and political questions about which future we want to strive for will be fruitfully reopened.

The Case for Nuclear Deterrence

In this paper, I address three of the most frequently used arguments for maintaining a significant measure of dependence for international security on nuclear deterrence both globally and regionally:¹⁰

1. Nuclear weapons have deterred great powers from waging war against each other, so a world without nuclear weapons will lead to, or at least might encourage, great-power war.
2. The US nuclear umbrella has deterred nuclear proliferation, so the reduction of the US nuclear arsenal will undermine the credibility of US extended deterrence and create additional incentives for nuclear proliferation.
3. Nuclear weapons have deterred other powers from invading the territory of those states that possess nuclear weapons and thus

10. A fourth objection I do not address here would emphasize that nuclear weapons are an incomparable instrument for coercive diplomacy. Todd S. Sechser and Matthew Fuhrmann convincingly rebut this objection in a recent study showing that nuclear weapons do not provide more leverage than conventional weapons in crisis situations. See "Crisis Bargaining and Nuclear Blackmail," *International Organization* 67, no. 1 (January 2013): 173–195.

leaders of countries with relatively weak conventional capabilities will keep their weapons as an equalizer. A version of this argument focuses on dictatorial regimes or “rogue states” whose very existence depends on their having nuclear weapons.

I argue that none of these arguments holds.

These three arguments for acquiring and keeping nuclear arsenals rest on the power of these weapons to deter an action, whether a great-powers war, nuclear proliferation, or invasion of and regime change in weaker nations. But deterrence of such an action is most often based on the credibility of a set of national capabilities that include all the non-nuclear assets of a nation, including its credibility as an ally. Therefore, deterrence should not be identified with nuclear weapons and defined by them as has become the habit, almost unconsciously.¹¹ The *added* deterrent value of nuclear weapons,¹² rather than their deterrent value per se, has to be reexamined, keeping in mind that conventional weapons and other factors (economic, as an example) can have a deterrent effect with a much higher credibility of actual use.¹³

After showing that these arguments are not as convincing as their frequency suggests, I will delineate opportunities which advocates for a nuclear-free world should exploit on their way to advancing their goal, based on the decoupling of nuclear weapons and deterrence.

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11. Patrick Morgan and George Quester remind us that the concept of deterrence predates the invention of nuclear weapons and show how mutual nuclear deterrence as we know it was not codified before the late 1950s and early 1960s. See “How History and the Geopolitical Context Shape Deterrence” in *Deterrence: Its Past and Future*, ed. George P. Shultz, Sidney D. Drell, and James E. Goodby (Stanford: Hoover Institution Press, 2011).
 12. This builds on Steven P. Lee’s notion of the “marginal deterrent value” of nuclear weapons in *Morality, Prudence, and Nuclear Weapons* (Cambridge, UK: Cambridge University Press, 1993), 132ff.
 13. *Ibid.*, 124–129.

One cannot state for certain that great-power war will be more likely in a world without nuclear weapons

The most intimidating critique of the goal of a world free of nuclear weapons is that it would make the world safe for further war among great powers. Its most eloquent proponent was probably Winston Churchill, who warned his fellow citizens: “Be careful above all things not to let go of the atomic weapon until you are sure and more than sure that other means of preserving peace are in your hands.”¹⁴ In other words, according to Kenneth Waltz, “abolishing the weapons that have caused sixty-five years of peace would certainly have effects. It would, among other things, make the world safe for the fighting of World War III.”¹⁵ This common belief is summarized in the famous October 2009 *Time* magazine article: “Want peace? Give a Nuke the Nobel.”¹⁶

I will show three major flaws in this statement. First, it assumes that we can know for sure what caused peace and neglects several competing hypotheses explaining the absence of great-power wars. Second, it thus assumes that nuclear weapons are either the only, or at least a necessary, cause of great-power peace. Third, it assumes a stark contrast between the world of the last seventy years, which have appeared relatively “peaceful,” and a world without nuclear weapons that would be war-prone.

14. Quoted by Margaret Thatcher at Lord Mayor’s banquet, November 10, 1986, <http://www.margaretthatcher.org/document/106512>; and most recently by Bruno Tertrais, “The Illogic of Zero,” *The Washington Quarterly* 33, no. 2 (April 2010): 136.

15. Kenneth N. Waltz, “The Great Debate,” *The National Interest*, September–October 2010, 92.

16. David Von Drehle, “Want peace? Give a Nuke the Nobel,” *Time*, October 11, 2009.

The “nuclear peace” is only a risky hypothesis among others

We cannot know for sure what caused the absence of great-power wars over the last seventy years.¹⁷ We are left with dueling counterfactuals and the need to bet and trust.¹⁸ The opponents of the goal of a world without nuclear weapons create a false dichotomy between what we know for a fact and what we hypothesize. On the one hand, they argue, is the hard fact of the nuclear peace; on the other hand are other hypotheses or counterfactual reasonings. But the nuclear peace is not a fact. It is a hypothesis trying to link two observable facts: the existence of nuclear weapons in the world since 1945 and the absence of war between the United States and the Soviet Union during the same period. The fact is that the idea of the nuclear peace and competing explanations share the same status: all are hypotheses, requiring a rerun of the history of the last seventy years without nuclear weapons to see whether war would have broken out. The

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17. One might say sixty-six years if the reference point is the Soviet Union acquiring nuclear weapons. The date changes again if delivery vehicles enter the assessment. In any case, the problem here is that high subjective confidence is not a good indicator of validity and that experts are not rewarded for admitting the limits of validity of their knowledge—quite the opposite. Daniel Kahneman, *Thinking, Fast and Slow* (New York: Farrar, Straus, and Giroux, 2011), chap. 20 and pp. 262–263.
18. The social science literature testing this only reaches probabilistic conclusions that are irrelevant in a realm in which one failure would be intolerable. Robert Rauchhaus confirms, for example, that possession of nuclear weapons by multiple parties to a crisis makes them less likely to enter a crisis, in “Evaluating the Nuclear Peace Hypothesis: A Quantitative Approach,” *Journal of Conflict Resolution* 53, no. 2 (April 2009): 269. There are three fundamental problems with this type of finding: (1) The validity of such a finding given the limited number of cases we have and the limited duration of the nuclear age; (2) the amount of what we don’t know about the past; and, (3) the past’s questionable relevance for the future. For further analysis of these points, see James G. March, Lee S. Sproull, and Michal Tamuz, “Learning from Samples of One or Fewer,” *Organization Science* 2, no. 1 (February 1991); and Benoît Pelopidas, *Renoncer à l’arme nucléaire: La séduction de l’impossible?* (Giving up Nuclear Weapons Ambitions: The Seduction of the Impossible?) (Paris: Sciences Po University Press, forthcoming).

nuclear peace hypothesis is no less a counterfactual than its rivals.¹⁹ It faces the challenge of proving a negative. In these circumstances, faith in the nuclear peace becomes a bet or a matter of trust.²⁰

Moreover, we know that complex and tightly coupled systems like nuclear weapons are doomed to fail eventually, even if the frequency of failure is very low. This is because their complexity and tight coupling don't allow for anticipating and testing of every possible failure.²¹ Given this epistemological challenge, which relies ultimately on the trust one puts in one potential cause of peace at the expense of the others and on the expected timing of nuclear versus non-nuclear disasters, at least one question arises: is seventy years a high enough standard of evidence for us to surrender our fate to nuclear weapons forever?²²

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19. John Mueller, "Epilogue: Duelling Counterfactuals," in *Cold War Statesmen Confront the Bomb: Nuclear Diplomacy since 1945*, ed. John Lewis Gaddis, Philip H. Gordon, Ernest R. May, and Jonathan Rosenberg (Oxford: Oxford University Press, 1999); and Richard Ned Lebow, *Forbidden Fruit: Counterfactuals and International Relations* (Princeton, NJ: Princeton University Press, 2010), 13.
 20. The claim that the nuclear peace hypothesis is true results from a common fallacy which consists in turning a correlation between two variables into a causal relationship. Cognitive psychology shows how common this is given that intuition "automatically and effortlessly identifies causal relations between events, sometimes even when the connection is spurious." Kahneman, *Thinking, Fast and Slow*, 110; see also 75, 114–118.
 21. See Charles Perrow, *Normal Accidents: Living with High Risk Technologies* (Princeton, NJ: Princeton University Press, 1999), chap. 2; Scott Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, NJ: Princeton University Press, 1993); and Matthew Rendall, "Nuclear Weapons and Intergenerational Exploitation," *Security Studies* 16, no. 4 (October 2007). Drell and Goodby rightly characterize the view that nuclear deterrence will always work as "an exercise in wishful thinking," in Sidney Drell and James Goodby, "The Reality: A Goal of a World without Nuclear Weapons is Essential," *Washington Quarterly* 31, no. 3 (Summer 2008): 29. This critique was particularly strong in the late 1970s and early 1980s.
 22. Assuming validity and reliability is a common mistake psychologists call "the law of small numbers." In our judgments about the validity of claims, we tend to pay more

The limits of nuclear deterrence as a peacemaker²³

Critics of abolition portray a world without nuclear weapons as war-prone and believe that nuclear weapons are a necessary and sufficient cause for great-power peace. This is only the latest instance of an idea that has repeatedly been proven wrong, since at least 1860: the expectation that the unprecedented destructiveness of a new weapon system and the threat of its use will put an end to war. This was wrong for dynamite, submarines, artillery, smokeless powder, the machine gun, and poison gas.²⁴ Was nuclear deterrence a necessary and sufficient cause for peace among great powers? Most critics of the idea of a world without nuclear weapons maintain that it was. They argue that the nuclear-armed

attention to the content of messages than to information about their reliability. See Daniel Kahneman, *Thinking, Fast and Slow*, chap. 10.

23. The idea of a nuclear peace has been challenged for several years. See Evan Luard, *War in International Society: A Study in International Sociology* (London: I. B. Tauris, 1986), 396; Michael MccGwire, "Nuclear Deterrence," *International Affairs* 82, no. 4 (June 2006): 784; Michael MccGwire, "Deterrence: The Problem, Not the Solution," *International Affairs* 62, no. 1 (Winter 1986); John Mueller, "The Essential Irrelevance of Nuclear Weapons: Stability in the Postwar World," *International Security* 13, no. 2 (Fall 1988); John Vasquez, "The Deterrence Myth: Nuclear Weapons and the Prevention of Nuclear War" in *The Long Postwar Peace: Contending Explanations and Projections*, ed. Charles Kegley (New York: HarperCollins, 1991); Ken Berry, Patricia Lewis, Benoît Pelopidas, Nikolai Sokov, and Ward Wilson, "Delegitimizing Nuclear Weapons: Examining the Validity of Nuclear Deterrence," James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies, May 2010; and Steven Pinker, *The Better Angels of Our Nature: Why Violence Has Declined* (New York: Viking, 2011), 268–278.
24. For a condensed presentation of these arguments, see James Lee Ray, "The Abolition of Slavery and the End of International War," *International Organization* 43, no. 3 (Summer 1989): 429–430. Kenneth Waltz recognizes the exception he is arguing for when he labels nuclear weapons as "the only peacekeeping weapon the world has ever known," in "The Great Debate," 92. The proponents of the previous weapons in the list said the same thing.

states never fought a war against each other.²⁵ This can now be proven wrong. The 1969 border clash between China and Russia²⁶ and, more recently, the 1999 Kargil crisis between India and Pakistan show that the conventional wisdom that a nuclear-armed state cannot be attacked is historically inaccurate. Moreover, nuclear-armed states have been attacked by non-nuclear-weapon states on multiple occasions. US troops were attacked by Chinese forces in 1950 in Korea and by Vietnamese forces in the 1960s and 1970s; Israel was attacked by Syria and Egypt in 1973 and by Iraq in 1991; and in 1982, Argentina invaded the British Falkland Islands.²⁷ This narrows down the claims for nuclear weapons as peacemakers. More importantly, even this narrower claim needs to be reexamined taking into account two facts: (1) avoidance of several nuclear disasters was due to luck and cannot be explained by nuclear deterrence; and (2) deterrence as a strategy has favored more risk-prone strategies and in some cases made war possible instead of preventing it.

Luck is too often taken as a confirmation that nuclear deterrence kept the peace.²⁸ But luck should not be misread as successful deter-

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25. Waltz, "The Great Debate"; Bruno Tertrais, "In defense of deterrence," Institut Français des Relations Internationales, Proliferation Paper 39, Fall 2011: 9; Robert Rauchhaus, "Evaluating the Nuclear Peace Hypothesis," 268.
 26. David Holloway, "'Czech-mating' China? The Sino-Soviet Crisis of 1969," in *Historie Prožití Minulosti*, ed. Jiří Kocian, Milan Otáhal, and Miroslav Vaněk (Prague: Institute of Contemporary History, 2010).
 27. T. V. Paul, *The Tradition of Non-Use of Nuclear Weapons* (Stanford, Stanford University Press, 2009), 145.
 28. The argument based on luck is decisive. Indeed, Paul Schroeder, who argued in favor of managing the nuclear danger without abolishing the weapons, recognized this: "If since 1945 only luck had kept the world from nuclear holocaust then one would have to join . . . cries for some drastic action to turn things around." See Paul Schroeder, "Does Murphy's Law Apply to History?" *Wilson Quarterly* 9, no. 1 (1985): 87. I would argue that it is the case even if luck was the only reason why we avoided disaster in one single case. There is no need for luck to be the only cause of non-use of nuclear weapons to justify a call for change in nuclear policy.

rence.²⁹ More accurately, as Thomas Schelling noted, leaders of nuclear-weapon states can make threats that “leave something to chance”³⁰—recognizing that things could spiral out of control and nuclear weapons could be used even if they do not intend to use them—to make those threats more credible. But including luck in a successful deterrence strategy, as if you could control it, is both a conceptual confusion and a retrospective illusion.³¹ Luck was on our side this time, but this is not a consequence of purposeful action. For example, during the night of October 26–27, 1962, at the height of the Cuban missile crisis, an American U-2 spy plane strayed into Soviet airspace over the Arctic. Soviet fighter jets scrambled to intercept the U-2 while F-102 interceptors were sent to escort it home and prevent Soviet MIGs from freely entering US airspace. Given the circumstances, the F-102s conventional air-to-air missiles had been replaced with nuclear-tipped ones and their pilots could decide to use nuclear weapons. According to Scott Sagan in *The Limits of Safety*, “the interceptors at Galena were armed with the nuclear Falcon air-to-air missiles and, under existing safety rules, were authorized to carry the weapons in full readiness condition in any ‘active air defense’

29. On this problem, see Benoît Pelopidas, “We all lost the Cuban missile crisis,” in *The Cuban Missile Crisis: A Critical Reappraisal*, ed. Len Scott and R. Gerald Hughes (London: Routledge, 2015).

30. Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, MA: Harvard University Press, 1960), chap. 8.

31. Because past crises did not escalate and turn into nuclear war, we are prone to what psychologists call “hindsight bias” or “narrative fallacy,” which retrospectively will create a false causal relation between crisis management and the favorable outcome of the crisis which avoided nuclear war. Some of these consequences could only be known retrospectively; claiming hindsight is an overstatement. We are also likely to believe that we can learn more than we should from the favorable outcome of crises because we misunderstand the role of luck. See Kahneman, *Thinking, Fast and Slow*, chap. 19. On this confusion, see Benoît Pelopidas, “The theorist who leaves nothing to chance,” paper presented at the 2014 International Studies Association conference, Toronto, March 29, 2014.

mission.”³² Fortunately, the spy plane turned back and the Soviet jets held their fire.³³ There are many other instances in which deterrence cannot account for favorable outcomes.³⁴ Robert McNamara was direct about the role of luck during the Cuban missile crisis:

According to former Soviet military leaders, at the height of the crisis, Soviet forces in Cuba possessed 162 nuclear warheads, including at least 90 tactical warheads. [And the United States. was not aware of that at the time.] At about the same time, Cuban President Fidel Castro asked the Soviet ambassador to Cuba to send a cable to Soviet Premier Nikita Khrushchev stating that Castro urged him to counter a U.S. attack with a nuclear response. Clearly, there was a high risk that in the face of a U.S. attack, which many in the U.S. government were prepared to recommend to President Kennedy, the Soviet forces in Cuba would have decided to use their nuclear weapons rather than lose them. Only a few years ago did we learn that the four Soviet submarines trailing the U.S. Naval vessels near Cuba each carried torpedoes with nuclear warheads. Each of the sub commanders had the authority to launch his torpedoes. The situation was even more frightening because, as the lead commander recounted to me, the subs were out of communication with their Soviet bases, and they continued their patrols for four days after Khrushchev announced the withdrawal of the missiles from Cuba. The lesson, if it had not been clear before, was made so at a conference on the crisis held in Havana in 1992. . . . Near the end of that meeting, I asked Castro whether he would have recommended that Khrushchev use the weapons in the

32. Sagan, *The Limits of Safety*, 137.

33. *Ibid.*, 135-138.

34. One of the most recent lists can be found in Martin E. Hellman, “How Risky is Nuclear Optimism?” *Bulletin of the Atomic Scientists* 67, no. 2 (2011). See also Michael Dobbs, *One Minute to Midnight: Kennedy, Khrushchev, and Castro on the Brink of Nuclear War* (New York: Alfred A. Knopf, 2008), 303ff.

face of a U.S. invasion, and if so, how he thought the United States would respond. “We started from the assumption that if there was an invasion of Cuba, nuclear war would erupt,” Castro replied. “We were certain of that. . . . [W]e would be forced to pay the price that we would disappear.” He continued, “Would I have been ready to use nuclear weapons? Yes, I would have agreed to the use of nuclear weapons.” And he added, “If Mr. McNamara or Mr. Kennedy had been in our place, and had their country been invaded, or their country was going to be occupied . . . I believe they would have used tactical nuclear weapons.” I *hope* that President Kennedy and I would not have behaved as Castro suggested we would have. . . . Had we responded in a similar way the damage to the United States would have been unthinkable. But human beings are fallible [emphasis added].³⁵

This fascinating account shows how lack of information, misperception, and ideology could have led to disaster if we had not been lucky. But false information, lack of information, and misperceptions were not the only reason why luck was the decisive cause of the positive outcome of the Cuban missile crisis. Limits of safety, limits of command and control, and organizational problems also have to be taken into account. As Scott Sagan wrote:

Many serious safety problems, which could have resulted in an accidental or unauthorized detonation or a serious provocation to the Soviet government, occurred during the crisis. None of these incidents led to inadvertent escalation or an accidental war. All of them, however, had the potential to do so. President Kennedy may well have

35. Robert S. McNamara, “Apocalypse Soon,” *Foreign Policy* 148 (May–June 2005): 33. Dean Acheson proposed this interpretation as early as 1969. He explained the positive outcome of the Cuban missile crisis as due to “plain dumb luck.” He explained the positive outcome in *Esquire*, February 1969, 76.

been prudent. He did *not*, however, have unchallenged final control over U.S. nuclear weapons.³⁶

Most-recent studies show that sloppy practices in nuclear weapons management have occurred at all levels of decision-makers, leaders, nuclear safety and security teams, and top-level military personnel in most nuclear-weapon states. They also show the limits of learning from past sloppy practices. Confidence in perfect nuclear safety is still a matter of wishing for the best and relying on luck.³⁷ One telling example of this occurred at Minot Air Force Base in North Dakota in 2007. This offers a well-documented case of multiple sloppy practices and suggests the limits of learning after the incident was identified. On August 29–30, 2007, six US nuclear-armed cruise missile warheads were mistakenly flown to Barksdale Air Force Base in Louisiana. They had been placed by mistake under the wings of a B-52; the weapons had not been guarded appropriately during a thirty-six-hour period. Had the plane experienced any problems in flight, the crew would not have followed the proper emergency procedures.³⁸ After this widely publicized case of sloppy

36. Sagan, *The Limits of Safety*, 116.

37. Eric Schlosser, *Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety* (New York: Allen Lane, 2013); and Patricia Lewis, Heather Williams, Benoît Pelopidas, and Sasan Aghlani, "Too Close for Comfort: Cases of near nuclear use and options for policy," Chatham House, Royal Institute of International Affairs, April 2014, http://www.chathamhouse.org/sites/files/chathamhouse/home/chatham/public_html/sites/default/files/20140428TooCloseforComfortNuclearUseLewisWilliamsPelopidasAghlani.pdf.

38. This included jettisoning the cruise missiles if necessary. This involved sloppy practices at multiple levels. First, the original movement plan was changed and this change was not reported in the documents produced for the internal coordination process at Minot. "As a consequence, one of the originally scheduled pylons of cruise missiles had not been prepared for tactical ferry. [Second] When the breakout crew accessed the storage facility, they did not properly verify the status of the weapons in the facility as required by established procedure and they failed to note that the missiles on one of the pylons on their internal work document still contained nuclear warheads. Although procedure requires three subsequent verifications (by

practices,³⁹ US Secretary of Defense Robert Gates emphasized the need for responsibility in handling nuclear weapons: “The problems were the result of a long-standing slide in the Service’s nuclear stewardship. . . . For your part, you must never take your duties lightly. There is simply no room for error. Yours is the most sensitive mission in the entire US military.”⁴⁰ Change and improvement were supposed to follow, but even on the base where the incident took place and where the Secretary of Defense came to give his speech, it was necessary to repeat the order to leave no room for error. In April 2013, one officer from the 91st Missile Wing at the same Air Force Base in North Dakota was punished for sleeping on the job while having the blast door open behind him. (Sleeping wasn’t prohibited on a twenty-four-hour shift, but leaving the blast door open was.) He was one of two missile officers sanctioned that year for such a fault and he told his superiors that it wasn’t the first time.⁴¹ Air Force officers told the Associated Press that such violations of the safety procedures had happened more often than just in the two documented cases.⁴² The limits of safety, the limits of command and control, and the persistence of sloppy practices even in the US nuclear forces suggest that the role of luck is likely to have been even more important than we can document here.

three different groups) of the payload installed in those cruise missiles, those procedures were not followed.” The quotes for the account of this particular accident are taken from the unclassified account available in the February 2008 report from the Defense Science Board Permanent Task Force on Nuclear Weapons Surety, entitled *Report on the Unauthorized Movement of Nuclear Weapons*.

39. George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, “Toward a Nuclear-Free World,” *Wall Street Journal*, January 15, 2008, <http://www.nuclearsecurityproject.org/publications/toward-a-nuclear-free-world>.
40. Global Security Newswire, “Gates stresses nuclear responsibility at Minot Air Force Base,” December 2, 2008, <http://www.nti.org/gsn/article/gates-stresses-nuclear-responsibility-at-minot-air-force-base/>.
41. Robert Burns, “Officers In Charge Of Nuclear Missiles Left Blast Door Open: Air Force Officials,” *Associated Press*, October 22, 2013.
42. *Ibid.*

There are no reliable records of nuclear weapons accidents or close calls in most nuclear-weapon states.

Another reason why nuclear weapons cannot be considered as a necessary and sufficient cause for peace among the great powers is that they have encouraged more risk-prone behavior which, in some cases, made war possible. In other words, nuclear deterrence can require leaders to get closer to the brink of disaster to make their deterrent threat more credible. "The most recent research has confirmed this argument and established that a significant deterrent effect against conventional conflict requires regional states to adopt an asymmetric escalation posture, which puts pressure on the command and control system and increases the risk of accidental use."⁴³ One case in which nuclear deterrence arguably favored more risk-prone behavior is Kennedy's strategy of deterrence in 1961. After Khrushchev's ultimatum on Berlin, Kennedy hoped to deter him from escalating the crisis. So he emphasized, both privately and publicly, US nuclear superiority and his willingness to conduct a nuclear first strike. The result was an increase in the tension between the two countries in the months leading to the Cuban missile crisis.⁴⁴ Longer term, the strategies of deterrence developed by the two superpowers from the late 1950s to October 1962 created a spiral of escalation in which the deployment of forces or their overestimation for the sake of deterrence led to an

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43. Vipin Narang, "What Does It Take to Deter? Regional Power Nuclear Postures and International Conflict," *Journal of Conflict Resolution* 57, no. 3 (2012).
44. Richard Ned Lebow and Janice Gross Stein, *We All Lost the Cold War* (Princeton, NJ: Princeton University Press, 1994), chap. 2; see also Vojtech Mastny, "Introduction: new perspectives on the Cold War Alliance" and "Imagining War in Europe: Soviet Strategic Planning," in *War Plans and Alliances in the Cold War: Threat Perceptions in the East and West*, ed. Vojtech Mastny, Sven G. Holtsmark, and Andreas Wenger (New York: Routledge, 2006), 3, 38. A recent review of the historical evidence on the Soviet side of the crisis is Sergey Radchenko, "The Cuban Missile Crisis: Assessment of New, and Old, Russian Sources," *International Relations* 26, no. 3 (September 2012).

increased threat perception.⁴⁵ It is interesting to note that this risk-prone behavior, caused partly by the strategy of nuclear deterrence, does not come only from a high risk perception. For instance, the crisis between the United States and the Soviet Union after the 1973 war in the Middle East was based on a low risk perception and faith in nuclear deterrence. Convinced that its adversary would not risk a nuclear escalation, each nation sought unilateral advantages that exacerbated the crisis.⁴⁶

More importantly, a relationship of mutual nuclear deterrence at the strategic level creates opportunities for low-intensity conflicts. Even worse than the 1973 Middle East confrontation was the Kargil crisis between India and Pakistan in 1999, which killed a thousand soldiers. The nuclear arsenals of both countries and the beliefs associated with them contributed to the crisis instead of preventing it. Contrary to the optimistic readings of the proponents of deterrence who focus on the fact that there was no escalation⁴⁷ or simply do not count it as a war,⁴⁸ the Pakistani generals thought that their nuclear arsenal gave them the ability to send troops beyond the Indian border without risking retaliation from India.⁴⁹ They were

45. Dominic D. P. Johnson, *Overconfidence and War: The Havoc and Glory of Positive Illusions* (Cambridge, MA: Harvard University Press, 2004), chap. 5; Richard Ned Lebow, "Conventional vs. Nuclear Deterrence: Are the Lessons Transferable?" *Journal of Social Issues* 43, no. 4 (1987): 179.

46. Lebow and Stein, *We All Lost the Cold War*, chap. 10 and 13.

47. Tertrais, "In defense of deterrence," 9, note 5.

48. Scott Sagan and Alexander Montgomery focus on this fallacy and its effects in "The Perils of Predicting Proliferation," *Journal of Conflict Resolution* 53, no. 2 (April 2009): 304, 321–322.

49. S. Paul Kapur, "Revisionist ambitions, conventional capabilities, and nuclear instability: Why Nuclear South Asia is not like Cold War Europe," in *Inside Nuclear South Asia*, ed. Scott Sagan (Stanford: Stanford University Press, 2009); Timothy Hoyt, "Kargil: the nuclear dimension," in *Asymmetric Warfare in South Asia: The Causes and Consequences of the Kargil Conflict*, ed. Peter Lavoy (Cambridge, UK: Cambridge University Press, 2009), 144.

wrong, and war broke out.⁵⁰ Before getting nuclear weapons, they had never attempted such an aggression.

The “long peace” was not that peaceful . . . a world without nuclear weapons will not be unprecedentedly war-prone

For nuclear deterrence advocates, the Cold War is portrayed as the “long peace” whereas a world without nuclear weapons would be war-prone. Both sides of this statement seem to be wildly exaggerated. On the one hand, the “long peace” was neither all that peaceful nor all that exceptional. It existed only in a limited space, and proxy wars killed several million people during the Cold War.⁵¹ It was not that exceptional if defined as the avoidance of an all-out great-power war, which has been a pretty rare event.⁵² On the other hand, a world without nuclear weapons may well be much less war-prone than people assume. In a widely quoted article, Schelling wrote: “One can propose that another war on the scale of the 1940s is less to worry about than anything nuclear. But it might give pause to reflect that the world of 1939 was utterly free of nuclear

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50. S. Paul Kapur shows that the nuclearization of India and Pakistan increased the frequency and intensity of conflicts between the two countries. See Kapur, *Dangerous Deterrent: Nuclear Weapons, Proliferation and Conflict in South Asia* (Stanford: Stanford University Press, 2007), 122–127; Kapur, this volume. For a contrarian position and Kapur’s defense, see Sumit Ganguly and S. Paul Kapur, *India, Pakistan, and the Bomb: Debating Nuclear Stability in South Asia* (New York: Columbia University Press, 2010).
51. Odd Arne Westad, *The Global Cold War: Third World Interventions and the Making of Our Times* (Cambridge, UK: Cambridge University Press, 2005). Cold War studies are partly responsible for maintaining this illusion of the long peace. As Holger Nehring notes: “While attracting attention from many different fields and profiting from interdisciplinary inspiration, Cold War studies . . . might have lost sight of one of the key elements of the ‘Cold War’: its war-like character.” See Nehring, “What Was the Cold War?” *English Historical Review* 127, no. 527 (August 2012): 923, 925.
52. Randolph M. Siverson and Michael D. Ward, “The Long Peace: A Reconsideration,” *International Organization* 56, no. 3 (Summer 2002).

weapons, yet they were not only produced, they were invented, during war itself and used with devastating effect."⁵³

There are at least three counter-arguments to the idea of a radical contrast between the "long nuclear peace" and a war-prone world without nuclear weapons.

The first: yes, abolishing nuclear weapons is not abolishing war. However, the ability to reconstitute nuclear weapons would create a "virtual deterrent" effect.⁵⁴ Moreover, in a world without nuclear weapons, the support for measures to prevent or respond to a breakout would, arguably, be much greater than it is today.⁵⁵ Leaders in this world would probably remember Schelling's story and learn from it. As Sagan said, "In a nuclear-free world, the former nuclear-weapons states would have far stronger *mutual* incentives to punish and reverse any new state's decision to acquire atomic bombs. Ironically, it is precisely because nuclear-weapons states have such large arsenals today that they sometimes succumb to the temptation to accept new proliferators. In a disarmed world, such complacency would be more obviously imprudent."⁵⁶

The second counter-argument is included in the quote of Schelling's work: yes, another war of the size of 1940 is less to worry about than anything nuclear. This is because of the speed of the destruction caused by a nuclear war, which would be much more difficult to stop if it ever

53. Thomas C. Schelling, "A World without Nuclear Weapons?" *Daedalus* 138, no. 4 (Fall 2009): 125, 127.

54. The original idea of "virtual arsenals" or "weaponless deterrence" comes from Jonathan Schell in his book *The Abolition* (New York: Alfred A. Knopf, 1984). See also Sidney D. Drell and Raymond Jeanloz, "Nuclear Deterrence in a World without Nuclear Weapons"; and Christopher A. Ford, "Nuclear Weapons Reconstitution and its Discontents: Challenges of 'Weaponless Deterrence'" and David Holloway, "Deterrence and Enforcement in a World Free of Nuclear Weapons," in *Deterrence: Its Past and Future*.

55. Holloway, "Deterrence and Enforcement," 342; and Sagan, "The Great Debate," 90.

56. Sagan, "The Great Debate," 90.

started, and of the duration of the radiation effects that would follow the war if anyone survived.

The third counter-argument would be that a world without nuclear weapons will not be achieved overnight, so changes that would happen between now and then need to be considered. One is a macro-trend toward a steady decline in the number of armed conflicts between states, at least since 1945, a trend that became stronger after 1989.⁵⁷ Then comes the “Norman Angell rebuttal,”⁵⁸ suggesting that four years before the most destructive war man had ever experienced, theoreticians also saw the end of war and an increase in economic interdependence that was supposed to make war too costly. It is also true that the idea of the changing character of war has appeared every one or two generations in the last two centuries.⁵⁹ However, the trend is observed by most analysts even if they disagree on the causes.⁶⁰ Another interesting trend is the recognition that UN peace-keeping operations are more successful than previously

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57. John Mueller, *Retreat from Doomsday: The Obsolescence of Major War* (New York: Basic Books, 1990); Joshua S. Goldstein, *Winning the War on War: The Decline of Armed Conflict Worldwide* (New York: Dutton Books, 2011); Steven Pinker, *The Better Angels of Our Nature: Why Violence Has Declined* (New York: Viking, 2011); Richard Ned Lebow, *Why Nations Fight: Past and Future Motives for War* (Cambridge, UK: Cambridge University Press, 2010); Christopher J. Fettweis, *Dangerous Times? The International Politics of Great Power Peace* (Washington, DC: Georgetown University Press, 2009); Azar Gat, “The Changing Character of War,” in *The Changing Character of War*, ed. Hew Strachan and Sibylle Scheipers (Oxford: Oxford University Press, 2011), 44; John Horgan, *The End of War* (New York: McSweeney’s, 2012), 133–137.
58. Norman Angell was an English journalist and Labor Member of Parliament who argued in 1909 that a major war would be futile and would not pay, due to major economic interdependence among nations. His book, *Europe’s Optical Illusion*, was republished in 1910 under the title *The Great Illusion: A Study of Military Power and National Advantage* (London: G. P. Putnam’s sons, 1910) and often retrospectively portrayed as claiming that World War I was impossible.
59. Gat, “The Changing Character of War,” 27.
60. The declining trend in the frequency of war among great powers is still visible if you shift the threshold for war from the standard one thousand battle deaths to

thought and rather inexpensive.⁶¹ These are obviously not irreversible—the fear that climate change would reverse this trend and create wars has been expressed widely⁶² as well as fear of a war in the Taiwan strait⁶³—but they suggest policies to keep this trend downward.

Nuclear proliferation risks are not likely to increase if the size of the US nuclear arsenal decreases⁶⁴

The second key critique of the goal of a world without nuclear weapons is based on the idea that positive nuclear security guarantees, or the so-called “nuclear umbrellas,” are necessary to prevent proliferation. Therefore, shrinking the size of the US arsenal would simply decrease the credibility of extended nuclear deterrence and, thus, create additional incentives for nuclear proliferation.⁶⁵ If so, getting to zero might not be achievable or desirable, as it would spur proliferation.

twenty-five. Andrew Mack, roundtable on Steven Pinker's *The Better Angels of our Nature*, ISA, San Diego, Calif., April 3, 2012.

61. Goldstein, *Winning the War on War*; interview of the author with Joshua S. Goldstein, San Diego, April 4, 2012. He observed that every US household pays \$700 a month to fund the military, including pensions, and only \$2 a month for UN peacekeepers, who are chronically underfunded and suffer from a lack of resources.
62. A famous voice is Colin S. Gray, *Another Bloody Century: Future Warfare* (London: Weidenfeld & Nicolson, 2005), 82–83.
63. Lebow, *Why Nations Fight*, 223.
64. Some of the arguments in this section will also appear in Benoît Pelopidas, “The Nuclear Straitjacket: American Extended Nuclear Deterrence and Nonproliferation,” in *The Future of US Extended Deterrence: NATO and Beyond*, ed. Stéfanie von Hlatky and Andreas Wenger (Washington, DC: Georgetown University Press, forthcoming 2015).
65. Here, by credibility, I mean credibility in the eyes of the protégé/ally and those of the potential attacker. I ignore the technical issue of stockpile reliability as well as that of the confidence of US policymakers in that reliability. On these issues, see Benjamin

The idea that extended nuclear deterrence deters proliferation has been stated in official US policy documents even before the 2001 *Nuclear Posture Review*⁶⁶ and has been US official policy at least since then. In December 2008, the Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management stated, “The United States has extended its nuclear protective umbrella to 30-plus friends and allies as an expression of commitment and common purpose as well as a disincentive for proliferation.”⁶⁷ On page 7, this report also quotes the 1998 annual defense report stating that “Nuclear forces remain an important disincentive to nuclear, biological, and chemical proliferation.” The same idea is expressed in a May 2009 report requested by Congress: “During the Cold War, proliferation was strongly inhibited by the relationships of extended deterrence established by the United States (and also by the Soviet Union).”⁶⁸ The May 2009 report to Congress also states that:

[The United States] must continue to safeguard the interests of its allies as it does so. Their assurance that extended deterrence remains credible and effective may require that the United States retain

Sims and Christopher R. Henke, “Repairing Credibility: Repositioning nuclear weapons knowledge after the Cold War,” *Social Studies of Science* 42, no. 3 (June 2012).

66. In a comment on the *Nuclear Posture Review* he has heavily influenced, Keith Payne wrote: “[The United States] extended nuclear deterrence commitments—its nuclear umbrella—permit friends and allies to forgo seeking their own independent nuclear capabilities or alternatives. This is perhaps the single most important inhibitor of the pace of global proliferation today.” Keith B. Payne, “The Nuclear Posture Review: Setting the Record Straight,” *Washington Quarterly* 28, no. 3 (Summer 2005): 148.
67. US Department of Defense, “Report of the Secretary of Defense Task Force on DoD Nuclear Weapons Management, Phase II: Review of the DoD Nuclear Mission, 2008,” iv.
68. United States Institute of Peace, *America’s Strategic Posture. The Final Report of the Congressional Commission on the Strategic Posture of the United States* (Washington, DC: United States Institute for Peace Press, 2009), 8.

numbers or types of nuclear capabilities that it might not deem necessary if it were concerned only with its own defense.

This idea was expressed quite clearly in a Council on Foreign Relations April 2009 report entitled *US Nuclear Policy*:

Although the United States does not need nuclear weapons to compensate for conventional military weaknesses, other states are not in a similar position—they may consider acquiring nuclear weapons to deter attacks. The United States has the responsibility to assure allies through extended deterrence commitments. This assurance helps convince many of these allies not to acquire their own nuclear weapons. . . . A related pillar, necessary to maintain the credibility of the U.S. nuclear deterrent for as long as it is needed, is to ensure that the U.S. nuclear arsenal is safe, secure and reliable.⁶⁹

The text of the *Nuclear Posture Review* restates the same two arguments about the role of extended nuclear deterrence—it is meant to reassure allies and in the process deter proliferation:

The United States will retain the smallest possible nuclear stockpile consistent with our need to deter adversaries, reassure our allies. . . . By maintaining a credible nuclear deterrent, . . . we can reassure our non-nuclear allies and partners worldwide of our security commitments to them and confirm that they do not need nuclear weapons capabilities of their own.⁷⁰

This argument persists because people generalize from a few cases in which a positive nuclear security guarantee actually played a role in the

69. Council on Foreign Relations, “US Nuclear Weapons Policy,” 2009: 5. These points are reaffirmed on pages 8, 14–16, 81, 90–91.

70. Department of Defense, “Nuclear Posture Review Report,” April 2010: 39, 7.

decision not to go for the bomb—Germany, Japan⁷¹—and because it has not received the careful historical analysis it deserves.⁷²

As a critique of this argument, I propose three points:

1. The idea that a decrease in the size of the US nuclear arsenal will lead to a wave of proliferation wrongly assumes the existence of a pressing desire for the bomb waiting for more favorable conditions. This expectation has been proven wrong for several decades.
2. An extended nuclear deterrence guarantee has historically not been a necessary condition for states to give up nuclear-weapon ambitions.
3. The existing studies fail to isolate the role of nuclear weapons among other factors in the security guarantee they discuss. As a consequence, they underestimate the credibility problem of extended nuclear deterrence and overestimate the demand for such a nuclear guarantee, which has been perceived as more threatening than reassuring in important cases.

At the state level, the present and foreseeable demand for nuclear weapons is limited

The argument that without a credible nuclear security guarantee states would have additional incentives to develop their nuclear arsenals

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71. Daniel Deudney explicitly focuses on these two cases when he makes the argument that the extended nuclear deterrence commitment played a major role in non-proliferation decisions. See Daniel Deudney, “Unipolarity and nuclear weapons,” in *International Relations Theory and the Consequences of Unipolarity*, ed. G. John Ikenberry, Michael Mastanduno, and William C. Wohlforth (Cambridge, UK: Cambridge University Press, 2011), 305, 307.
 72. David Holloway notes this lack of historical analysis of the role of extended deterrence in what he calls “the proliferation objection” to a world without nuclear weapons in “Deterrence and Enforcement,” 353, note 19.

assumes an implicit desire to go for the bomb. It suffers from what I call the nuclear straitjacket. In this perspective, the ultimate security guarantor has to be nuclear. This approach neglects the possibility of a non-nuclear understanding of security. This is a strong bias given that the most generous estimate of the number of states that have ever had nuclear-weapon-related activities totals only forty.⁷³ Most states, as a matter of fact, have never expressed any interest in developing nuclear weapons even if academic and governmental forecasts have announced cascades of proliferation at least since the late 1950s.⁷⁴ Moreover, among those states that have had any form of nuclear-weapons-related activities, more have given up before or after building a nuclear arsenal (twenty-nine) than have kept their arsenals (nine).⁷⁵ It is worth noting that two recent authoritative analyses reject the idea of a wave of proliferation following the possible acquisition of nuclear weapons by Iran.⁷⁶ Moreover, recent studies of the management of nuclear-weapons programs show that, contrary to conventional wisdom, the rate of failure has increased over time and the time

73. Details about these numbers can be found in Benoît Pelopidas, "The Oracles of Proliferation: How Experts Maintain a Biased Historical Reading that Limits Policy Innovation," *Nonproliferation Review* 18, no. 1 (March 2011). Forty is the most pessimistic estimate of nuclear-weapons-related activities. See http://thenuclearworld.org/wp-content/uploads/2012/01/Benoit_Pelopidas_oracles_of_proliferation_NPR2011-3.pdf.

74. *Ibid.*

75. *Ibid.*, 306. (To add up to forty, the list would have to include Iran and Syria.)

76. William Potter, with Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century: A Comparative Perspective, Volume 2* (Stanford, CA: Stanford University Press, 2010); James J. Wirtz and Peter Lavoy, eds., *Over the Horizon Proliferation Threats* (Stanford, CA: Stanford University Press, 2012). These two books cover Argentina, Australia, Brazil, Burma, Egypt, Indonesia, Iran, Japan, Ukraine, South Africa, Taiwan, Turkey, South Korea, Syria, Saudi Arabia, Venezuela, and Vietnam. In the most recent of these two studies, only one case, Saudi Arabia, is considered as very likely to go for the bomb. See James Russell, "Nuclear Proliferation and the Middle East's Security Dilemma: The Case of Saudi Arabia," in *Over the Horizon Proliferation Threats*.

needed to lead a nuclear-weapon program to completion has increased.⁷⁷ So the idea that decreasing the size of the US nuclear arsenal would create additional incentives for proliferation underestimates important factors: the lack of desire for these weapons in the first place and the frequency of nuclear reversal in midcourse, on top of the managerial and technological obstacles to developing a nuclear-weapon program, which remain very strong.

Extended nuclear deterrence has neither been necessary nor sufficient to deter proliferation

A positive nuclear security guarantee has not been a necessary or sufficient condition for all states to give up nuclear weapons ambitions. In other words, some states have given up nuclear weapons plans despite the lack of a positive nuclear security guarantee or “nuclear umbrella” (South Africa, Libya, Ukraine, Sweden⁷⁸ and all the states that had not

77. Jacques Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians, and Proliferation* (Cambridge, UK: Cambridge University Press, 2012).

78. Analysts reluctant to consider Ukraine, Belarus, and Kazakhstan as nuclear-weapon possessors focus on the issues of launch codes, satellites, and testing. Here, I will focus on Ukraine as an example. To be considered as possessing a nuclear arsenal, Ukraine would have needed access to the launch codes for its missiles and would have had to become able to change the targets of that same arsenal. The experts I met agreed that the Ukrainians could have obtained the codes had they been given enough time. (Interview with Robert Nurick, Washington, DC, April 4, 2008; interview with Nikolai Sokov, Monterey, Calif., November 13, 2009.) James E. Goodby mentions a “strong presumption that if [Ukraine] chose to keep the nuclear weapons within its borders, it could have done so.” See “Preventive Diplomacy for Nuclear Nonproliferation in the Former Soviet Union,” in *Opportunities Missed, Opportunities Seized: Preventive Diplomacy in the Post-Cold War World*, ed. Bruce W. Jentleson (New York: Rowman & Littlefield, 2000), 110. It is true that Ukraine had neither an independent satellite system to monitor missiles nor a testing site, yet Christopher Stevens argues that nuclear warheads would have remained viable without testing until at least 2010, whereupon computerized tests could have been carried out. See Christopher Stevens, “Identity Politics and Nuclear Disarmament: The Case of Ukraine,” *Nonproliferation Review* 15, no. 1 (March 2008). He

expressed interest in developing these weapons in the first place) while others have developed nuclear weapons in spite of a nuclear security guarantee (France and Great Britain).⁷⁹

It is true that Ukraine and Libya received some form of security assurances but, in spite of what the Ukrainian leadership said for domestic purposes, the security assurances Ukraine received from Russia, the United Kingdom, and the United States on December 5, 1994, are nowhere close to a promise of extended nuclear deterrence and were ignored by Russia in 2014.⁸⁰ Moreover, the results of recent research across cases are contradictory and do not allow us to conclude that any strong relationship exists between a positive nuclear security guarantee and national nuclear-weapons decisions.⁸¹

also points out that US and Russian experts believed that the Ukrainians had the capacity required to ensure the security of nuclear warheads.

79. The complete analysis of those two early cases and their relevance can be found in Pelopidas, "The Nuclear Straitjacket."
80. The memorandum and an analysis of the negotiation can be found in Goodby, "Preventive Diplomacy for Nuclear Nonproliferation," 123–126 and 128–129. [See footnote 78.]
81. The key insights of this body of literature are the inconsistency of the results, the lack of statistically significant correlation between the relationship with a nuclear-armed state and nuclear-weapons-related behavior, and the skepticism of qualitative case studies regarding such a connection. Some studies suggest that a security guarantee offered by a nuclear-armed power has only a limited effect on a state's decision to explore a nuclear weapons option. See Philipp C. Bleek, "Why do states proliferate? Quantitative analysis of the exploration, pursuit, and acquisition of nuclear weapons," in *Forecasting Nuclear Proliferation in the 21st Century: Volume 1, The Role of Theory*, ed. William Potter, with Gaukhar Mukhatzhanova (Stanford, CA: Stanford University Press, 2010), 179–180; Erik Gartzke and Dong-Joon Jo, "Determinants of nuclear weapons proliferation," *Journal of Conflict Resolution* 51, no. 1 (2007); Sonali Singh and Christopher Way, "The correlates of nuclear proliferation: a quantitative test," *Journal of Conflict Resolution* 48, no. 6 (December 2004). After rectifying a methodological problem in Singh and Way, Sagan and Montgomery show that their result was not statistically significant, in "The Perils of Predicting Proliferation." However, Sagan is right to object that these results might be due to selection effects in "The Causes of Nuclear Proliferation," *Annual Review of Political Science* 14

The counter-argument would be to say that even if these conditions were not necessary across cases, it is enough if they were decisive in a few key cases, like Germany and Japan. It is true that German rearmament was a key concern in the post-World War II years and the Germans were suspected of seeking nuclear weapons. Similarly, after the end of the Cold War, the same fear reemerged and the German chancellor Helmut Kohl gave credit to what I called the nuclear straitjacket. He explained that Germany would not develop its own nuclear weapons because it trusted the US “nuclear umbrella.”⁸² We are therefore expected to think that extended nuclear deterrence kept Germany from going nuclear in the past and the same is supposed to be true for Japan, whose officials

(June 2011): 233. Other studies suggest opposite results and argue that pacts with nuclear-armed states would increase the risk of proliferation rather than decrease it. See, for example, Harald Müller and Andreas Schmidt, “The Little-Known Story of Deproliferation: Why States Give up Nuclear Weapons Activities,” in *Forecasting Nuclear Proliferation in the 21st Century: The Role of Theory*. But even in this case, the authors recognize that the link is only weak. This is in line with the skepticism of the qualitative literature regarding this type of correlation. Etel Solingen insists on the weakness of the correlation between positive nuclear security guarantees and nonproliferation and Jacques Hymans and T. V. Paul emphasize the variation in the effects of alliances on nuclear proliferation decisions from one case to the other. See Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton, NJ: Princeton University Press, 2007), 12–14, 25–27, 256; Jacques Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (Cambridge, UK: Cambridge University Press, 2006), 42–43, note 79; T. V. Paul, *Power Versus Prudence: Why Nations Forgo Nuclear Weapons* (Montreal: McGill Queens University Press, 2000), 53–154. Only Maria Rublee offers a more favorable analysis of positive nuclear security guarantees. She argues that if there is internal debate, such guarantees can be decisive and convince the supporters of an independent nuclear-weapon capability. See Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint* (Athens, GA: Georgia University Press, 2009), 202–203. However, even she does not argue for a systematic effect across cases. A good systematic review of this subset of literature can be found in Jeffrey W. Knopf, “Varieties of Assurance,” *Journal of Strategic Studies* 35, no. 3 (2012): 389–394.

82. Interview with Helmut Kohl, *Le Figaro*, May 6–7, 1992.

emphasize so strongly the nuclear component of the alliance.⁸³ It certainly played a role, but it is necessary to keep in mind that, first, it is hard to discern how policies were affected exclusively by the nuclear component of the security guarantee and, second, the utility of future nuclear options may be seen in a different light than they were in the past. [See chapters 13 and 14 in this volume regarding Korea and Japan.]

For example, the most detailed study on the German case argues that German nuclear policy decisions were not determined primarily by concerns about extended deterrence but rather about its foreign policy situation in NATO. For Bonn, showing that it was able to exercise a nuclear option was an opportunity for influence within NATO.⁸⁴ Decades later, the nuclear nonproliferation treaty has affected German perceptions of appropriate behavior and the Fukushima nuclear accident has crystallized the progress of an anti-nuclear culture which has played a strong role in German nuclear policy after the Cold War.⁸⁵ Similarly, in the case of Japan, the nuclear security guarantee appears as a necessary but not sufficient cause for nonproliferation.⁸⁶

83. The Taiwanese and South Korean rollbacks are better explained by other variables. See Solingen, *Nuclear Logics*.

84. Catherine McArdle Kelleher, *Germany and the Politics of Nuclear Weapons* (New York: Columbia University Press, 1975). Matthias Küntzel agrees that the purpose of Germany's policy was to reach a threshold status and to keep a nuclear weapons option open in *Bonn and the Bomb: German Politics and the Nuclear Option* (London: Pluto Press, 1995). There is disagreement on this issue though, and Beatrice Heuser makes the case for what I called the nuclear straitjacket in the German case, at least until Bonn signed the NPT. She argues that short of national nuclear forces, the German leadership advocated a NATO nuclear force and/or a European one. See Beatrice Heuser, *NATO, Britain, France and the FRG: Nuclear Strategies and Forces for Europe 1949–2000* (New York: St. Martin's Press, 1997), 125–126.

85. Harald Müller, "Nuclear Weapons and German Interests: An Attempt at Redefinition," Peace Research Institute Frankfurt, report 55, 2000: 10; Tom Sauer and Bob van der Zwaan, "US Tactical Nuclear Weapons in Europe after NATO's Lisbon Summit: Why their Withdrawal is Desirable and Feasible," *International Relations* 26, no. 1 (March 2012): 88–89.

86. Rublee, *Nonproliferation Norms*, 96.

So the nuclear security guarantee cannot be judged to have been a necessary or sufficient condition for nonproliferation across cases. Even when it played a role, the coupling of deterrence with nuclear weapons makes it hard to separate out what that role was.

The coupling of extended deterrence and nuclear weapons overestimates the role of these weapons in nonproliferation policy

The assessments of extended nuclear deterrence as a nonproliferation tool analyze the value of the nuclear component as a subset of the total value of the security guarantee that is offered. This leads to overstating the role of nuclear weapons in nonproliferation policy in two ways: (1) every security guarantee offered by a nuclear-armed state is implicitly considered as a nuclear security guarantee,⁸⁷ neglecting the central problem of credibility that plagues extended nuclear deterrence; and (2) the demand for nuclear security guarantees on the part of the protégé is mischaracterized.

Extended nuclear deterrence suffers from a basic credibility problem.⁸⁸ Its advantage vis-à-vis deterrence by conventional means comes from the higher level of anticipated damage if the nuclear threat is executed, but the credibility of this threat is dubious since its aim is to protect an ally and not necessarily the homeland of the protecting state. The tradition of

87. On the inability of most studies to conceive of a non-nuclear security strategy as purposive and deliberate as opposed to a default option, see Benoît Pelopidas, "Reversal and Restraint," in *Handbook of Nuclear Proliferation and Policy*, ed. Nathan Busch and Joseph F. Pilat (London: Routledge, 2015). The biased premise and the conclusion it necessarily leads to are condensed in the following sentence by Bruno Tertrais: "Security guarantees by a nuclear-armed state, potentially involving the use of nuclear weapons to protect an ally, have played an important role in preventing proliferation." See Tertrais, "Security Assurances and the Future of Proliferation," in *Over the Horizon Proliferation Threats*, 240.

88. Timothy W. Crawford, "The Endurance of Extended Deterrence: Continuity, Change, and Complexity in Theory and Policy," in *Complex Deterrence: Strategy in the Global Age*, ed. T. V. Paul, Patrick Morgan, and James Wirtz (Chicago: University of Chicago Press, 2009).

non-use of nuclear weapons makes this lack of credibility more of a fact every day.⁸⁹ This credibility deficit is best captured by the words of Henry Kissinger, who confessed at a meeting of American and European defense experts that, as national security adviser and secretary of state, he had often repeated the promise of extended deterrence to NATO allies. Then, he added:

If my analysis is correct, these words cannot be true. And we must face the fact that it is absurd to base the strategy of the West on the credibility of the threat of mutual suicide. Therefore, I would say—which I might not say in office—the European allies should not keep asking us to multiply strategic assurances that we cannot possibly mean, or, if we do mean, we would not want to execute, because if we execute we risk the destruction of civilization.⁹⁰

Even if this statement has a specific purpose and has to be understood in context, it is a candid acknowledgement of the credibility problem of extended nuclear deterrence: the protector who pretends to use nuclear weapons to protect an ally either does not mean what he says or, if he means it, will not want to keep his promise when the time comes because it is too risky. In the end, the credibility of extended nuclear deterrence pledges never seems to be credible enough to dissuade those nations that decided to go for the bomb from doing so.

Beyond the underestimation of the credibility problem, the need for extended nuclear deterrence as a nonproliferation tool is overestimated because analysts misunderstand the demand for positive nuclear security

89. For an argument about the role of the taboo in decreasing the credibility of extended deterrence pledges, see George Perkovich, "Extended Deterrence on the Way to a Nuclear-Free World," paper for the International Commission on Nuclear Non-proliferation and Disarmament, May 2009, http://icnnd.org/Documents/Perkovich_Deterrence.pdf.

90. Henry A. Kissinger, "The Future of NATO," *Washington Quarterly* 2, no. 4 (Autumn 1979).

guarantees: they assume that such a demand does exist on the part of the protégé and that it will not coexist with an independent deterrent. None of these claims is supported by the historical record.

There have been numerous cases in which the presence of such a guarantee in the form of nuclear weapons deployed on foreign soil was perceived as more threatening than protecting. The type of security guarantee that is requested is not necessarily of a nuclear nature and pretending to offer a “nuclear umbrella” can be counterproductive.⁹¹ Good examples of a rather widespread fear would be Norway and Libya.

As a NATO member since 1954, Norway benefits from a nuclear umbrella. However, in December 1957, Prime Minister Einar Gerhardsen unexpectedly announced at a NATO summit in Paris that his country would not accept the deployment or storage of nuclear weapons on its soil in peacetime.⁹² By doing so, the prime minister avoided turning his country into a target of Soviet nuclear forces. Before speaking at the NATO summit, he had assured the Soviet Union that Norway would not authorize American troops to supervise nuclear charges on its soil.⁹³ This fear is not unique. In the early days of the Cold War, when British Prime Minister Clement Attlee was informed that if nuclear weapons had to be

91. One critical problem here is that positive and negative assurances can be in tension since the efforts to increase the credibility of the pledge of extended nuclear deterrence require affirmation of a readiness to use them, which is contradictory to the idea of negative security assurances. Bruno Tertrais shows it well in “Security Assurances and the Future of Proliferation.” See also Knopf, “Varieties of Assurance,” 388–389.

92. When they decided to be among the founding members of NATO, Norwegian authorities also made clear that they would not accept permanent basing of foreign forces on their soil either. Simon Duke, *United States Military Forces and Installations in Europe* (New York: Oxford University Press, 1989), 217.

93. Astrid Forland, “Norway’s Nuclear Odyssey: From Optimistic Proponent to Nonproliferator,” *Nonproliferation Review* 4, no. 2 (Winter 1997): 12–14.

used against the Soviet Union, they would be launched from British territory, he tried to convince President Truman to do otherwise.⁹⁴

As for Libya, it should have been a perfect case for the nuclear straitjacket—either an independent national deterrent or an extended nuclear security guarantee—given the length of the pursuit of nuclear weapons by Colonel Moammar Gadhafi⁹⁵ and the fact that his life had been threatened by the United States.⁹⁶ The current historical knowledge about the Libyan case suggests, however, that Tripoli received no positive nuclear security guarantee. It is true that it received two security guarantees from those with whom it negotiated the dismantlement of its so-called weapons of mass destruction program, none of which had anything to do with extended nuclear deterrence. The first one was offered during negotiations around the settlement of the Lockerbie case in the late

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94. Nicholas Wheeler, "The Attlee Government's Nuclear Strategy, 1945–1951," in *Britain and the First Cold War*, ed. Anne Deighton (New York: St. Martin's Press, 1990). Such a fear and opposition to a "nuclear umbrella" can be found in Sweden and New Zealand.
95. Gadhafi started the nuclear-weapons program only a few months after taking power in 1969 and ended it in 2003. See Rublee, *Nonproliferation Norms*, 152; Solingen, *Nuclear Logics*, 213, 215; Malfrid Braut-Hegghammer, "Libya's Nuclear Turnaround: Perspectives from Tripoli," *Middle East Journal* 62, no. 1 (Winter 2008): 59–61; Harald Müller, "The Exceptional End to the Extraordinary Libyan Nuclear Quest," in *Nuclear Proliferation and International Security*, ed. Morten Bremer Maerli and Sverre Lodgaard (London: Routledge, 2007), 78; Wyn Q. Bowen, *Libya and Nuclear Proliferation: Stepping Back from the Brink* (London: Oxford University Press, 2006), 52; David Albright, *Peddling Peril: How Secret Nuclear Trade Arms America's Enemies* (New York: Free Press, 2010), 49; William Langewiesche, *The Atomic Bazaar: The Rise of the Nuclear Poor* (New York: Penguin, 2007), 171.
96. The operation El Dorado Canyon in 1986 can be considered as an attempt at killing the Libyan leader given the amount of effort to determine where he would spend the night the evening before the attack. Leif Mollo, *The United States and Assassination Policy: Diluting the Absolute*, MA thesis, Naval Postgraduate School, Monterey, Calif., December 2003: 15–16; Ward Thomas, *The Ethics of Destruction, Norms and Force in International Relations* (Ithaca, NY: Cornell University Press, 2001), 75–77; and Pelopidas, *Renoncer à l'arme nucléaire*, 216–220.

1990s.⁹⁷ It consisted in implicitly assuring the Gadhafi regime that it was not under threat. The second one was not formalized before June 2006. That was more than two and a half years after Libya officially announced it had given up on nuclear weapons, even if one could argue that the discussions on the terms of this letter started just before the official announcement.⁹⁸ In this letter, signed by the British and then the Libyan authorities, London committed itself to help satisfy Tripoli's needs in terms of conventional defense and to actively seek an action from the United Nations Security Council if Libya were attacked by biological or chemical weapons.⁹⁹ Neither of these guarantees can be presented as a positive nuclear security guarantee. The only nuclear component of these declarations reaffirms the negative security guarantee the United Kingdom provided to the non-nuclear NPT member states in April 1995.

This does not mean that security considerations did not contribute to Libya's decision to give up nuclear, biological, and chemical weapon programs. The security considerations were focused on regime survival.¹⁰⁰ Gadhafi's son Saif al-Islam was explicit about the need for security guarantees, but focused on the conventional level. In 2004, he reported the commitments of the United States and the United Kingdom in the following terms: "They said we, the West, and the international society will

97. On December 21, 1988, a bomb was detonated on board Pan Am flight 103 from Frankfurt to Detroit and parts of the plane crashed onto Lockerbie, Scotland, killing more than 270 people. After a two-year investigation, an arrest warrant was issued for two Libyan nationals.

98. Wyn Q. Bowen, "Libya, nuclear rollback and the role of negative and positive security assurances," in *Security Assurances and Nuclear Nonproliferation*, 12.

99. *Ibid.*, 1.

100. Braut-Hegghammer, "Libya's Nuclear Turnaround," 71; Bowen, "Libya, nuclear rollback and the role of negative and positive security assurances," 9–11; Bruce Jentleson and Christopher Whytock, "Who 'Won' Libya? The Force-Diplomacy Debate and its Implications for Theory and Policy," *International Security* 30, no. 3 (Winter 2005–2006): 56, 74; Harald Müller, "The Exceptional End to the Extraordinary Libyan Nuclear Quest," 88–89; Solingen, *Nuclear Logics*, 216.

be responsible for the protection of Libya” and will provide “necessary defensive weapons.”¹⁰¹

Not only does the nuclear straitjacket wrongly assume that demand for a positive nuclear security guarantee exists—it also falls into the opposite trap of neglecting that such a demand can coexist in various ways with a national nuclear-weapon program. For example, it fails to capture the thinking of decision-makers in France and the United Kingdom when their nuclear-weapons programs were developed.¹⁰² In both cases, the leaders never thought their choice was *either* a national nuclear-weapons capability *or* a positive nuclear security; they contemplated combinations of both.

Non-democratic leaders can give up nuclear weapons for regime survival

The third recurring critique of the goal of a world without nuclear-weapon states is that it is not feasible because states with relatively weak conventional arsenals will never give up their nuclear arsenals.¹⁰³ A specific

101. Carla Ann Robbins, “In giving up arms, Libya hopes to gain new economic life,” *Wall Street Journal*, February 12, 2004.

102. Pelopidas, “The Nuclear Straitjacket.”

103. The three cases would be Israel, France, and Pakistan. A chapter is dedicated to each country in Barry Blechman and Alexander Bollfrass, eds., *National Perspectives on Nuclear Disarmament* (Washington, DC: Henry L. Stimson Center, 2010). See also Avner Cohen, “Israel’s Nuclear Future: Iran, Opacity, and the Vision of Global Zero,” and Venance Journé, “France’s Nuclear Stance: Independence, Unilateralism, and Adaptation,” in *Getting to Zero: The Path to Nuclear Disarmament*, ed. Catherine McArdle Kelleher and Judith Reppy (Stanford, CA: Stanford University Press, 2010); and Devin T. Hagerty, “The Nuclear Holdouts: India, Israel, and Pakistan,” in *Slaying the Nuclear Dragon: Disarmament Dynamics in the Twenty-First Century*, ed. Tanya Ogilvie-White and David Santoro (Athens, GA: University of Georgia Press, 2012); James M. Acton, *Deterrence during Disarmament: Deep Nuclear Reductions and International Security* (Abingdon, UK: Routledge, 2011); Malcolm Chalmers, Andrew Somerville, and Andrea Berger, eds., *Small Nuclear Forces: Five Perspectives* (London: Royal United Services Institute, 2011).

version of this argument is used as the scarecrow intended to stop the conversation about the goal of a world without nuclear weapons: dictators with nuclear weapons will never give them up. This section will assess this particular critique. The most frequently quoted supporting evidence for this argument is that dictators have learned the lesson from Libya. On December 19, 2003, President George W. Bush officially welcomed Colonel Gadhafi's decision to give up weapons of mass destruction with the following words:

Today in Tripoli, the leader of Libya, Colonel Muammar al-Gaddafi, publicly confirmed his commitment to disclose and dismantle all weapons of mass destruction programs in his country. . . . And another message should be equally clear: leaders who abandon the pursuit of chemical, biological, and nuclear weapons, and the means to deliver them, will find an open path to better relations with the United States and other free nations. . . . As the Libyan government takes these essential steps and demonstrates its seriousness, its good faith will be returned. Libya can regain a secure and respected place among the nations, and over time, achieve far better relations with the United States. . . . Old hostilities do not need to go on forever.¹⁰⁴

The so-called WMD programs were dismantled with the help of the United States, Russia, and the United Kingdom.¹⁰⁵ Less than ten years

104. BBC News, transcript of President George Bush's statement in Washington on Libya's dismantling of WMD, December 20, 2003, <http://news.bbc.co.uk/2/hi/americas/3336159.stm>.

105. Jack Boureston and Yana Feldman, "Verifying Libya's Nuclear Disarmament," *Trust & Verify* 112, Verification Research, Training and Information Centre, London, 2004; Joseph Cirincione, Jon Wolfsthal, and Miriam Rajkumar, *Deadly Arsenals: Nuclear, Biological, and Chemical Threats*, 2nd ed. (Washington, DC: Carnegie Endowment for International Peace, 2005). One has to recognize that his long quest for nuclear weapons had led to very little success. For a summary of the Libyan program's failures and shortcomings, see Hymans, *Achieving Nuclear Ambitions*, 239–243. However, I argued elsewhere that these were not enough to pretend that Libya was not a

later, members of the armed forces of the National Transition Council captured Gadhafi and beat him to death after his convoy was bombed by NATO forces. Many constituencies of the nuclear conversation seem to have learned the same lesson from this episode: if you are not a US ally, keep your nuclear weapons or get a few quickly. Otherwise, your survival as a ruler is not assured. Pundits and proliferation analysts, civilian and military alike, have publicly expressed this lesson from the Libyan story.¹⁰⁶ The efforts by US officials to disconnect Libyan disarmament from the fall of the Gadhafi regime did not convince observers.¹⁰⁷ The North Koreans were the first ones to express skepticism publicly. “The situation in Libya is a lesson for the international community,” said a spokesman for the North Korean Foreign Ministry, unnamed by the North’s news agency. “It has been shown to the corners of the earth that Libya’s giving up its nuclear arms, which the US liked to chatter on about, was used as an invasion tactic to disarm the country. . . . Having one’s own strengths was the only way to keep the peace.”¹⁰⁸ This is not an isolated statement. Iran’s religious leader, Ayatollah Ali Khamenei, addressing the population for

serious proliferator: it did not give up when the sanctions and the technological impediments were the strongest. See Pelopidas, *Renoncer à l’arme nucléaire*.

106. Among others, see Andrew J. Pierre, “If Gaddafi Had The Bomb,” *Huffington Post*, August 4, 2011; Waltz, “The Great Debate,” 92. Kenneth N. Waltz and Mira Rapp-Hopper, “What Kim Jong-Il Learned from Qaddafi’s Fall: Never Disarm,” *The Atlantic*, October 24, 2011; Gus Lubin, “Why The Libyan War Means That No Country Will Ever Give Up Its Nuclear Weapons Again,” *Business Insider*, March 24, 2011; Norman Cigar, “Libya’s Nuclear Disarmament: Lessons and Implications for Nuclear Proliferation,” US Marine Corps University, Middle East Studies (January 2012): 12–13.
107. “Where they’re at today has absolutely no connection with them renouncing their nuclear program or nuclear weapons,” said Mark Toner, a State Department spokesman, in March 2011. Quoted in Mark McDonald, “North Korea Suggests Libya Should Have Kept Nuclear Program,” *New York Times*, March 24, 2011.
108. Korea JoongAng Daily, “Libyans should have kept nukes, says Pyongyang,” March 24, 2011, <http://koreajoongangdaily.joinsmsn.com/news/article/article.aspx?aid=2933884>.

the Persian New Year, said that Gadhafi's concessions to the West over Libya's nuclear program showed that Iran was right to continue to reject any curb to its nuclear development.¹⁰⁹ As Norman Cigar wrote in a paper for the US Marine Corps University, "The sense of legitimacy of a country's previous acquisition of nuclear weapons or its efforts to do so will increase, in part thanks to a more understanding environment, especially among countries with similar concerns."¹¹⁰

Advocates for a world without nuclear weapons seem to face a conundrum. The end goal becomes impossible to achieve because no dictator will ever give up nuclear weapons. Therefore, it should not be desired. It is true that the United States has never attacked a nuclear-armed adversary to overthrow its regime and only one nuclear-armed state has suffered military attacks aiming at least at changing the regime: Israel.¹¹¹

109. Robin Pomeroy, "Don't Bomb Libya, Arm Rebels, Says Iran's Khamenei," Reuters, March 21, 2011, <http://www.reuters.com/article/2011/03/21/us-iran-khamenei-idUSTRE72K50L20110321>.

110. Cigar, "Libya's Nuclear Disarmament," 13.

111. In 1973, it was well-known that Israel had developed such a capability but Egypt and Syria attacked anyway. Other cases would be Argentina invading the British Falkland Islands in 1982 and the Iraqi attack on Israel in the 1991 Persian Gulf War. But the goal was never to overthrow the regime in the United Kingdom or in Israel. It was only to regain territory. See Berry et al., "Delegitimizing Nuclear Weapons," 26–27; Paul, *The Tradition of Non-Use of Nuclear Weapons*, 145. It is tempting to mention the 1967 war as a precedent given that Israel had assembled a crude nuclear device in the run-up to the war (Avner Cohen, "Crossing the Threshold: The Untold Nuclear Dimension of the 1967 Arab-Israeli War and Its Contemporary Lessons," *Arms Control Today* 37, June 2007) and that the goal of the Arab coalition might have been to overthrow the regime in Israel. The rhetoric on the Egyptian radio on the eve of the conflict was challenging the Israeli leader Levi Eshkol and suggesting that opening fire would lead to the "death and annihilation of Israel." See Pierre Hazan, 1967, *la guerre des six jours: la victoire empoisonnée* (1967, the six-day war: the poisoned victory) (Paris: Complexe, 2001), 18. However, the Egyptian leadership at the time was not aware of the Israeli capability. See Avner Cohen, *Israel and the Bomb* (New York: Columbia University Press, 1998), 259–276.

Noting that dictators can change their minds and calculations about the utility of nuclear weapons even after pursuing these weapons for decades¹¹² is important but not sufficient, since we only have a few cases of renunciation of an existing arsenal. It is worth focusing on the supposed worst-case scenario of a dictator keeping nuclear weapons while other states have disarmed. To reassess this scenario, I will make two points: first, nuclear weapons do not protect against coups and popular uprisings; and second, the incentives to denuclearize would be enormous because of the combined pressures of global norms, big-power opposition, economic sanctions, and powerful conventional forces arrayed against the holdout.

112. Moammar Gadhafi was the case in point. It is true that the Libyan regime did not achieve much in terms of nuclear technology. However, the focus on technological failure does not account for the timing of Gadhafi's decision to disarm. Given that he started a nuclear-weapon program as soon as he took power in 1969 and did not make significant progress, why suddenly give up in 2003? Sanctions tell only part of the story: they had asphyxiated the country since the 1970s and, most importantly, sanctions imposed by the UN Security Council since 1992 (UNSC Res 731, 748, 883) were removed before 1999, that is, several years before the decision to give up weapons of mass destruction. Sanctions from the European Union had also been softened since the late 1990s. The explanation based on the threat of regime change after the United States invaded Iraq is dubious, too, for two reasons: (1) The 1986 bombings intended to kill Gadhafi did not lead him to give up the WMD programs, so why should a more remote threat produce a stronger effect? (2) In the 1990s, during the secret negotiations with the United States and the United Kingdom, the Libyan regime offered to give up its weapons of mass destruction after the threat of regime change was removed, not because of it. So technological failures, sanctions, and regime change policy in Iraq might have played a role in the decision to give up WMDs, but they neglect the fact that the Gadhafi regime had lost its original rationale for building the weapons and, since the early 1990s, its foreign policy and security perspective were shifting from pan-Arabism to pan-Africanism, a context in which the value of nuclear weapons was definitely lower. A fuller analysis of the Libyan case can be read in Pelopidas, *Renoncer à l'arme nucléaire*.

Nuclear weapons do not protect against coups, popular uprisings, and destabilization campaigns by non-state actors

Nuclear weapons may deter the United States from invading countries to change their regimes. However, they are powerless against coups, popular uprisings, or destabilization campaigns by non-state actors. As George Shultz, William Perry, Henry Kissinger, and Sam Nunn note, “In the case of the Soviet Union, nuclear weapons did not prevent collapse or regime change”¹¹³ in 1990. In that respect, the lesson learned from the Libyan story assumes that the popular uprising alone would not have been enough to overthrow the regime. This might be true even if we remember that external support was not decisive in the success of the Egyptian uprising against Hosni Mubarak.¹¹⁴ But does it mean that the United States and foreign powers would not have increased their support for the protesters in indirect ways? It is reasonable to assume that the allies would have welcomed opportunities to overthrow the regime by other means, too. If so, the defeat of the opponents of Gadhafi, had he kept his weapons program, becomes even more uncertain. The popular uprisings in the Arab world tell another story. Even if they study popular uprisings and try to learn how to defeat them, dictators should fear their own populations. Nuclear weapons cannot protect them against popular uprisings.

Nuclear weapons cannot deter destabilization campaigns by secessionist organizations and other non-state actors either. This was true during the Cold War and remains true today. Lebanese and Palestinian militant groups have launched offensives against Israel since the 1970s. In the 1980s, the Tamil Tigers attacked a presumably nuclear-armed India, and Chechen rebel groups have struggled against Russia since 1994.¹¹⁵ Even if the purpose of these attacks was not to change the regime, it

113. George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, “Deterrence in the Age of Nuclear Proliferation,” *Wall Street Journal*, March 7, 2011.

114. Erica Chenoweth and Maria J. Stephan, *Why Civil Resistance Works: The Strategic Logic of Nonviolent Conflict* (New York, Columbia University Press, 2011), 230.

115. Paul, *The Tradition of Non-Use of Nuclear Weapons*, 145.

is also worth recalling the Pakistani-supported terrorist attacks in India even after New Delhi officially became a nuclear-weapon possessor in 1998, the terrorist attacks against US interests supported by Libya in the 1980s, and the attacks of Al Qaeda against the United States, United Kingdom, and Russia.

This should not be read as an incentive to support violent insurrections in nuclear-weapon states since chaos would increase the risk of theft of nuclear material and possibly of nuclear use. If this analysis is correct, the United States should shift from a threat-based strategy—of which deterrence is one type—to a reassurance strategy, which credibly rejects regime change and emphasizes the increased vulnerabilities associated with nuclear-weapons possession.¹¹⁶ Awareness of this last point and of other limits of nuclear safety and security appears as a first step to make a dictator more amenable to giving up his weapons.

Could a dictator keep nuclear weapons indefinitely?

The dictatorship we are discussing is easy to identify: North Korea. If the problem is framed in terms of rogue states or states of concern, one should then include Iran if it acquires nuclear weapons and, possibly, Pakistan. The assumption is that because we think these leaders will never give up their nuclear arsenals, we should give up the goal of getting to zero. So would a world without nuclear weapons except for one dictatorship be more dangerous than the world we live in? To answer that question, one can then build two scenarios: either the dictator is non-deterrable and wants to create the maximum of damage or he is deterrable. In the first scenario, keeping nuclear weapons or not will not change the outcome, unless a credible missile defense is built¹¹⁷ and no accidental launch

116. For example, John Steinbruner suggested a form of cooperative or consensual security that would subordinate the practice of deterrence to that of reassurance in "Consensual Security," *Bulletin of the Atomic Scientists* 64, no. 1 (March–April 2008).

117. This would require specifying the detection systems because even if a credible missile-defense system were built, which is unlikely, the nuclear dictatorship could

happens: once the undeterrable dictator is in power and possesses a nuclear-weapon capability as well as delivery vehicles, millions will die. In the second scenario, the question becomes: can conventional capabilities deter a nuclear attack?

Opponents of the goal of a world without nuclear weapons have not decoupled deterrence and nuclear weapons. “If such states cannot be disarmed,” argue Josef Joffe and James Davis, “they must be deterred. But how can nuclear weapons be deterred unless with nuclear weapons?”¹¹⁸ The argument is misguided in multiple ways.

First, it misses the fact that nuclear disarmament is a long-term process and that the North Korean case will be reconsidered when we reach a lower level of nuclear arsenals in the world. By then, the situation will probably have changed in ways we cannot fully grasp today. For instance, in a world approaching zero nuclear weapons, stringent prohibitions on nuclear testing would be in place and efforts to detect cheaters would increase considerably, so the number of hidden weapons would be limited and they would probably not be tested. Given this uncertainty, renouncing a policy goal because of our expectations about the future behavior of a dictatorship grants the ruler of this state much more power and leverage than is deserved.

More fundamentally, the deterrent value of conventional capabilities will have increased considerably and, in any case, these conventional capabilities will remain sufficient to inflict unacceptable damage to a nuclear dictatorship. I realize that precision-guided munitions have been emphasized several times since the 1970s to re-legitimize conventional deterrence, with only limited success.¹¹⁹ However, the recent

send decoys to defeat it and launch its nuclear warheads only once the anti-ballistic missile defense had been defeated.

118. Josef Joffe and James W. Davis, “Less than Zero: Bursting the New Disarmament Bubble,” *Foreign Affairs*, January–February 2011: 8.

119. The classical critique of conventional deterrence in general, and of this argument in particular, remains John Mearsheimer, *Conventional Deterrence* (Ithaca, NY: Cornell University Press, 1983).

developments of drone technology and the project of prompt global strike capabilities should lead us to consider that these weapons may credibly be used to destroy key assets of a nuclear dictatorship. If so, their deterrent potential would be at least as good as that of nuclear weapons. In other words, US possession of a military advantage and destructive capability is one reason to believe in the efficacy of a conventional deterrent in these circumstances. Robert Jervis convincingly argues that it is overwhelming and that small nuclear arsenals are not enough to compensate.¹²⁰ Even if this superiority declined, the broad coalition of countries that would unite against the threat of a nuclear-armed state in a world with only a few of them could create a convincing deterrent capability.¹²¹ A few analysts even argue that progress in conventional capabilities and the so-called revolution in military affairs make the prospect of a decapitating first strike against a weak nuclear-armed state “more than just a theoretical possibility, although a state contemplating such a strike could be deterred by the remote possibility of nuclear retaliation.”¹²² The late ambassador-at-large Paul Nitze had already made this argument in his last op-ed for the *New York Times* on October 28, 1999.¹²³

120. Robert Jervis, “Deterrence, Rogue States and the U.S. Policy,” in *Complex Deterrence*, 134.

121. Dennis Gormley convincingly argues that US conventional superiority is an obstacle to the ultimate goal of a world without nuclear weapons in “American Conventional Superiority: the Balancing Act,” in *Getting to Zero*. David Holloway and Edward Lfft rightfully observe that the enforcement problem would be harder if the cheater were a great power. See Edward Lfft, “Practical Considerations Related to Verification,” in *Deterrence: Its Past and Future*, 331; and David Holloway, “Deterrence and Enforcement in a World Free of Nuclear Weapons,” 343.

122. Michel Fortmann and Stéfanie von Hlatky, “The Revolution in Military Affairs: Impact of Emerging Technologies on Deterrence,” in *Complex Deterrence*, 317.

123. Paul H. Nitze, “A Threat Mostly to Ourselves,” *New York Times*, October 28, 1999. Hypothesizing that there could be such a thing as unambiguous intelligence, he wrote: “As for the so-called rogue states that are not inhibited in their actions by the consensus of world opinion the United States would be wise to eliminate their nuclear capabilities with the preemptive use of our conventional weapons—when

Regarding the threat of theft of nuclear material and proliferation, the available quantity would be much smaller than it is now and all the former nuclear-weapon states would have a common incentive to enforce nonproliferation. As Pavel Podvig writes, “A world with North Korea as the only nuclear power would be a rather uncomfortable place, but the world in which it is the *ninth* nuclear weapons state is even more uncomfortable.”¹²⁴

These two scenarios would require further elaboration about my assumptions in terms of latency, availability of other weapons, intentions, crisis stability, and interstate relations in the world I describe. In this chapter, I just want to show that apparently obvious objections to the goal of a world without nuclear weapons become much weaker as soon as you decouple the notion of deterrence and nuclear weapons and keep in mind our current level of nuclear threat.

Conclusion: Beyond the “Nuclear Straitjacket”

Earlier in the chapter, I asked whether seventy years is a high enough standard of evidence for us to surrender our fate to nuclear weapons forever. In brief, we don’t know what caused the lack of war between great powers. Several answers compete. So far, we have decided to trust one answer that would cost millions of lives if it were proven wrong because there is no foreseeable protection against a nuclear strike.¹²⁵ We will never reach

necessary, and when we have unambiguous indication of these countries’ intent to use their nuclear capability for purposes of aggrandizement. The same principle should apply to any threat emanating from unstable states with nuclear arsenals.”

124. Pavel Podvig, “What if North Korea Were the Only Nuclear Weapon State?,” *Bulletin of the Atomic Scientists*, May 27, 2009.
125. This has been true at least since nuclear-tipped ballistic missiles could be launched underwater from a submarine which is impossible to detect. As a consequence, destroying the missile before it is launched became impossible. It is well established that civil defense programs make promises that are impossible to keep. See Lee Clarke, *Mission Improbable: Using Fantasy Documents to Tame Disaster* (Chicago:

a level of certainty that makes this policy choice as obvious as some claim it to be.¹²⁶ The critique of the goal of a world without nuclear weapons raising the specter of the return of great-power war has to face this uncertainty. It must also face the mixed record of nuclear weapons as peacemakers.

Not only is the reliance on nuclear deterrence a bet portrayed as a certainty in practice if not in words, but this bet considerably overestimates the peace-keeping capacities of this strategy. Nuclear deterrence has, at times, favored more risk-prone behavior in a series of cases, does not avoid organizational and command-and-control problems, and has not been sufficient to keep the peace in a series of critical situations.

The idea that reaching a world without nuclear weapons will “unleash the dogs of war” is unconvincing.

We cannot and will not know for sure what kept peace in the last seven decades. Looking for certainties and silver bullets is what makes the nuclear peace hypothesis so appealing. What we know is that the long peace was limited in time and space, that luck played a significant role that cannot be replaced by deterrence, that we might not yet know the full extent of its role due to persisting secrecy about nuclear-weapons-related accidents and that nuclear deterrence as a strategy created more

University of Chicago Press, 1999), 30–40, 90–97; Dee Garrison, *Bracing for Armageddon: Why Civil Defense Never Worked* (Oxford: Oxford University Press, 2006). Even if the current missile-defense project could be made credible, it is not intended as a complete protection against a nuclear strike, for two reasons. First, it focuses on threats from regional powers only. Second, it is a US system and there is little prospect of sharing it.

126. This is quite a recent development. As Daniel Deudney aptly notes: “Early proponents emphasized the tentative, second-best, and temporary character of [deterrence statism, i.e., the idea that nuclear weapons make war prohibitively costly], but many of its contemporary proponents are confident that this solution is highly enduring and close to the best of all solutions,” *Bounding Power*, 247. James Goodby and Steven Pifer develop this point in the last section of their chapter in this volume. On the role and risk of overstated certainties in the nuclear discourse and the shift from one to another, see Benoît Pelopidas, “Critical Thinking about Nuclear Weapons,” *Nonproliferation Review* 17, no. 1 (2010): 191–193.

risk-prone behavior on the part of the nuclear possessors and did not ultimately prevent nuclear-armed states from fighting a war.

So the only question worth asking is whether a war among great powers would be more or less likely than it is now. The trend toward a decline in inter-state wars seems to be robust and suggests that such wars might be less likely. In any case, war in a world without nuclear weapons would not run the risk of nuclear escalation, provided that the absence of such weapons is properly enforced.

To sum up, nuclear proliferation risks are not likely to increase if the United States decreases the size of its nuclear arsenal. A closer look at nuclear history demonstrates that, contrary to the accepted wisdom, a positive nuclear security guarantee has not been a silver bullet for non-proliferation even if it played a role in a couple of nuclear choices. Current policy discussions overestimate the appeal of nuclear weapons and wrongly assume that states are seeking to organize their national security around the alternative between an independent nuclear deterrent and a “nuclear umbrella.” They neglect the most recent studies that underplay the threat of massive proliferation of nuclear weapons by states in the next decades as well as the challenges associated with successful proliferation. More importantly, they underestimate the enormous credibility problem of extended nuclear deterrence and the facts that it might make the protégé feel more insecure or, on the contrary, might not alter his plans for a national nuclear-weapons capability. These key problems of extended nuclear deterrence are going to remain for the foreseeable future. Finally, extended nuclear deterrence is not well-equipped to deter terrorists from acquiring nuclear weapons. Because of these problems, a more cooperative and tailored policy of security guarantees could be elaborated that would not rely so explicitly on nuclear weapons. Conventional threats would be much more credible and would not invite nuclear retaliation.¹²⁷ This shift, which would require close consultations

127. This borrows and modifies Scott Sagan’s argument in “The Commitment Trap: Why the United States Should Not Use Nuclear Threats to Deter

with allies who understand the nuclear umbrella as the ultimate sign of US protection, would free the United States from a possible reputation cost of not keeping its promises if an ally is attacked. It might also address the concerns of allies who consider that having US nuclear weapons on their soil makes them more vulnerable.

The idea that dictators will never give up their nuclear arsenal is not entirely convincing. It might seem to be early to consider this case, but opponents of the goal of a world without nuclear weapons intend to use it to delegitimize the goal and stop the conversation. So it is worth rebutting the argument right now. To do so, one should emphasize that nuclear weapons do not protect against coups, popular uprisings, or destabilization campaigns by non-state actors and that the incentives for a nuclear-armed dictator to disarm would be enormous.

In the remainder of this chapter, I will suggest three ways in which opponents to nuclear status quo or endless modernization can move the conversation beyond the nuclear straitjacket.

Address the contradiction between nuclear deterrence and nonproliferation

The perceived value of nuclear weapons and the scope of their mission have evolved. Historically, their scope has been shrinking. The period starting in the 1990s—reaffirming that nuclear weapons can also deter chemical and biological attacks—appears anomalous. Therefore, decoupling “nuclear” from “deterrence” in order to reassess the added deterrent value of nuclear weapons and the effectiveness of deterrence as a strategy remains promising. This endeavor might highlight the contradiction between absolute faith in nuclear deterrence and unconditional rejection of nuclear proliferation. Indeed, a strong faith in nuclear deterrence as an exceptional strategy for great-power peace and nonproliferation would actually contradict US efforts toward nonproliferation: logically,

Biological and Chemical Weapon Attacks,” *International Security* 24, no. 4 (Spring 2000).

if nuclear weapons are peacemakers provided that they spread slowly and in a managed way, one should welcome their spread.¹²⁸ On a policy level, it would overstate the otherwise declining utility of these weapons for security and regime survival instead of emphasizing our common vulnerability to the nuclear danger. As a consequence, pretending that the “atomic magic” is intact would encourage proliferation¹²⁹ and, because of the tendency of dictators attracted to the bomb to overstate their potential achievements as I outlined above, would jeopardize the main rationale for these leaders to give up their nuclear ambitions. Therefore, shifting toward a “no-first-use policy” seems to be the next step, for three main reasons. First, it would decrease reliance on nuclear weapons by reducing the scope of their mission. Second, it would avoid a “commitment trap”¹³⁰ leading the United States to lose credibility if it does not respond to a WMD attack with nuclear weapons. Third, since the expected casualties on the US side after this type of strike are much more limited, it might “bolster conventional deterrence”¹³¹ by increasing the reputation for resolve of the United States.

128. Kenneth Waltz is consistent in that respect. See “Why Iran Should Get the Bomb: Nuclear Balancing Would Mean Stability,” *Foreign Affairs*, July–August 2012. French theorist Pierre-Marie Gallois made the same argument.

129. This is why the choice we are facing for the future is often characterized as either nuclear proliferation or global nuclear disarmament. George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn wrote that “continued reliance on nuclear weapons as the principal element for deterrence is encouraging, or at least excusing, the spread of these weapons,” in “Deterrence in the Age of Nuclear Proliferation,” *Wall Street Journal*, March 7, 2011. See also Holloway, “Deterrence and Enforcement in a World Free of Nuclear Weapons,” 363; and Sagan, “The Great Debate,” 88.

130. See Sagan, “The Commitment Trap”; and Scott Sagan, “The Case for No First Use,” *Survival* 51, no. 3 (June–July 2009), 171.

131. Michael Gerson, “No First Use: The Next Step for U.S. Nuclear Policy,” *International Security* 35, no. 2 (Fall 2010): 47; and Fortmann and von Hlatky, “The Revolution in Military Affairs,” 309–310.

Engage the expected veto player

The amount of opposition to the goal might be overestimated. Cold War history offers several examples of high-level US and Soviet officials who understood that the current course of nuclear policy in their country was flawed but did not speak up because they thought a third party would be reluctant to change and powerful enough to block any change.¹³²

For example, the US secretaries of defense under the Ford and Carter administrations kept referring to an external audience that was supposed to believe that the balance of nuclear forces was a relevant measurement of American power. This supposed belief about other international actors seems to have been a central driver of nuclear policies. In the report to Congress for fiscal year 1975, President Ford's secretary of defense, James Schlesinger, recognized that the Soviet Union was in no position to launch a disarming first strike against the United States or even hope to do so, but nonetheless called for immediate measures to counter the increase in size of their nuclear arsenal. "There must be essential equivalence between the strategic forces of the US and the Soviet Union—an equivalence perceived not only by ourselves, but by the Soviet Union *and third audiences as well.*"¹³³ This expected perception by a third party is decisive in his reasoning. He therefore concludes that "to the degree that we wish to influence the perception of others, we must take appropriate steps (*by their lights*) in the design of the strategic forces."¹³⁴ In other words, the supposed perception of the US arsenal by other actors

132. At the end of a historical investigation of the support for the goal of a world without nuclear weapons in the United States, Jonathan Pearl concluded that "when the barriers to disarmament seemed lowest, political and popular enthusiasm for this goal largely dissipated." Jonathan Pearl, "Forecasting Zero: U.S. nuclear history and the low probability of disarmament," Strategic Studies Institute, US Army War College, November 2011: 40–41.

133. Steven Kull, "Nuclear Nonsense," *Foreign Policy* 58 (Spring 1985): 32. Author's italics.

134. *Ibid.*, 32–33.

was a major driver in designing the force beyond the requirements of deterrence.¹³⁵ These “third parties” might have been more amenable to change than had been supposed. In other words, some change was achievable if they had not anticipated that the opponents to change were impossible to convince or defeat. Engaging them and revealing those past missed opportunities is a first step.

The number of opponents to the goal might diminish in another way. Historically, a few genuine opponents to nuclear disarmament and arms control turned out to be involuntary supporters: they crafted proposals that were so ambitious or so demanding that the Soviets would not accept them. As in the cases described above, they were wrong about the “expected veto player” in a way that ended up promoting nuclear disarmament. A case in point would be Richard Perle’s support of the “zero option” in the early 1980s. In other words, the United States would forgo the deployment of Pershing 2 and ground-launched cruise missiles in Europe if the Soviets gave up their intermediate range forces. It has been most often interpreted as an option designed to be unacceptable by the Soviets¹³⁶ . . . but five and a half years later, General Secretary Gorbachev accepted it within the Intermediate Nuclear Forces treaty framework.¹³⁷

These instances suggest that proponents of change might be more numerous than we think but that convincing them is not enough. They

135. Ibid. The entire article is a convincing case for this. Other good examples are the report to Congress by Secretary of Defense Harold Brown in 1979, and Secretary of Defense Robert McNamara asking for more weapons after he learned that the missile gap was in the United States’ favor.

136. William E. Pemberton, *Exit with Honor: The Life and Presidency of Ronald Reagan* (New York: M.E. Sharpe, 1998), 167; and Thomas Risse-Kappen, “Did ‘Peace Through Strength’ End the Cold War? Lessons from INF,” *International Security* 16, no. 1 (Summer 1991): 170.

137. Thomas Risse-Kappen, *The Zero Option: INF, West Germany and Arms Control* (New York: Westview, 1988), 82.

also have to come to believe that coming out as a proponent of change is safe for them and effective.¹³⁸ Tactical mistakes will do the rest.

Think about possible futures, beyond proliferation

Things that never happened before happen often. This is also true in the nuclear arena even if analysts and policymakers in this field tend to see the unprecedented only as bad news. For example, unprecedented cases of nuclear disarmament in South Africa, Ukraine, Belarus, and Kazakhstan were not anticipated by academic analysts and intelligence agencies alike.¹³⁹ They were unprecedented and unexpected: before they happened, all the observers would have said that they were impossible. Similarly, in 1986, who would have expected that the global nuclear stockpile would have been reduced by two-thirds in the next twenty-five years?¹⁴⁰ This worst-case assumption is still there today, with the degradation of the recent climate taken by the opponents to the goal of zero as revealing the truth of its impossibility. This pessimistic view of the world assumes that the latest wave of support for disarmament will be the last one, carrying a definitive verdict about the possibility of future nuclear arms levels. Contrary to this myopic view of the world, past failures of worst-case scenarios suggest that a disarmament initiative might happen in the future, too, in spite of the fact that we do not anticipate it now.¹⁴¹

138. This argument is fully developed in my “Innovation in Nuclear Thinking: Incompetent, Dangerous or Futile,” under review by *Ethics & International Affairs*.

139. Benoît Pelopidas, “The Oracles of Proliferation”; Jeffrey Richelson, *Spying on the Bomb: American Nuclear Intelligence from Nazi Germany to Iran and North Korea* (New York: W.W. Norton, 2006), 373–400.

140. Hans Kristensen and Robert Norris, “Global Nuclear Weapons Inventories: 1945–2010,” *Bulletin of the Atomic Scientists* 66, no. 4 (July–August 2010): 81–82. Based on their most conservative estimates for 2010, the global nuclear stockpile has been reduced by 67.6 percent between 1986 and 2010.

141. Benoît Pelopidas, “La couleur du cygne sud-africain, Le rôle des surprises dans l’histoire nucléaire et les effets d’une amnésie partielle” (The Color of the South African Swan: The Role of Surprises in Nuclear History and the Effects of a Partial Amnesia), *French Yearbook of International Relations*, 2010 (in French), <http://www.afri-ct.org/IMG/pdf/Pelopidas.pdf>.