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U.S. NUCLEAR REQUIREMENTS IN AN ERA OF DEFENSE AUSTERITY

TESTIMONY BEFORE THE HOUSE ARMED SERVICES COMMITTEE SUBCOMMITTEE ON STRATEGIC FORCES

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Chairman Rogers, Ranking Member Cooper, and Members of the Subcommittee, thank you for your invitation to testify this afternoon on the subject of U.S. nuclear requirements. My testimony[1] addresses the prospective risks and benefits that may accrue should the United States pursue significant reductions in its nuclear forces beyond those called for in the New START agreement.

Background to the Current Situation

Post-Cold War Drawdown

After amassing large nuclear arsenals during the forty-year Cold War, both the United States and Russia have made deep reductions in these forces since the fall of the Berlin Wall in 1989. These reductions were enabled by the subsiding tensions between the two countries that began in the late 1980s and that continued through the collapse of the Soviet state in December 1991. They were further enabled by the corresponding decline in the size and effectiveness of Russia's conventional forces, which left the U.S. military in a position of unchallenged conventional superiority—a reality demonstrated by the decisive victory over the Iraqi military in 1991. At the time there were no other comparable nuclear powers, which also facilitated the remarkable drawdown of U.S. and Russian nuclear forces.

By 2010 the United States nuclear arsenal comprised 5,113 active and inactive warheads, including both strategic and non-strategic weapons.[2] This represents an 84 percent

[1] My testimony draws significantly from ongoing research by several of my CSBA colleagues, in particular Evan Braden Montgomery and Barry D. Watts. Any shortcomings in my remarks are, of course, solely my own.

[2] Department of Energy, "Increasing Transparency in the U.S. Nuclear Stockpile," Fact Sheet, May 3, 2010, p. 1. Active warheads include strategic and non-strategic weapons maintained in an operational, ready-for-use configuration, as well as warheads that must be ready for possible deployment within a short timeframe and logistics spares. They have tritium bottles and other Limited Life Components installed. Inactive warheads are maintained at a depot in non-operational status, and have their tritium bottles removed.

reduction from the U.S. nuclear arsenal's peak of 31,255 warheads in 1967, and a 77 percent reduction from the 22,217 total in 1989. The sharpest decline in the U.S. nuclear stockpile took place from 1989 to 1994, during which it was reduced by half. The Soviet/Russian nuclear stockpile also underwent similarly large reductions during this timeframe. Unclassified sources indicate that the Soviet stockpile peaked at over 40,000 strategic and non-strategic nuclear weapons in the mid-1980s.[3] Recent Congressional testimony by U.S. Department of Defense (DoD) officials indicates that Russia's current stockpile is between 4,000 and 6,500 nuclear weapons, of which 2,000 to 2,500 are considered strategic weapons.[4] Russia's nuclear stockpile has therefore undergone a reduction of 84 to 90 percent since its peak during the mid-1980s. The reduction to date since 1989 is 82 to 89 percent.[5] The most rapid decline in Russian nuclear weapons took place from 1989 to 1996, during which it was cut by over 60 percent.

New START

The 2011 New START Treaty entered into by the United States and Russia is the latest in a series of agreements intended to reduce the two countries' nuclear forces. That being said, neither U.S. nor Russian officials have been completely forthcoming regarding their existing stockpiles of nuclear weapons. The figures both countries have recently made public under New START reporting requirements are for strategic warheads on deployed ICBMs, SLBMs, and heavy bombers. As of September 2012, the United States reported 1,722 strategic warheads on 806 deployed ICBMs, SLBMs, and heavy bombers, while the Russians reported 1,499 warheads on 491 deployed strategic launchers.[6] These numbers, however, do not capture all the nuclear weapons permitted under the treaty. New START's counting rule for heavy bombers counts only one warhead for each nuclear-capable heavy bomber against the deployed warhead limit of 1,550.[7] Yet maximum loads for the 76 B-52Hs and 20 B-2s allow over 1,700 U.S. nuclear bomber weapons to go "uncounted." Similarly, maximum loads for Russia's 63 Tu-95 and 13 Tu-160 bombers would enable the Russians to deploy at least another 760 weapons over the 1,550-warhead limit.[8] Thus, while a cursory look at the New START agreement may give the impression that both the United States and Russian Federation are limited to 1,550

[3] Natural Resources Defense Council (NRDC), "Table of USSR/Russian Nuclear Warheads," available at http://www.nrdc.org/nuclear/nudb/datab10.asp, accessed on November 29, 2012; and William J. Perry and James R. Schlesinger, *America's Strategic Posture* (Washington, DC: United States Institute of Peace Press, 2009), p. 111.

[4] James N. Miller, Statement before the House Committee on Armed Services, November 2, 2011, p. 1; and Madelyn Creedon and Andrew Weber, Joint Statement for the Record, Strategic Forces Subcommittee, Committee on Armed Services, U.S. Senate, March 28, 2012, p. 2.

[5] The NRDC's database on USSR/Russian warheads estimates that in 1989 the USSR had 12,177 strategic and 23,700 non-strategic warheads for a total of 35,817. NRDC, "Table of USSR/Russian Nuclear Warheads."

[6] State Department, "New START Treaty Aggregate Numbers of Strategic Offensive Arms," Fact Sheet, October 3, 2012. When the first New START data exchange occurred in February 2011, the United States reported 1,800 warheads on deployed ICBMs, SLBMs, and heavy bombers; Russia reported 1,537. Thus, from February 2011 to September 2012, Russia's deployed strategic warheads increased, whereas the United States' decreased.

[7] "Treaty between the United States of American and the Russian Federation for the Further Reduction and Limitation of Strategic Offensive Arms," Article III, paragraph 1.(c).

[8] If the load-out for the Tu-95MS Bear is limited to six Kh-55 cruise missiles carried internally to maximize range, then the Russian bomber force would only add 396 uncounted nuclear weapons.

deployed strategic warheads each, for a combined total of 3,100, the counting rules relating to bombers permit as many as another 2,500 warheads to go uncounted. New START also allows both parties to maintain 100 non-deployed ICBMs, SLBMs, and heavy bombers over and above the 700 permitted to each side by the treaty. Moreover, any strategic warheads stockpiled for these launchers are not counted. In short, New START has some significant loopholes. While it constrains launchers, its 1,550-warhead limit by no means constrains the United States and Russia to a combined total of 3,100 warheads. Ignoring stockpiled warheads—whose numbers could be considerable, the United States could have nearly 3,330 strategic weapons and Russian over 2,300 within the 1,550 limit on deployed weapons.

Then there are the "non-strategic" or "tactical" nuclear warheads, many of which have yields greater than the bombs dropped on Hiroshima and Nagasaki. New START does not address these weapons, much less limit them. A study by the Federation of American Scientists (FAS) published in May 2012 estimated that the United States has some 760 of these non-strategic nuclear weapons while Russia has over 2,000.[9] Adding these figures for U.S. and Russian non-strategic warheads to the maximum totals allowed under New START brings the active U.S. stockpile to over 4,000 nuclear weapons and Russia's stockpile to at least 4,700. However, Defense Department estimates of Russian non-strategic nuclear weapons range from 2,000 to 4,000 weapons, which means the active Russian stockpile could be as high as 6,500 weapons.[10] Based on the U.S. stockpile figure for 2009 of 5,113 weapons (reported in 2010) and the roughly 90 fewer strategic warheads the United States reported in September 2012 under New START, a reasonable estimate for the active U.S. stockpile would appear to be roughly 5,000 nuclear weapons.[11]

Further Reductions?

The Obama administration has committed itself to the eventual elimination of the world's nuclear weapons. This effort is often referred to as "Global Zero." By far the most influential presentation of this view has been advanced by Henry Kissinger, Sam Nunn, William Perry and George Shultz, highly regarded senior statesmen from both political parties.[12] The "Four Horsemen of the Apocalypse," as they have been called, argue that

[9] According to this study, the United States' non-strategic inventory consists of around 500 B61 bombs plus some 260 W80-0 warheads (in storage for the TLAM-N); the Russian non-strategic inventory includes nuclear bombs, torpedoes, depth changes, warheads for the SS-21 Tochka and SS-26 Iskander short-range ballistic missiles, and warheads for the A-135 and S-300 antiballistic missile systems. Hans M. Kristensen, "Non-Strategic Nuclear Weapons," *Federation of American Scientists*, Special Report No. 3, May 2012, pp. 14, 53-54. A more recent study estimates the total number of operationally assigned Russian non-strategic nuclear warheads to be 860 to 1,040. See Igor Sutyagin, "Atomic Accounting: A New Estimate of Russia's Non-Strategy Nuclear Forces," *Royal United Services Institute for Defence and Security Studies*, Occasional Paper, November 2012, pp. 2-3. However, Kristensen's higher total is based on nominal loadings plus weapons in storage or awaiting dismantlement. Sutyagin's estimate only includes "those that have been assigned to available delivery systems." Ibid., p. 1.

[10] Hans M. Kristensen, "Non-Strategic Nuclear Weapons," *Federation of American Scientists*, Special Report No. 3, May 2012, p. 50.

[11] The preceding discussion of the U.S. and Russian post-Cold War nuclear forces is drawn from Barry D. Watts, *Nuclear-Conventional Firebreaks and the Nuclear Taboo* (Washington, DC: Center for Strategic and Budgetary Assessments, forthcoming in 2013).

[12] George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, "A World Free of Nuclear Weapons," *The Wall Street Journal*, January 5, 2007; and George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, "Toward a Nuclear-Free World," *The Wall Street Journal*, January 15, 2008.

the world is at a "nuclear tipping point" in which "nuclear weapons [are] more widely available, [and] deterrence decreasingly effective and increasingly hazardous." The result is that "the world is now on the precipice of a new and dangerous nuclear era. Most alarmingly, the likelihood that non-state terrorists will get their hands on nuclear weaponry is increasing."[13] This stems from fears that the instability that plagues several existing and prospective nuclear states could lead to the collapse or overthrow of their governments. Should that occur, the security of their nuclear weapons could be jeopardized, and the likelihood of a nuclear weapon or fissile material finding its way into the hands of terrorist groups would increase substantially. Moreover, it is not inconceivable that, in the event of a more proliferated world, radical nuclear-armed states might transfer nuclear arms or fissile material to radical nonstate entities.

Nuclear abolitionists generally admit that the path to achieving their ultimate goal is likely to be long and difficult, and so they advocate taking a series of interim steps to generate momentum. For them, New START represents one of these small steps.

The Obama administration appears to be planning to take another such step. Since the New START treaty entered into force in February 2011, the administration has signaled that it will seek further reductions in the U.S. nuclear arsenal.[14] Along these lines, a 2012 report chaired by the former vice chairman of the Joint Chiefs of Staff, General James Cartwright, argued that by 2022 the United States could reduce its strategic arsenal to 500-900 warheads, eliminate all tactical nuclear weapons, and shift to a dyad of B-2 bombers and fleet ballistic missile submarines (SSBNs), eliminating nuclear ICBMs, the third leg of America's nuclear triad.[15] Moreover, the report insisted, these steps could be taken either in unison with Russia or unilaterally. Perhaps most important, however, is that the new secretary of defense, Chuck Hagel, served on the commission and put his name to the report.[16]

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[13] George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, "A World Free of Nuclear Weapons," *The Wall Street Journal*, January 5, 2007; and George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, "Toward a Nuclear-Free World," *The Wall Street Journal*, January 15, 2008. For a discussion of the dangers associated with nuclear terrorism, see Graham T. Allison, *Nuclear Terrorism* (New York: Owl Books, 2004); and Andrew F. Krepinevich, *7 Deadly Scenarios* (New York: Bantam Books, 2009), pp. 63-90, and 238-241. See also Evan Braden Montgomery, *Nuclear Terrorism: Assessing the Threat, Developing a Response* (Washington, DC: CSBA, 2009).

[14] David E. Sanger, "Obama to Renew Drive for Cuts in Nuclear Arms," *The New York Times*, February 10, 2013, available at http://www.nytimes.com/2013/02/11/us/politics/obama-to-renew-drive-for-cuts-in-nuclear-arms.html?_r=0, accessed February 11, 2013. The administration's 2012 strategic guidance includes this comment: "*It is possible that our deterrence goals can be achieved with a smaller nuclear force,* which would reduce the number of nuclear weapons in our arsenal as well as their role in national security." Department of Defense, "Sustaining U.S. Global Leadership: Priorities for 21st Century Defense," January 2012, p. 5.

[15] "Modernizing U.S. Nuclear Strategy, Force Structure, and Posture," Global Zero U.S. Nuclear Policy Commission Report, May 2012, pp. 1, 6-8, and 20. The report is available at http://www.globalzero.org/files/gz_us_nuclear_policy_commission_report.pdf, accessed May 20, 2012.

[16] Others whose names appear as members of the commission are Ambassador Richard Burt, Ambassador Thomas Pickering, and General (Retired) Jack Sheehan. General (Retired) James Cartwright served as the commission's chair, and Bruce Blair as the study director.

How to Think About Further Reductions

Would it make sense for the United States to pursue significant additional reductions in its nuclear forces and, if so, under what conditions? This is a very complicated issue, and it pertains to a capability that has represented a major U.S. strategic asset for nearly 70 years. Given the stakes involved, a thorough assessment of the situation is merited. How would one structure such an assessment? What issues would need to be addressed to assist the administration and Congress in coming to a decision? I offer the following framework, along with some preliminary analysis.

In its 2010 Nuclear Posture Review, the Obama administration declared that so "long as nuclear weapons exist, the United States must sustain a safe, secure, and effective nuclear arsenal—to maintain strategic stability with other major nuclear powers, deter potential adversaries, and reassure our allies and partners of our security commitments to them."[17] This statement by the administration offers a sound basis for considering the purposes served by our nuclear forces, which can be summarized as follows:

- Precluding the use of nuclear weapons against the United States, to include our territory and our military forces overseas through whatever means necessary, to include deterrence, dissuasion, and preventive or preemptive action.

- Deterring other forms of aggression or coercion against ourselves and our security partners; and

- Supporting efforts to arrest the use of nuclear weapons promptly should they be used by another party.

- Discouraging the proliferation of nuclear weapons, in part by dissuading treaty allies and partners from acquiring nuclear weapons by providing nuclear guarantees—extended deterrence—that relieves them of the need to acquire their own nuclear forces.

In these ways nuclear forces support the United States' overriding objective of extending the tradition of non-use of nuclear weapons. Arguably with the U.S. military's considerable advantage in conventional military capability, extending this tradition has acquired even greater value over the past two decades.

Might these objectives be enhanced or compromised through further significant reductions in the U.S. nuclear arsenal?

Would a reduction in U.S. nuclear forces lead other nuclear powers to reduce their arsenals, or aspiring nuclear powers to forego acquiring nuclear weapons, or both?

(Not) Following the Leader

Some of those who advocate further significant reduction in U.S. nuclear forces state that leading by example will stimulate other nuclear powers to follow suit and/or prospective

[17] Department of Defense, "Nuclear Posture Review Report," April 2010, p. i.

nuclear powers to forgo the acquisition of nuclear weapons. Should this occur, they believe, it would also reduce the likelihood of nuclear weapons use.

The evidence to date does not appear to bear this out. Both the United States and Russia have drastically reduced their nuclear arsenals since the end of the Cold War, yet the states of greatest concern—those that are hostile to the United States or who have authoritarian regimes—have not followed suit. Over the past twenty years the world has added three new nuclear powers: India, North Korea and Pakistan. Iraq might be a nuclear power today if not for U.S. military action in 1991, and an Israeli military strike ten years earlier. Iran is almost certainly pursuing a nuclear weapons capability, and Syria appeared to be seeking one as well prior to a 2007 Israeli strike on a nuclear reactor it had under construction.

In brief, there is no conclusive evidence that other states have reduced their nuclear arsenals or curbed their nuclear ambitions because of the example set by the United States and Russia.

The Nuclear Umbrella and "Friendly" Proliferation

In fact, the opposite may be true. Reductions in the U.S. nuclear forces, either in concert with Russia or unilaterally, may undermine the credibility of Washington's nuclear guarantees to allies and key security partners. Unlike Russia, the United States extends a nuclear umbrella over many countries, particularly in Europe and East Asia. Depending on how large any further reductions to the U.S. nuclear forces are, those states sheltering under this umbrella may come to doubt its worth, even to the point where they decide to pursue their own nuclear capabilities. The United States currently maintains such commitments to a number of non-nuclear powers, including its NATO allies (in particular a non-nuclear Germany), Japan, and South Korea, states that could quickly acquire a nuclear capability if they chose to do so. Even if they do not pursue the path of proliferation, some may decide to loosen their security relationship with the United States in favor of arrangements with other states, some of whom may not be on friendly terms with Washington. This would hardly seem to enhance U.S. security or result in fewer fingers on the nuclear trigger.

Complicating matters further, should efforts to prevent Iran from acquiring a nuclear capability fail, the Obama administration has advanced the possibility that U.S. nuclear guarantees might be extended to countries in the Middle East.[18] Thus the commitment of U.S. nuclear weapons to the defense of other states would be *increasing* while the United States' arsenal is *decreasing*. The implied assumption here is that the United States has a large surplus of nuclear weapons, and that it can readily meet its expanding nuclear commitments with a substantially smaller arsenal than called for under New START.

Does such a surplus exist? The answer to this question resides in the minds of those under the U.S. nuclear umbrella and those who would threaten them with nuclear attack or use

[18] In July 2009, Secretary of State Hillary Clinton advanced the idea of extending U.S. nuclear guarantees to countries in the region: "We want Iran to calculate what I think is a fair assessment that if the United States extends a defense umbrella over the region, if we do even more to support the military capacity of those in the Gulf, it's unlikely that Iran will be any stronger or safer because they won't be able to intimidate and dominate as they apparently believe they can once they have a nuclear weapon. Quoted in James A. Russell, "Extended Deterrence, Security Guarantees and Nuclear Weapons: U.S. Strategic Policy Conundrums in the Gulf." *Strategic Insights,* December 2009.

nuclear weapons as a means of coercion. Do we have some sense of how they view the situation? How they calculate cost, benefit and risk?

U.S. Conventional Forces and the Great Equalizer

The large advantage the U.S. military enjoys in conventional military capabilities strongly suggests that further reductions in U.S. nuclear forces are unlikely to stimulate similar actions by the nuclear powers Washington worries about most, or to retard the efforts of those seeking to acquire a nuclear capability. As India's defense minister observed after the U.S. military's stunning dismantlement of Iraq's military in the First Gulf War, "Don't fight the United States unless you have nuclear weapons."[19] His advice appears to have been taken to heart by states long hostile toward the United States, including Iran, Libya, North Korea and Syria, all of which have sought to acquire their own nuclear weapons. These states, who cannot hope to match the U.S. military's conventional capabilities, would clearly understand the logic behind Josef Stalin's injunction to nuclear physicist Igor Kurchatov at the end of World War II: "Build the bomb—it will remove a great danger from us."[20]

Both Russia and Pakistan cite their inferiority in conventional forces relative to those of their prospective enemies as reasons for maintaining—and modernizing—their nuclear forces. Russia currently has plans for tripling its production of nuclear missiles, including new SLBMs and a heavy ICBM capable of carrying 10-15 warheads. Tests are being performed to enhance the reliability of Russia's new generation of very-low-yield tactical nuclear weapons.[21] President Vladimir Putin has stated Russia plans to add 400 new ICBMs and SLBMs to Russia's strategic forces in the coming decade.[22]

For its part Pakistan is constructing a series of plutonium production nuclear reactors that could increase its nuclear weapons production capability from 7-14 weapons per year to between 20 and 25 weapons.[23] In addition to expanding weapons production, Pakistan may also want the additional plutonium to enhance the quality of its arsenal and to facilitate efforts to build a new generation of lighter yet more powerful warheads.[24]

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[19] Quoted in Samuel P. Huntington, "The Clash of Civilizations," *Foreign Affairs*, Summer 1993, p. 48.

[20] Accessed at http://www.pbs.org/redfiles/kgb/inv/kgb_inv_ins.htm, on March 1, 2013.

[21] Mark Schneider, "The Nuclear Forces and Doctrine of the Russian Federation and the People's Republic of China," prepared statement, U.S. House of Representatives, Armed Services Committee, Subcommittee on Strategic Forces, October 14, 2011, pp. 2-3.

[22] Vladimir Putin, "Being Strong: National Security Guarantees for Russia," *Rossiyskaya Gazeta*, February 28, 2012, English translation available at http://www.voltairenet.org/article172934.html, accessed on December 12, 2012; and "Strategic Rocket Forces," as of April 12, 2012, available at http://russianforces.org/missiles/, accessed on December 12, 2012. The original Russian is available at http://www.rg.ru/2012/02/20/putin-armiya.html.

[23] David Albright and Paul Brannan, "Pakistan Doubling Rate of Making Nuclear Weapons: Time for Pakistan to Reverse Course," *Institute for Science and International Security*, May 16, 2011. Pakistan had one heavy water reactor at its Khushab nuclear site at the time of its nuclear tests in 1998. Between 2000 and 2002 it began construction of a second heavy water reactor at Khushab, followed by the initiation of construction of yet another reactor in 2006. Construction is apparently now underway on a fourth reactor, also at Khushab.

[24] David Albright and Paul Brannan, "Pakistan Doubling Rate of Making Nuclear Weapons: Time for Pakistan to Reverse Course," *Institute for Science and International Security*, May 16, 2011.

For these countries nuclear weapons are the "great equalizer" that offset their inferiority in conventional military power relative to current or prospective rivals. To the extent this perspective prevails, the size of other nuclear arsenals,[25] to include the U.S. nuclear arsenal, is at best a secondary consideration. For Pakistan and Russia, reducing their nuclear forces would be tantamount to compromising their security.

Unintended Consequences: Lowering the Entry Barrier

At some point, undertaking substantial additional nuclear force reductions beyond those called for in New START may tempt existing and prospective nuclear powers to create arsenals on a par with the United States and Russia. It is not possible to state precisely at what point such reductions will stimulate this behavior. Different competitors will almost certainly have different thresholds. It would make sense to try and identify what these thresholds are lest efforts to reduce the global stock of nuclear weapons actually produce the opposite effect.

Summary

In brief, based on the evidence of U.S. and Russian nuclear force reductions over the past twenty-odd years, there appears to be little correlation between these reductions and similar reductions by other states, or for non-nuclear powers to forego acquiring a nuclear capability. In some cases reductions in the U.S. nuclear arsenal may actually stimulate nuclear armaments.

Would a reduction in U.S. nuclear forces serve to discourage the use of nuclear weapons?

When asked about the consequences of a nuclear-armed Iran, Hubert Vedrine, France's Foreign Minister from 1997-2002, declared:

> Jacques Chirac said things that many experts are saying around the world, even in the United States. That is to say, that *a country that possesses the bomb does not use it and automatically enters the system of deterrence and doesn't take absurd risks.*[26] [Emphasis added]

Vedrine's view is a reassuring one. It implies that nuclear weapons are good for deterrence, and deterrence only, and that this logic is universal: once a state acquires nuclear weapons it enters a "deterrence system" which appears to be quite stable, as none of its members take "absurd risks." His view seems to suggest that the number of nuclear weapons a state possesses is not particularly important, either in terms of enabling deterrence or promoting rational behavior (i.e., avoiding "absurd risks").

If Vedrine's view is correct, then it may be possible to effect substantial reductions in U.S. nuclear forces beyond those called for in New START. Regrettably, this perspective does not pass close inspection, for the following reasons.

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[25] Russia's concerns appear to be concentrated on NATO (the U.S. specifically) and China, while Pakistan must account for India's advantage in conventional forces.

[26] Elaine Sciolino, "Chirac's Iran Gaffe Reveals a Strategy: Containment," *New York Times*, February 3, 2007, p. A8.

Nuclear weapons have utility beyond deterrence of nuclear use

Several states that view nuclear weapons as a means of offsetting their conventional inferiority have adopted military doctrines calling for the use of nuclear weapons under circumstances other than in response to a nuclear attack on their homeland. Two of particular note are Pakistan and Russia.

Russia's military doctrine calls upon nuclear weapons to support two objectives.[27] One involves employing nuclear weapons to deter a nuclear attack on the homeland through the threat of a devastating retaliatory strike upon the aggressor. The second centers on the limited employment of nuclear weapons, both to demonstrate resolve and to terminate a conventional war in which the balance has shifted against Russia.[28]

Russia is backing up its words with action. Since 1999, the Russians have "employed" very-low-yield nuclear weapons in large-scale military exercises.[29] In their Zapad-1999 (West-1999) exercise the Russian military, in responding to a NATO attack on the Kaliningrad oblast, conducted limited nuclear strikes with four air-launched cruise missiles.[30] More recently, in Vostok-2010 (East-2010) in eastern Russia—the largest military exercise in post-Soviet history—two live launches of nuclear-capable Tochka-U (SS-21) missiles were executed against the command post of a "hypothetical opponent."[31] The Russians apparently believe that their large strategic nuclear forces will deter the opponent from responding in kind, and seek to employ "tactical" nuclear weapons if necessary to terminate a conflict on conditions acceptable to Moscow.

With respect to Pakistan,[32] the principal roles of Pakistan's nuclear arsenal have been to deter the use of nuclear weapons against its territory, deter a military invasion by India's superior conventional forces, and ensure that any conventional conflict that does occur does not result in a ruinous defeat.[33] To enhance deterrence Islamabad has resisted any

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[27] I am indebted to my colleague, Barry D. Watts, for these observations regarding Russia's nuclear doctrine and associated field exercises.

[28] Dima Adamsky, "Russian Regional Nuclear Developments," *Long Term Strategy Group* (LTSG), September 2010, p. 20 (italics in the original). See also Mark Schneider, "The Nuclear Forces and Doctrine of the Russian Federation," *National Institute Press*, publication No. 0003, 2006; and Stephen J. Blank, ed., *Russian Nuclear Weapons: Past, Present, and Future* (Carlisle, PA: Strategic Studies Institute, November 2011).

[29] Miriam John and Joseph Braddock, "The Nuclear Weapons Effects National Enterprise," Defense Science Board/Threat Reduction Advisory Committee, June 2010, pp. 8-9.

[30] Nikolai N. Sokov "The Evolving Role of Nuclear Weapons in Russia's Security Policy," in Cristinia Hansell and William C. Potter, eds, *Engaging China and Russia on Nuclear Disarmament* (Monterey, CA: Center for Nonproliferation Studies, April 2009), p. 78; and Gunnar Arbman and Charles Thornton, "Russia's Tactical Nuclear Weapons: Part I: Background and Policy Issues," FOI-R—1057—SE, November 2003, pp. 29-30.

[31] Roger McDermott, "Reflections on Vostok 2010: Selling an Image," *Eurasia Daily Monitor*, 7, Issue 134, July 13, 2010, available at http://www.jamestown.org/single/?no_cache=1&tx_ttnews%5Btt_news%5D=36614, accessed on March 3, 2012.

[32] This discussion of Pakistan's nuclear doctrine is drawn from the research of two of my CSBA colleagues, Ambassador Eric Edelman and Dr. Evan Braden Montgomery.

[33] Peter Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries Beyond War* (Carlisle: Strategic Studies Institute, 2008), p. 134; and

declaration of its nuclear "redlines." Moreover, it has also refused to join India in a "no-first-use" pledge.

The best elaboration of Pakistani nuclear policy and doctrine may have come from Lieutenant General (Ret.) Khalid Kidwai, head of the Pakistani military's Strategic Plans Division—the organization responsible for overseeing, coordinating, and protecting the nation's nuclear arsenal. LTG Kidwai declared that Pakistan would resort to nuclear weapons use under four conditions: (1) if India conquered a large portion of Pakistan's territory; (2) if India destroyed a large portion of Pakistan's air or ground forces; (3) if India attempted to economically strangle Pakistan, for instance by implementing a maritime blockade of its key ports at Gwadar and Karachi; and (4) if India destabilized Pakistan politically or was responsible for instigating a large-scale domestic uprising.[34] The general might have included a fifth circumstance: Indian attacks on Pakistan's nuclear forces.

Pakistan has also left considerable ambiguity with regard to how it would employ its nuclear weapons.[35] It appears, however, that Pakistan is lowering the barriers to nuclear use. The prospect that its conventional forces might be overrun quickly is placing considerable pressure on Islamabad to use its nuclear weapons shortly after a conflict breaks out. As Scott Sagan explains

> The strategic logic of Pakistan's weaker conventional balance and subsequent first-use doctrine would lead one to predict that limited nuclear war options exist both to provide a more credible deterrent threat against Indian conventional operations and to provide less than massive, and some would say suicidal, options to the Pakistani leadership in the event of a major conventional war Pakistan is losing.[36]

In summary, at least two major nuclear powers have military doctrines that call for the use of nuclear weapons against conventional aggression. Given the objectives outlined above for the U.S. nuclear deterrent, one would want to know how it might play a role in deterring such use, or in arresting it should it occur. Until problems like this have been thoroughly vetted it is difficult to say whether substantial further reductions in the U.S. arsenal represent a wise course of action.

Peter Lavoy, "Pakistan's Nuclear Doctrine," in Rafiq Dossani and Henry S. Rowen, *Prospects for Peace in South Asia* (Stanford: Stanford University Press, 2005), p. 284.

[34] Paolo Cotta-Ramusino and Maurizio Martellini, "Nuclear safety, nuclear stability and nuclear strategy in Pakistan," *Landau Network—Centro Volta* (January 2002), http://www.centrovolta.it/landau/content/binary/pakistan%20Januray%202002.pdf.

[35] Some analysts, for instance, maintain that Pakistan would strike a mixture of Indian civilian and military targets. Others assert that Pakistani nuclear strikes would be limited solely to counter-value targets. Peter Lavoy, "Islamabad's Nuclear Posture: Its Premises and Implementation," in Henry D. Sokolski, ed., *Pakistan's Nuclear Future: Worries Beyond War* (Carlisle, PA: Strategic Studies Institute, 2008), p. 139; Zafar Iqbal Cheema, "Pakistan's Nuclear Use Doctrine and Command and Control," in *Planning the Unthinkable, How New Powers will Use Nuclear, Biological, and Chemical Weapons* (Ithaca, NY: Cornell University Press, 2000), p. 179; Gregory S. Jones, "Pakistan's 'Minimum Deterrent' Nuclear Force Requirements," in *Pakistan's Nuclear Future*, pp. 90-91; and "A.H. Nayyar and Zia Mian, "The Limited Military Utility of Pakistan's Battle-Field Use of Nuclear Weapons in Response to Large-Scale Indian Conventional Attack," *Pakistan Security Research Unit*, Brief No. 61.

[36] Scott D. Sagan, "The Evolution of Pakistani and Indian Nuclear Doctrine," in Sagan, ed., *Inside Nuclear South Asia* (Stanford: Stanford University Press, 2009), p. 234.

Not all decision-makers who control nuclear weapons may be rational, or rational according to the ways we calculate cost, benefit and risk

M. Vedrine argues that no rational person would consciously decide to employ nuclear weapons because (one assumes) of the potential horrific consequences that might ensue. The problem with his assertion is that there are leaders who are not rational— at least not in the way that leaders of nuclear-armed, Western, democratic states are rational.

The history of the last century is replete with examples of leaders taking what many considered to be "absurd risks," but which might better be termed examples of the leaders of rival states failing to assess the intentions of one another correctly. In the period leading up to World War II, British Prime Minister Neville Chamberlain believed his counterpart, German dictator Adolf Hitler, could be negotiated with in good faith over Czechoslovakia. Hitler's threat to go to war over Czechoslovakia was considered so great a risk that his generals plotted a coup against him in the event he gave the order to go forward.[37] For his part, Hitler apparently believed that neither Great Britain nor France would go to war over his invasion of Poland in September 1939.[38] Both assumptions proved wrong, with enormous consequences for the world. Later, despite being at war with the British Empire, in a period of less than six months in 1941 Hitler took the "absurd risk" of going to war against both the Soviet Union and the United States, the world's two emerging superpowers—decisions that ultimately led to his demise. Toward the end of the war Hitler went so far as to order *the destruction of his own country*.[39]

During the Cuban Missile Crisis, the Cuban dictator Fidel Castro took the suicidal risk of urging his Soviet counterpart, Nikita Khrushchev, to attack the United States with nuclear weapons if U.S. conventional forces attacked Cuba, even though Cuba was certain to be obliterated in a U.S. nuclear counterstrike. Castro clearly viewed the world very differently in this respect than his rival in the White House, President John Kennedy or, thankfully, Khrushchev. According to those who knew him, Castro "had the messianic ambition of a man selected by history for a unique mission" one who valued national *dignidad* ("dignity, or "honor") above survival. A Cuban newspaper editor who observed Castro during his early days in power felt that "Fidel gets his kicks from war and high tension."[40]

For their part the Americans were totally surprised by Khrushchev's gambit. Even as the Soviet deployment was underway a CIA National Intelligence Estimate (NIE) concluded "the establishment on Cuban soil of Soviet nuclear striking forces which could be used against the U.S. would be incompatible with Soviet policy as we presently estimate it." Indeed, Khrushchev took what Vedrine might term an "absurd risk" in the first place by covertly deploying nuclear weapons to Cuba, less than 100 miles from the United States.

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[37] Fortunately for Hitler, but not for humanity, the western powers caved in to Germany's demands at the Munich Conference in September 1938.

[38] Alan Bullock, *Hitler and Stalin* (New York, Alfred A. Knopf, 1992), p. 631.

[39] On March 19, 1945, Hitler issued a directive ordering the destruction of all of Germany's industrial, transportation and communications infrastructure, as well as all food stores. Germany was to be made one vast wasteland. William L. Shirer, *The Rise and Fall of the Third Reich* (New York: Simon & Schuster, 1959), pp. 1104-05. Fortunately, Hitler's order required the cooperation of many more people than would have been needed if he had had nuclear weapons at his disposal. Fortunately key German leaders did not carry out the order, and the German nation was spared even greater misery.

[40] Michael Dobbs, *One Minute to Midnight* (New York: Alfred A. Knopf, 2008), pp. 76, 103.

Expecting the Soviet leader who, according to a close colleague, had "enough emotion for ten people—at least" to respect U.S. warnings against deploying Soviet offensive weapons in Cuba, Kennedy concluded his rival acted outside the bounds of acceptable diplomatic behavior, like "an immoral gangster . . . not a statesman, not as a person with a sense of responsibility." Kennedy also began questioning his own credibility—whether Khrushchev really understood him either, and concluded the Soviet leader thought, "I'm inexperienced. Probably thinks I'm stupid. Maybe most important, he thinks that I had no guts."[41]

For his part, Khrushchev's views of the situation varied widely, at times from moment to moment. When Kennedy ordered U.S. forces to DEFON-2,[42] a Soviet deputy foreign minister told colleagues that Khrushchev "s--t in his pants." Yet at another point Khrushchev believed

> the Americans have chickened out. It seems that Kennedy went to sleep with a wooden knife . . . . They say that when someone goes bear hunting for the first time, he takes a wooden knife with him, so it is easier to clean his pants.[43]

Khrushchev's calculation of costs, benefits and risks appears to have been changing, perhaps dramatically, from one moment to the next along with his moods.

There are, alas, many examples of leaders taking "absurd risks," or not acting in a way American leaders would expect them to—perhaps because they believe Americans would not act that way. There is still bewilderment over Saddam Hussein's decision to take on a U.S.-led military coalition not once, but twice.[44] At the same time, Saddam Hussein's perception of the United States and its leaders was deeply flawed. According to Major General Wafiq al Sammarai, former head of Iraqi military intelligence,

> Saddam [before the 1991 Gulf War] thought any reprisals would be limited and would tail off with time. He thought that America's involvement in Vietnam had badly damaged its willingness to use military power. Vietnam had been an outright defeat, militarily and politically.[45]

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[41] Michael Dobbs, *One Minute to Midnight* (New York: Alfred A. Knopf, 2008), pp. 7-8, 33, 123. Andrei Gromyko, the Soviet foreign minister, is the close colleague who remarked on Khrushchev's personality. Kennedy's initial response to the situation shows how temporal factors can greatly influence decision-making. Although the president eventually negotiated the withdrawal of Soviet missiles, his initial inclination was "We're going to take out those missiles."

[42] A defense readiness condition (DEFCON) is an alert posture used by the United States armed forces, ranging from peacetime readiness (DEFCON-5) to general war (DEFCON-1). The first and only time U.S. forces were raised to DEFCON-2 was during the Cuban Missile Crisis. U.S. forces have been called to DEFCON-3 on only two occasions, during the 1973 Yom Kippur War and during the September 2011 terrorist attacks on New York and Washington. Joint Chiefs of Staff, Joint *Publication 1-02, Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: US Joint Chiefs of Staff, November 8, 2010), as amended through December 31, 2010, p. 100.

[43] Khrushchev's point was that first-time bear hunters were more afraid of the bear than the bear was of them. Thus upon seeing a bear, they would soil their pants, which could be more easily "cleaned" with a dull wooden, as opposed to a sharp metal, knife. Dobbs, *One Minute to Midnight*, p. 112.

[44] See Keith B. Payne, *The Fallacies of Cold War Deterrence* (Lexington, KY: The University Press of Kentucky, 2001).

[45] Quoted in "Frontline: The Gulf War," *Frontline* Show #1407T, PBS, Air Date: January 28, 1997, http://www.pbs.org/wgbh/pages/frontline/gulf/script_a.html

In summary, history suggests that, given the stakes involved when it comes to nuclear weapons American political leaders should not assume that leaders of other nuclear-armed states will avoid taking what are perceived as "absurd risks." That is to say, we should not assume that they will view the world in the same way that we do, or that they will calculate costs, benefits and risks in the same way that we do, or that they will act "rationally." These cautions were well understood during the Cold War: consequently, a great deal of talent and resources was devoted to understand how nuclear-armed states and their leaders calculated cost, benefit and risk with respect to the military balance in general and nuclear weapons in particular.

Structural instability

There may be instances where two nuclear rivals very much desire to avoid the use of nuclear weapons, where both do not want to take such "absurd risks." We might assume that, under such circumstances, the use of nuclear weapons would not occur. Yet history suggests that the risks of nuclear use, even under these circumstances, cannot only be present, but uncomfortably high.

Consider the case of the United States and the Soviet Union during the Cold War. We now know that both countries came frighteningly close to the precipice on several occasions, despite the desire of leaders on both sides to avoid nuclear use. The most famous case, of course, is the Cuban Missile Crisis of October 1962. The other case occurred in the early 1980s.

At that time changes in U.S. nuclear strike options were made to target Soviet leaders themselves. Washington's objective was to enhance deterrence by convincing the Kremlin that its regime could not survive a nuclear exchange with the United States. The United States was also planning to deploy Pershing II nuclear-armed ballistic missiles to Europe in response to the Soviet Union's decision to field comparable SS-20 missiles. Collectively the change in U.S. nuclear targeting, the Pershing IIs' short flight times and the Soviet Union's problematic early warning system led the Kremlin leaders to believe they might be subjected to a surprise U.S. nuclear "decapitation" attack. Soviet leaders feared that a surprise U.S. first strike would destroy the radio and cable systems used to transmit orders to their nuclear forces, either directly or indirectly through the use of electromagnetic pulse (EMP) attacks.

Consequently they considered an option, known as the Dead Hand, that would enable a nuclear retaliatory strike in the event that all senior political decision makers and the military command structure were incapacitated. Dead Hand envisioned computers receiving nuclear attack warning data, riding out any attack and then, if they failed to receive any instructions, ordering an automated nuclear retaliatory strike.[46] The concept shared much with the "Doomsday Machine" depicted in the motion picture "Dr. Strangelove."[47] Fortunately "only" a modified version of the system was fielded in which

[46] David E. Hoffman, *The Dead Hand*, (New York: Anchor, 2010), p. 152.

[47] Herman Kahn reportedly outlined the idea of a "Doomsday Machine" in the 1950s. The machine would have a computer linked to an arsenal of nuclear weapons. In the event of a nuclear attack, sensors would pass the information to the computer, which would be programmed to order all the doomsday weapons to detonate, irradiating the planet in a lethal radioactive nuclear fallout shroud that would extinguish all human life. The doomsday machine could be seen as the ultimate deterrent to an attack, since the computer would automatically issue the order to detonate without human intervention, effectively discouraging efforts by an

the decision to launch would be made by a small cadre of officers in a deep underground command center.

That system, known as Perimeter, was tested in November 1984 and became operational a few months later. Soviet policy called for ballistic missiles placed in super-hardened silos to be launched quickly upon alert of an attack by staff officers in a deeply buried military command center. These missiles would give the order to all remaining Soviet missiles to launch their attack on the United States. Oddly enough, the Soviets never informed the Americans about Perimeter, even though its purpose was primarily to deter a U.S. nuclear attack.[48]

A similar situation could occur if Iran acquires a nuclear capability.

Considering its inability to absorb even a limited nuclear attack of a half dozen or so warheads and the limitations of ballistic missile defenses, Israel can be expected to attempt to maintain the option of executing a decisive, nuclear pre-emptive attack against Iran's nuclear arsenal if it believes an attack is imminent. Israeli leaders recognize that a first strike against Iran would likely be met with universal condemnation from the international community. However, Israel has weathered such criticism before. Moreover, given the stakes involved in failing to preempt—the survival of the state of Israel—the costs of failing to order a first strike would likely be viewed as far exceeding the benefits of exercising restraint. Accordingly, Israeli decision makers will have strong incentives to pursue a counterforce capability in addition to a countervalue ("assured destruction") capability. Yet Iran's mobile missile launchers would very likely present significant challenges to Israeli efforts at counterforce targeting. As Iran's missile forces continue to grow, and its nuclear arsenal increases, Israel's problem will only become more difficult.[49]

Another worrisome consequence of this competitive dynamic is the short warning times each will have in the event of a ballistic missile attack, similar to the problem faced by Soviet leaders when confronted with U.S. deployment of Pershing II missiles to Europe. This will almost certainly pressure both sides to adopt a heightened alert status—Israel to preserve the option of launching a decisive first strike, and Iran to avoid becoming the victim of such an attack. Yet the cost of fielding early warning and command and control systems that would be required will be very costly, perhaps prohibitively so. To the extent that either side seeks to resolve the problem by placing its forces on hair-trigger alert or extending nuclear release authority to lower commands, such a posture would not only be costly but also potentially destabilizing, as the risk of accidental launch or miscalculation would inevitably increase, especially during crises.

Over time geographic proximity, growing nuclear arsenals and related advances in technology[50] that enable disarming first strikes against a rival's nuclear forces could

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enemy to launch a sneak attack to destroy the opposing country's nuclear forces before they could retaliate.

[48] David E. Hoffman, *The Dead Hand*, (New York: Anchor, 2010), pp. 124, 149, 153-54. Ironically, the Soviets in "Dr. Strangelove" also failed to inform the Americans of their "Doomsday Machine."

[49] Cordesman and Seitz, *Iranian Weapons of Mass Destruction: Doctrine, Policy and Command* (Washington, DC: Center for Strategic and International Studies, January 12, 2009), p. 314.

[50] As occurred during the Cold War, certain advances in military technology—for example, the miniaturization of nuclear warheads that enabled them to be deployed on ballistic missiles, major improvements in missile guidance, etc.—enabled the side possessing them to seriously contemplate

create a highly unstable nuclear balance between Israel and Iran. Under such circumstances—the very way in which the nuclear competition is structured—even leaders who desire to avoid "absurd risks" could find themselves compelled to take them.

An "N-Player" Competition

Depending on the size of additional reductions in the U.S. nuclear arsenal, the United States will find itself in a multipolar nuclear world. This will occur either because its arsenal has been reduced to a size comparable to countries like China, Pakistan and others, or because U.S. levels are sufficiently low as to encourage minor nuclear powers to expand their arsenals to achieve "great nuclear power" status. While a great deal of thought was given during the Cold War by some of the world's best strategic thinkers as to the character of a competition between two nuclear-armed states, comparatively little thought has been given to the characteristics of an "n-player" nuclear competition.

Some who advocate major further reductions in the U.S. nuclear arsenal assert that other countries could be drawn into negotiations that would find all nuclear powers paring down their arsenals until these weapons are eliminated from the earth.[51] This raises the question as to whether a world comprising a half dozen or so nuclear powers, all possessing an equal number of nuclear weapons, is likely to reduce the chances of nuclear weapons use and serve U.S. security interests more broadly.

In a multipolar nuclear world, many of the conditions that contributed to "stability" during the bipolar U.S.-Soviet Cold War nuclear competition would no longer obtain. For example, in contrast with the nuclear competition during the Cold War, "parity"—having a comparable nuclear capability with that of your existing or prospective rival(s)—is not an option for each state engaged in an n-player competition. It is also difficult to see how all players would have the resources to establish an "assured destruction" capability, another Cold War desideratum. Consider a thought experiment. Five nuclear-armed regional powers each possess 200 nuclear weapons as they travel along the road to nuclear weapons elimination. If these five powers are all allies or partners, the situation is likely to be stable. Such a condition would also be exceedingly rare, in that history offers very few examples of five comparable powers all existing in harmony.

Let us assume, therefore, that the historical norm prevails, and that there is some level of competition among these states, such that there are some formal and informal alignments, as there were in late 19th and early 20th century Europe. Then France and Russia were aligned with one another, as were Germany and Austria-Hungary. Britain leaned toward the former powers while the Ottoman Empire tilted toward the latter. Italy was aligned on paper with Germany and Austria-Hungary, but ended up siding with France and Russia.

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disarming its rival's nuclear forces in a first-strike counterforce attack. These military technologies have long since been mastered by a number of states and could destabilize the balance between emerging nuclear powers, such as India and Pakistan.

[51] See, for example, Gen. (Ret.) James Cartwright, Amb. Richard Burt, Sen. Chuck Hagel, Amb. Thomas Pickering, Gen. (Ret.) Jack Sheehan, and Dr. Bruce Blair (Study Director), "Modernizing U.S. Nuclear Strategy, Force Structure and Posture," *Global Zero U.S. Nuclear Policy Commission,* 2012, pp. 3-4. Thomas Schelling has addressed the issue of whether the "abolition" of nuclear weapons throughout the globe would actually reduce the odds of their use, and I cannot improve upon his work in my testimony. Thomas C. Schelling, "A World Without Nuclear Weapons?" *Daedalus*, Fall 2009.

In brief, the system was neither highly dynamic nor rigidly static—the predominant characteristic of the international system in the modern (post-Treaty of Westphalia) era.

For our purposes, let's say the five powers are the United States, Russia, China, India and Pakistan. Again, each has 200 weapons. The only strongly democratic states in the group are the United States and India. Pakistan is a "wild card." While it has recently had strong ties to the United States, one could easily imagine it drifting closer to China (a key sponsor of its nuclear program). It is plausible that the United States would have to rely on its nuclear force of 200 weapons to account for between 400 and 600 weapons of China, Russia and Pakistan, to include extending a nuclear umbrella of extended deterrence to other countries such as Japan and Germany, concerned over the smaller nuclear forces of North Korea and Iran, respectively. Would the United States and the countries to which it has extended nuclear security guarantees be more secure under such an arrangement than they are today?[52]

Summary

The theme of my testimony is that while there appears to be general agreement on basic U.S. security objectives when it comes to nuclear weapons, there is considerable divergence of opinion with regard to how best to achieve these objectives. As to the issue of undertaking substantial further reductions, it appears there are a number of important issues that have yet to be addressed before we can confidently conclude that the benefits of such a course of action outweigh the risks. I have tried to identify some of them in my testimony.

As we move into what some have described as a Second Nuclear Age[53] it would be wise to follow the examples set by administrations early in the "First Nuclear Age"—the Truman and Eisenhower administrations, in particular. These administrations engaged some of our nation's finest strategic thinkers to ensure that they had thought through, as best they could, the enormous consequences of making the right decisions regarding our nuclear force posture.

[52] Some have argued that the United States can rely upon its precision-guided weaponry, which they assert can "hold at risk nearly the entire spectrum of potential targets" now reserved for nuclear weapons. See, for example, Gen. (Ret.) James Cartwright, Amb. Richard Burt, Sen. Chuck Hagel, Amb. Thomas Pickering, Gen. (Ret.) Jack Sheehan, and Dr. Bruce Blair (Study Director), "Modernizing U.S. Nuclear Strategy, Force Structure and Posture," *Global Zero U.S. Nuclear Policy Commission,* 2012, p. 2.This seems dubious. Consider, for example, hardened land-based missile shelters, or deep underground facilities. Rivals confronted with the prospect of having to address only the threat from conventional munitions, no matter how accurate, will look to offsets their value by pursuing counters such as these. There is also the matter of yield. While in theory enormous numbers of precision-guided munitions would be able to produce an equivalent level of prompt destruction on a city, in practice the cost of doing so would be enormous, both in terms of the weapons and the delivery systems.

[53] See, for example, Fred Charles Ikle, "The Second Coming of the Nuclear Age," *Foreign Affairs*, January/February 1996; and Paul Bracken, "The Second Nuclear Age," *Foreign Affairs*, January/February 2000; and Paul Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics* (New York: Henry Holt, 2012).