DETERRENCE

Its Past and Future
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DETERRENCE

Its Past and Future

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FOREWORD

DETERRENCE HAS BEEN a part of international relations throughout recorded history. The idea predated the creation of nuclear weapons and it will persist long after the last nuclear weapon is disassembled. Deterrence is not synonymous with “nuclear” or “mutual assured destruction.” It can, and is, exercised in many different ways: through non-nuclear military forces, through economic measures, through alliances and coalitions. These means of exercising deterrence can be strengthened in a world without nuclear weapons and during the process that would lead to that ultimate goal.

Deterrence is not an independent and unchanging factor in international relations. Even during the sixty-five years of the nuclear era, American thinking about how U.S. nuclear weapons influence other nations has changed many times. The fact is that deterrence is, and must be, geared to the international security environment. Today, deterrence in any form, whether it be nuclear or otherwise, is less central to the essential task of countering and defeating threats all responsible governments face than it was during the cold war. The use of force, of course, cannot be taken off the table. It will always be a key element in the mix of tools that nations have at their disposal. Policymakers have to be nimble enough to find the right mix to deal with terrorism, instabilities within regions of the world, asymmetries in modes of warfare, cyber warfare, and a host of problems that were
peripheral during the cold war. “Deterrence” cannot be the default answer to all of these many-faceted threats.

The threats inherent in a world of many more nations armed with nuclear weapons impelled me and my colleagues—Henry Kissinger, William Perry, and Sam Nunn—to write that the world is at a “tipping point.” Our judgment has been, and remains, that now is the time to act. The United States, together with other nations, must block this threat by actions they take now, not after catastrophe strikes. Our judgment also is that the choice, ultimately, is between no nuclear weapons states or many more of them. The assumption of the nuclear nonproliferation treaty was that a two-tier world—nuclear have and have-nots—was unsustainable. We think that assumption is correct and that is why we advocate steps to reduce nuclear dangers and believe that the vision of a world without nuclear weapons should be the compass by which the policies of all nations should be guided.

So long as nuclear weapons exist, the United States should see to it that its nuclear forces are safe, reliable, and capable of launching a devastating nuclear attack upon any nation that attacked the United States with nuclear weapons. I continue to support programs that strengthen the nuclear infrastructure of the United States. If successive administrations pursue such policies I believe that the nuclear component of U.S. deterrent policy will remain strong, during and after the long march to a world without nuclear weapons.

Yes, I mean “after” reaching zero nuclear weapons and I stress that nuclear deterrence will have a vital role, at least for some time, in ensuring that agreements to eliminate nuclear weapons can be sustained. This is another of the “sublime ironies” of the nuclear era of which Winston Churchill spoke so eloquently in 1955. The purpose of a responsive U.S. nuclear infrastructure in a world without nuclear weapons would be to deter other nations from breaking out of a global agreement. Future agreements would, of course, also regulate the nature of that nuclear deterrent and adequate warning time of an attempted breakout would be of the essence. The task, as during the
cold war, would be to convince other nations that they could gain no advantage through nuclear blackmail or by an attack on the United States or its friends.

The United States, by championing the reduction and elimination of nuclear threats, can gradually shape the global security environment. This use of American influence—a resource in which deterrence is only one part—can foster expectations that trends favor less reliance on nuclear weapons, not more. That is the “tipping point” we are working for because it will save the world from the disasters that otherwise will loom ahead.

GEORGE P. SHULTZ
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PART I

Summaries of Papers
Presented at a Conference
at the Hoover Institution

NOVEMBER 11–12, 2010
CHAPTER 1
How History and the Geopolitical Context
Shape Deterrence

Patrick Morgan and George Quester

COLD WAR DETERRENCE was initially conceived primarily in terms of the threat of certain punishment in retaliation for an attack. This thinking emerged for a variety of reasons, not just because of the arrival of nuclear weapons. It had appeared well before 1945, and even before World War I, particularly in the analyses and speculations of people in Great Britain, but also in Germany. One route to thinking of deterrence in this fashion was through anticipating how new weapons could make war so terrible as to deter it. A second strand was initiated by the very limited aerial bombing of cities in World War I, which led to ideas of how future air power might become so destructive that it could act as a major deterrent. Another emerged from a vision of naval attacks aimed at nations’ dependence on trade, thus inflicting grave suffering on their populations, not just on their military forces. Sea power could be used to defend against an opponent, but interior lines of communication would permit attacks in many directions. Thus navies could not only confront an opponent’s attacks, but also add to that the capability of inflicting great suffering on populations. This particular way of thinking was to strongly influence Western deterrence in containment of the communist bloc in the cold war. Thus the appearance
of an extremely destructive kind of weapon coupled with the old geopolitical problem of how to offset the geopolitical advantages of a Russia bent on expansion strongly shaped Western thinking about deterrence after 1945.

From its inception, this conception of deterrence had to confront precepts in Western morality that stressed confining warfare to attacks on military targets and sharply limiting even collateral damage to civilians. Even so, while military planners de-emphasized civilians in their strategic analyses, it was well understood that civilians would suffer considerably nonetheless and that the prospect of this might well add to deterrence of wars.

During the development of nuclear weapons in World War II through the Manhattan Project, the concern was not just about the weapons potentially being used against Germany, perhaps to preemptively destroy German efforts to obtain them. It also included deterring German use of nuclear weapons and compelling Germany to end the war, in the way these new weapons were eventually used against Japan.

In the future, deterrence might be focused on “no first introduction” to help sustain a world without nuclear weapons, something that was impossible in the midst of World War II. And even if nuclear weapons are eliminated, the presence and logic of deterrence by other means will still operate, just as it did with conventional weapons before World War II.

The rising prominence of deterrence after World War II reflected growing evidence on how deadly war could be even as the cold war made more major wars seem entirely possible. Also important was the emergence of the Soviet Union as the world’s second nuclear power. And the Korean War demonstrated that communist states would readily absorb casualties in conventional wars. World War II had conditioned policymakers and analysts to contemplate razing entire cities and inflicting great harm to civilians and this became the basis for deterrence threats, particularly faced with a totalitarian, ideologically driven enemy.
Another factor was the rapid technological change in weapons and delivery systems on both sides which repeatedly disrupted military planning and incited worst-case analyses.

The core features of cold war mutual deterrence postures were constructed frantically in 1950–1970 and were very durable, hard to alter or eliminate even after the cold war. These of course became normatively uncomfortable, as the morally “acceptable” options for using nuclear weapons steadily declined. The central preoccupation was stability—ensuring deterrence did not fail. That possibility inspired great concern about the credibility of the deterrent. And it turned out that mutual, even unilateral, nuclear deterrence had formidable credibility problems. Stability concerns affected many aspects of deterrence including efforts at arms control. All these concerns and the responses to them were conditioned by the ideologically driven intensity of the cold war, but many features of cold war deterrence practices still survive today.

Today’s deterrence arrangements do not fit today’s security threats and prospective technological developments. This has generated a flurry of new deterrence studies. Nevertheless, numerous states are relying on existing security arrangements because these are comfortable and comforting: retaining basic nuclear deterrence, resisting elimination of nuclear weapons, relying on U.S. alliances and informal security ties, improving nuclear weapons systems, participating in large conventional weapons flows. Even the West versus China and Russia continues.

This is despite how deterrence salience and utility have dropped due to the lack of intense conflicts among major powers. General deterrence postures dominate, with large forces on high alert. There is little preoccupation with actual or potential immediate deterrence situations (crises). The United States is a partial exception, having its forces primed for or involved in fighting around the globe as part of its global and regional security management via a dominant Western hegemony. Others actively practicing deterrence include Iran, the two Koreas, Pakistan and India, Israel, and Syria.
The critical political fault line is between Western nations and those at odds with Western goals and values. Deterrence is somewhat unreliable on both sides. One reason is that it is more like deterrence traditionally—complex, difficult, using threats that often provoke opponents but do not daunt them, or are frustrating enough to incite opponents into designing around them. Doubts about Western states’ staying power plus obvious political/moral constraints on their use of force invite challenges to their deterrents, often leading to threats and force being repeatedly employed. Meanwhile, regimes facing Western pressures challenging their rule and right to rule find this highly disturbing but not easily dispelled by deterrence either.

Looking to the future, international politics could continue as they are—an enlarging West dominating security management while presuming that spreading democracy and other Western values will mean fewer conflicts and less strife. The utility of deterrence would ultimately decline; there would be more reliance on collective actors and multilateralism in deterrence, little or no call for nuclear deterrence, and continuing efforts to eliminate the weapons. Ultimately, internalization of norms would prevent behavior that deterrence was designed to contain. But all this would happen slowly; resistance would continue, with interest in bolstering deterrence via nuclear weapons. Maintenance of Western cohesiveness in sustaining deterrence would remain a difficult problem.

A future often envisioned now is a China (and/or Russia) that rapidly modernizes but remains closed, authoritarian, hostile to the West. China now seems more uncomfortable with Western pressure on human rights, respect for minorities, an open market system, etc. Its response includes the typical rapid military buildup and emphasis on nationalism. Western uneasiness is apparent. The United States already is hedging militarily. A renewed emphasis on deterrence plus containment could develop as well as a stress on Western security management by evading the UN Security Council.
Another alternative future is a return of standard multi-polarity and related power-balancing behavior, with an end to U.S. hegemony and a sharply altered system management. This might emerge from an extended depression, the West’s citizens rejecting heavy military burdens, and growing resistance to interdependence (such as in trade or cyber space). It would lead to intensified political conflicts, increased fear of war, more stress on deterrence, and very likely more nuclear proliferation.

Important contextual changes in all these cases will stem from technological developments. Current worries include increasingly precise conventional weapons at great distances. Emergence of highly effective ballistic missile defense (BMD) would sharply disrupt strategic planning for various states. Cyber attacks are now common; already costly for the victim, they might come to pose catastrophic threats, reintroducing the intense cold war fears of preemptive attacks while again highlighting how growing interdependence makes arms control indispensable. Finally, developments in genetics may create more effective biological warfare, posing the same difficulties as cyber attacks in developing effective deterrence postures.
CHAPTER 2
Redefining the Role of Deterrence

Michael Mazarr and James E. Goodby

Deterrence is an ancient idea that came into its own during the cold war. Sophisticated deterrent signals based on elaborate theories and built around nuclear weapons constituted the bedrock of U.S. foreign policy. As a natural consequence of this history, deterrence has become an ingrained part of American thinking about defense policy. This reflexive reliance on nuclear-infused deterrence generates the default approaches to many national security challenges as well as blocking transformational change in the U.S. nuclear posture.

Our argument is not that deterrence is no longer valid. It is, rather, that trends in the international environment have diminished the proportion of U.S. national security challenges that might respond to the exercise of deterrence. Various studies have demonstrated the efficacy of deterrence and coercion, including even for non-state actors, especially through means that deny a potential attacker any hope of achieving his goal. On many day-to-day issues, U.S. officials employ deterrent and coercive tactics to achieve specific goals with other states: “If X happens, consequence Y will result.” It is critical to understand that our argument is not that deterrence per se is bankrupt. The issue is the overall balance, the relative utility of an instrument of state power that has been central to U.S. foreign and security policy for half a century or more (relative
both to its utility before 1989 and to the effectiveness of more comprehensive strategies). This is true both because the proportion of challenges amenable to force-based instruments such as deterrence has declined and because several objective trends in world politics tend to reduce the effectiveness of such tools. For the foreseeable future, the emerging era is less about revisionist states threatening sharp and irreversible discontinuities in the status quo; it offers fewer opportunities for the United States to bend other actors to its will with threats; and partly as a result, the ultimate threat—nuclear weapons—will rarely be relevant to security problems.

1. Defining the Problem of Deterrence

Deterrence involves threatening unacceptable consequences in order to prevent a target actor from seeking to undertake a sharp discontinuity in the status quo. Deterrence has been distinguished from related tools such as compellence and coercion by its focus on stopping an event that has not yet occurred. Yet a major theme of our analysis is that most current security issues blur these categories, reflecting “bundled” challenges. The United States is often trying to practice deterrence, coercion, compellence, persuasion, and engagement all at the same time, despite the fact that these tools often militate against one another. Meantime simple, pure deterrent tasks now comprise a small minority of U.S. strategic requirements.

Meantime simple, pure deterrent tasks now comprise a small minority of U.S. strategic requirements. The analysis discusses a number of the classic requirements for deterrence to succeed. The classic criteria include the following:

- The deterrer must have the capability to carry out the threat
- The threat must be credible, a judgment that will be made by the target of deterrence
- The deterrer must be able to effectively communicate its threat to its target, the deterree—in other words, the threat must be heard.
Over time, the demanding requirements of deterrence in practice have suggested a number of more discrete criteria for success:

- **The deterring state’s interests must appear to justify the necessary threats.** A notable aspect of U.S. foreign policy since 1945, for example, has been the broadening of its “vital” national interests, sometimes by linking the reputation and prestige of the United States to intrinsically modest issues. These “mission creep” tendencies have led the United States to attempt to influence dozens of international actions, some of which involve secondary interests—and to a policy that Alexander George and Richard Smoke have called an “overreliance of American foreign policy on deterrence strategy.”

- **Domestic and international support** is required for deterrence to succeed. The reasons can range from the credibility of the threat—the target may not believe the deterrer would take a threatened action if the world opposed it—to the direct support necessary to implement such actions as financial sanctions.

- **“Common knowledge” is key to the success of deterrence.** Deterrers must endeavor to avoid misperceptions in the deterrent relationship. This can be exceptionally difficult: If those who would resist deterrence threats are motivated in ways that cause them to ignore what an “instrumentally rational decision-maker” ought to perceive as a credible deterrent threat, even the best deterrent strategies will fail. In such cases, “common knowledge” will not exist, and deterrence will fail.

- **The greater the degree of coercion required, the more potential backlash a policy will provoke,** and thus the less likely the target state will be to respect the demands of the deterrer. When deterrence morphs into coercive diplomacy (as is increasingly the case in so many national security challenges), the consequences for both parties in a deterrent relationship change: preserving
the status quo gives way to altering the status quo in favor of the deterring party, which is more difficult to do.

- The clarity of the deterrer’s goal and, indeed, the overall outcome being sought or the “terms of settlement,” as one source has put it, appear to have some relationship to the success of the overall demand.

Deterrence, then, must be understood as a highly contingent tool. It is not a blank check, available upon demand. It is an instrument of statecraft that has to be seen in the context in which conflicts have arisen, the availability and necessity for U.S. power, and, most importantly, the stakes for the United States in particular contexts.

It is possible that what we have uncovered is not a problem with deterrence per se, or anything new to the character of an era of world politics, but merely a problem of national will. The United States has simply been unwilling to take the steps necessary to enforce the principles or objectives it has laid out in these cases, this argument goes, and a refusal to enforce deterrence—a repeated failure of will—should not be confused with emerging flaws in the capacity of the instrument itself. Our argument, however, suggests that both claims are true; it merges the arguments. Because of the trends and realities we lay out below, the United States will be inherently and persistently less willing to employ and enforce deterrence to deal with the leading security challenges of the new era. The very character of these trends is that they make national will more difficult to marshal and sustain.

II. Changes in the International Security Environment

Trends in world politics are making it less likely that these conditions of deterrence will be met. Basic elements of the new security environment include the following:
Security issues are more complex than during the cold war—deterrence of Soviet expansion has given way to state fragility, radicalization, and the paradoxical task of embracing powers like China while guarding against adventurism from the same states (without provoking nationalism). Such issues tend to make themselves known slowly, rather than appearing suddenly to shift the status quo—and are therefore more difficult to deter in classical terms.

Globalization, modernization, growth of middle classes, information technology, nuclear deterrence and many other factors mean that there are simply not as many outright aggressor states threatening attacks. One implication is that, on average, in any given incremental stage of an emerging threat, fewer vital U.S. interests will be at stake, leading to a reluctance to make deterrent or coercive threats. A critical shift underlies these changes: Global threats have morphed from singular states, threats, or events into a composite of separate events—a collection of actions by a host of loosely affiliated terrorist groups worldwide or a series of proliferation-related steps by a state actor. U.S. interests will seldom be sufficient to threaten sufficient punishment to deter any one of these steps, yet their accumulation is the “act” the United States is attempting to deter.

In an “information age” driven by near-instantaneous worldwide awareness of events and a strong “perception is reality” dynamic, national leaders may feel more restrained than in the past from actions with the risk of generating unintentional blow-back, large domestic costs, or other “perceptual” risks. This could tend to limit U.S. actions to those perceived as low-cost—and could impede the credibility of broad-based deterrent and coercive threats.

There is much more potential for anonymous troublemaking. From unclaimed terrorism to cyber attacks, states and groups
wishing to do major damage without being identified have elaborate tools for achieving this goal.

- The emergence of a more multi-polar world with less easily universalized interests—what Fareed Zakaria has aptly termed “the rise of the rest”—creates a more fragmented context for dealing with security issues.

- A United States politically exhausted and fiscally and militarily broke after a decade of foreign wars will not have the tools nor the will to respond to issues in the way some may expect or desire.

- A growing role for cyber technologies is emerging. Two examples of relatively benign attacks on a nation’s ability to conduct business already have occurred. The first was in Estonia; the second was in Georgia. Both incidents seriously affected those governments’ ability to use their electronic communications for a few days. These were classic cases where a third party could instigate a conflict between two nations. It is difficult to find the correct return address for cyber attacks in a timely and actionable way.

- The effect of other military technologies adaptable to military uses, such as synthetic biology, is being felt. In this field, science has been making rapid progress in a direction highly beneficial to humankind. But this technology could be misused to create weapons of mass destruction (WMD). These weapons will be especially interesting to terrorist groups or rogue states.

- Finally, many asymmetries are emerging in the power relationships between prospective deterrers and deterrees. There is, for one thing, the typical problem of “asymmetry of interest,” in which the smaller state has vital interests at stake whereas the deterrer (or coercer) has only secondary ones. Asymmetries of interest, knowledge, perception, and power become the norm in an era of multi-polarity, complexity, and fragmented understanding of the global system.
The nature of the emerging security environment makes it increasingly difficult to meet every one of the criteria outlined above. The characteristics of the new environment challenge these criteria in a host of ways. Few states have an interest in directly challenging the existing international order, and those who do (North Korea and Iran may be examples) employ gradual, “salami-slicing” approaches that move bit-by-bit and play the national interests of some major powers against others, rather than taking actions that would count as a sharp and irreversible discontinuity. At the same time, the capability of deterrers to make credible threats, and to carry them out once made, may be more in question, for reasons that range from greater constraints on the actions of major powers, to the greater difficulty of locating and punishing non-state or anonymous actors, to the challenges of assembling a consensus in a multi-polar world. The nature of the issues under dispute—state instability masking terrorist havens, for example—often means that the interests at stake emerge from an accumulating mass of events and reports rather than a single, clarifying act, and may not appear to a wary, debt-ridden, overextended U.S. public to justify unambiguous (and thus credible) threats. This asymmetry of interests will tend to favor the target state. In an environment of complex issues, fragmented multi-polarity, cross-cultural communication and domestic political pressures, and contested degrees of national interest, the potential for misunderstanding—and the sort of cognitive disconnect that has obstructed successful deterrence in the past—may be more in evidence than ever before.

An alternative interpretation is available: that nothing has changed. The flaws in deterrence theory have been clear for some time, and all we are witnessing today is the frustrating application of a troubled instrument to problematic cases. There is substantial truth to this; as noted above, the criteria for deterrence—and their limitations—have long been apparent. But we believe there is persuasive evidence for two essential propositions. First, the changing security agenda confronts the United States with a higher proportion of issues on which the well-known limitations of
deterrence will be especially evident. And second, several objective trends in the security context have rendered threat-based approaches like deterrence and compellence even less viable.

III. The Changing Role of Deterrence: Lessons of Cases

The analysis then reviews the lessons of three brief case studies in recent U.S. efforts to deter states from taking actions contrary to U.S. interests: North Korean and Iranian proliferation, and Pakistani support for Afghan Taliban groups. Each case is an example of “bundled” security challenges and responses: the United States is employing elements of deterrence, coercion, compellence, diplomacy, engagement, and other tools at the same time. The cases offer many overlapping lessons. A few examples:

- The goals of U.S. action in all cases have been at least somewhat vague, helping the target state to prevent deterrence success.
- The character of threats has shifted from one major discontinuous act to a series of steps, such as many actions on the road of a nuclear capability; but U.S. interests will seldom be sufficient to threaten sufficient punishment to deter any one step.
- Each of these issues meant more to the targets than to the United States, engaging the asymmetry-of-interests problem.

It could be objected that the case studies are not really examples of “deterrence,” or that the United States is not actually pursuing deterrence per se in any of these cases: it is trying to build a partnership with Pakistan, ratchet up “pressure” on Iran, and isolate and coerce North Korea. But it is also trying to deter each of these states from taking additional undesirable steps; and it attempted in the past to deter them from actions they have now taken. More fundamentally, the confused, mixed aspects of these strategies relate precisely to our argument: they
reflect the nature of the challenges that dominate the security agenda today. Examinations of U.S. responses become case studies of deterrence, compellence, coercion, and engagement all at once.

IV. Conclusions and Implications

The strategic context in which the United States must pursue its interests is growing more complex, abstract, and multi-polar, subject to passionate nationalistic and psycho-social pressures. The “unipolar moment” is over, while the limitations on the direct application of force—from nuclear escalation risks to the ability of small states to hunker down into protracted guerrilla wars—remain powerful. The sum total of these and related trends is that tools of statecraft requiring force, coercion, and threat will be effective, credible, and useful for a much smaller proportion of the threats the United States confronts than has been the case in the past. Beyond that broad conclusion, this analysis carries a number of more discrete implications:

- During the cold war, U.S. foreign and security policy came to rely heavily on deterrence, coercion and compellence as default tools of statecraft—tools arguably of questionable effectiveness even then, and of clearly problematic utility given trends in the international environment today. Yet the default mindset continues, risking a persistent and growing mismatch between our approaches and the challenges we face over time.
- The issues we are dealing with are inherently complex. Thinking of them as “actions to deter” misses the point. As a result, true “red lines” for decisive punishment often never emerge, leading to a series of retreats.
- There is a changed context for U.S. nuclear posture that has only partly made its way into official thinking—or U.S. nuclear policy. Many states, including the United States, have stepped
up nuclear coercion since the end of the cold war, but this ultimate weapon will in actuality be relevant to only a tiny handful of actual threats. Key questions remain to be answered, such as the red lines that would justify nuclear use, the goal nuclear use would attempt to achieve, and the basis on which nuclear conflict would be terminated.

A wide variety of military and non-military tools could be used with considerable precision as a part of U.S. deterrent policy. As a deterrent concept, however, as opposed to its utility in responding to a threat, tailored deterrence has to be evaluated against the diminished set of situations where deterrence of any kind can be relevant.

The emerging era offers less room for threat-based strategies of deterrence and coercion. Worse than that, the tactic of deterrence tends to narrow the thought processes of national security officials. It encourages threat-based thinking; it inhibits the critical assessment of challenges; and it encourages an exaggerated sense of threat perceptions, in part because, by its very nature, deterrence-based thinking views all adversaries as “opportunity driven,” ready to take advantage of any gap in deterrent threats with aggression. It places massive stress on the value of credibility and instructs nations to burn their bridges if necessary to make commitments—thus reducing maneuver room once crises begin. This is precisely the inverse of the sort of thinking that will be required for the security environment that is rapidly emerging. Although, to be clear, a role for deterrence and coercion still exists, it must be subsidiary to more nuanced tools and techniques that take seriously the character of the threats emerging, the multi-polar nature of the new era, and the limits on U.S. power. The new era of world politics renders threat-based approaches inherently less feasible and mandates strategies that work through, rather than against, the core interests of key target states.

What such strategies would look like is beyond the scope of this paper, but we offer a few general suggestions. In an era in which
deterrent-coercive approaches are still important but have much less effectiveness, U.S. national security strategies can be built on a foundation of:

- **Recognition of the limits of U.S. power**, and a greater focus on not making threats or coercive statements that cannot be backed up.
- **Enhanced knowledge and intelligence** about the challenges the United States faces to underwrite greater appreciation and more nuanced reactions.
- **Quiet rather than loud, covert rather than overt responses** when possible to eliminate or negotiate challenges in ways less likely to engage some of the public dynamics especially destructive of deterrent-coercive success.
- **The use of broad influence strategies working from the target state’s worldview and interest base** rather than beginning with U.S. demands and pouring coercive leverage on top until behavior changes result—an approach complicated by many factors, such as the difficulty of knowing just what the minimum interests of the other side actually are and the frequent domestic political challenges of granting them.
- **Finally, reliance more on deterrence-by-denial-based approaches** of defense than on threat-based deterrence-by-punishment. The emerging era of national security is one likely to emphasize such concepts as resiliency and homeland defense, which provide security even when a target state has not been deterred from taking hostile action. As one conference participant remarked, if deterrence is a preventive concept, part of the challenge is to broaden the search for means of preventing the harm we hope to avoid. Threat-based strategies are only one means to this end.

To reflect these principles in U.S. strategy will take new mindsets and creativity, but the U.S. national security establishment has seldom
done such thinking—and the hangover of deterrent thought processes is part of the reason why. As Lawrence Freedman has pointed out, “Once deterrence became doctrine, then it was elevated to a general theory of strategic relationships,” and it became a substitute for strategic thought. Deterrence theory “gradually removed the sense of dynamic interaction between the political context and the instruments of power that is at the heart of strategy.” To recapture a sense of that healthy dynamic, our default mindset must become more elaborate than deterrence-based approaches have taught us to think.
CHAPTER 3
Nuclear Deterrence After Zero

Sidney D. Drell and Raymond Jeanloz

Achieving a world of zero nuclear weapons, with neither deployed nor reserve arsenals, cannot mean returning to the world of pre-1945. Knowledge of nuclear weapons would still exist, and their almost unimaginable destructive potential was forever demonstrated by the rubble and charred bodies of Hiroshima and Nagasaki. These weapons cannot be un-invented. Hence, nuclear arsenals can be reconstituted or built from scratch, and thereby still provide an ultimate deterrent.

In short, nuclear deterrence does not go away in a world without nuclear weapons. Yet, given the possibility to reconstitute small but deadly arsenals, it is not clear that a world with no nuclear weapons is consistent with establishing strategic stability among nations on a global scale. By strategic stability, we mean conditions discouraging breakout—the threatening buildup of a nuclear arsenal—while also providing assurances that reconstitution would be possible on a time scale relevant to deterring treaty violations.

The objective of this paper is to describe nuclear deterrence in a world free of nuclear weapons, to facilitate considerations of both the feasibility and desirability of such a world. With this as our focus, we do not dwell on how to implement the necessary steps on the path to achieving that goal. Instead, we emphasize technical matters that
define the conditions of deterrence and provide a starting point for broader policy discussion. The decisions are ultimately political, yet must be in accord with what is technically feasible.

Our study focuses on the least restrictive definition of a world without nuclear weapons: one in which assembled weapons are banned, but components of unassembled nuclear warheads may be retained in declared sites. We also consider other options, but they add more constraints. They are far more challenging in monitoring and verification, and probably also in achieving such an end.

Nations having the desire and capability—former nuclear-weapon states, in particular—could maintain unassembled components, including parts making up the nuclear explosive package of a warhead. Building on what has already been achieved in arms-control treaties, the components and delivery systems for nuclear weapons would be restricted to declared sites, subject to verification through an inspection regime.

Former nuclear weapon states would therefore be in a position to reconstitute a nuclear deterrent in a matter of months, if not weeks. This would allow time to respond to all but the most sudden and unanticipated of crises. In particular, increased tensions in international relations—foreshadowing the potential of imminent crisis—could be the trigger for initiating reconstitution. Thus, a nuclear deterrent is technically feasible under these circumstances.

In addition to components, we expect that a nuclear infrastructure and associated activities would be in place. Notably, former nuclear weapons laboratories would play an important role in addressing vital national security issues related to nuclear weapons, including the development and use of technologies supporting treaty verification.

Our end-state definition is technically plausible, as it proposes building on frameworks created in past negotiations and relying on a variety of cooperative, confidence-building measures: activities including information exchanges and on-site challenge inspections to validate the control of nuclear warheads and their delivery vehicles.
We expect, however, that cooperation and transparency will necessarily extend beyond current experience; as noted below, this condition must apply to regional tensions, as well as to relations between the United States and Russia. Yet we recognize that measures of cooperation and transparency ensuring compliance with treaty commitments go far beyond what was thought possible twenty-five years ago.

Our on-site inspection (OSI) experience has been exercised more than 150 times for the Intermediate-Range Nuclear Forces Treaty (INF); more than 1,100 times for the Strategic Arms Reduction Treaty (START I); more than 500 times for each of the Chemical Weapons Convention (CWC), the Treaty on Conventional Forces in Europe (CFE), and Open Skies agreements; and many hundred times by the United Nations Special Commission on Iraq (UNSCOM), the United Nations Monitoring, Verification, and Inspection Commission (UNMOVIC) and the International Atomic Energy Agency (IAEA).

Still, we must seek to understand the conditions of deterrence in the end state: are they feasible, desirable, and less risky than alternatives of widespread nuclear proliferation?

Four major issues need to be addressed regarding the nuclear-weapons infrastructure that would be retained:

- What are the necessary elements of an adequate infrastructure, with a capacity for timely though limited reconstitution of a nuclear deterrent?
- What activities, facilities, or weapons-related items should be limited or prohibited?
- What can be done to assure early and reliable warning of an attempt at breakout?
- What can be done to protect that infrastructure from being destroyed in a preemptive strike?

Depending on the outcome of negotiations, the infrastructure could require a limited but adequate supply of parts for a weapon, including:
components of the metal primary stage; safety-certified arming, fusing and firing systems, with use-control and other features to ensure adequate surety; neutron generators; the high explosives that squeeze the nuclear-explosive material to critical densities to start the fission chain reaction; parts that control radiation flow; and gas-transfer systems, with supplies of tritium gas appropriately replenished to boost the yield of the primary stage of the weapon.

The delivery systems would also need spare parts, including re-entry vehicles for missiles. If intended for dual use with conventional bombs, these parts would need to be configured with compatible electrical connection plugs for the command, control, and firing signals.

Permitted activities would be those analogous to present-day stockpile stewardship, namely surveilling and maintaining the components in working order so that they could be counted upon if necessary. This holds for delivery systems as well as warheads, and would include remanufacturing capabilities.

The components and relevant delivery systems would have to be tracked and identifiable, not only by the country possessing them but also by inspectors charged with validating that there are no assembled nuclear weapons, and would have to be limited to declared sites.

The key nuclear-weapon components would presumably be stored within containers, both to physically secure them and to prevent sensitive design or material details from being revealed during inspections. There exist technologies for tagging and tracking sealed components that can support such a system of storage and can be validated by inspections. These technologies include hardware for remote sensing of attributes (i.e., measured without opening the container) and software for handling sensitive databases; this is a fruitful direction for future technical research.

Many more details would have to be addressed in establishing strategic stability in a regime of no assembled nuclear weapons. Some of the tasks to be pursued can be summarized now (see the following
box), but more work is needed to define the full spectrum of activities required from the technical community.

Technical requirements for major progress in reducing arsenals to low levels:

1. Accurate and transparent counting of warheads and delivery systems
2. Accurate and transparent determination of stockpiles of weapons-usable nuclear material and means of their protection against theft
3. International control and management of the nuclear fuel cycle for civilian power
4. Cooperation and transparency in non-nuclear military issues as deemed important for strategic stability as nuclear weapons recede in importance

Monitoring treaty compliance is demanding, and considerable hurdles must be overcome to achieve necessary trust and transparency. Beyond sensors and compiling data from declared sites, it is of particular concern to be able to detect and figure out what may be hidden in undeclared locations.

Here it is important to emphasize that it is not feasible to sustain a concealed stockpile of effective and reliable nuclear weapons by passive means alone. Without an active surveillance program replacing limited-life components and checking on signs of aging—both of which require direct access to and servicing of any remaining warheads—confidence in the effectiveness of any concealed weapons would necessarily decrease over time, as would their military utility. It is also true that maintaining nuclear-weapon components—let alone full warheads—is not a passive activity. Chemical reactions occur in
plutonium, high explosives, and other components of the weapons. Maintaining these components over several years requires active surveillance and refurbishing programs.

Detecting efforts to maintain an illegal, covert arsenal are indeed daunting. However, so was the challenge to implement on-site random inspections. Yet progress up to and through New START shows that such monitoring is possible and can be effective.

For a world in which assembled nuclear weapons are banned, and components of unassembled warheads are permitted, it would be necessary to increase the spatial resolution of monitoring sensors substantially beyond the New START criteria. This would enable verifying that individual parts of warheads and bombs in declared sites remain unassembled; it would also be intended to detect any illegal, covert efforts to reassemble them. The key would be to ensure that nuclear explosive packages have not been mated with arming, fusing, and firing systems: that is, the essential nuclear and non-nuclear components of the warhead remain separated.

We do not minimize the challenges associated with increasing the resolving power of monitoring systems by a factor of five. This increases approximately one hundred-fold the level of effort for inspecting any one site, reinforcing the need to require that facilities housing weapon components be declared sites only.

If there is no concern about cheating, the inspection process is a relatively straightforward extension of current practices. Our emphasis on both spatial resolution and activity in monitoring is to address the potential—no matter how likely or not—that one or another nation might not only hide its full capabilities, but also might be preparing surreptitiously for a preemptive strike on an adversary’s nuclear infrastructure.

We have no simple answers, especially for nations that feel threatened by neighbors they fear could overwhelm their defenses.

One important consideration is that the capability for nuclear-weapons reconstitution does not need to occupy much space, and it
can be protected against preemptive strike through burial in hardened sites at distributed locations. Detailed analysis has shown that it is easier to protect than to destroy such sites with current technologies.

Moreover, bilateral or NATO-like multilateral agreements could be implemented so that former nuclear-weapon states—the nations having the most rapid and reliable capability for reconstitution—could offer ultimate guaranties of security. This would be a form of extended nuclear deterrence in a world free of nuclear weapons.

Still, we acknowledge that this is one of the most troublesome topics in our study, which is why we emphasize right from the start that there will inevitably need to be changes in international relations, calling in particular for establishing regional stability in currently troubled areas, in order to achieve a condition of no assembled nuclear weapons.

A brief word about more restrictive conditions that ban all components of nuclear warheads, in addition to assembled nuclear weapons: because stockpiling key elements of the nuclear explosive package would no longer be allowed, the time required to reconstitute a nuclear arsenal would be significantly extended. To the degree that enforcing more time between a nation’s recognizing a major threat and its possessing nuclear weapons is considered stabilizing, this would be good.

One implication is that nuclear deterrence would—without vanishing—be less immediately salient. Although there would always remain the ultimate possibility of building nuclear weapons from scratch, the timescales for acquiring the materials and producing the weapons would now be stretched to many months if not years.

Verification of such a “below zero” nuclear-weapon regime would be significantly more challenging from a technical perspective, yet monitoring activities and maintaining confidence that there are no undeclared sites would be more important than for our earlier criterion of no assembled weapons.

In particular, supplements to optical and radioactivity sensors would be required to detect even smaller pre-fabricated parts or the materials
from which these are created, since they that might be retained to form the components of nuclear warheads. These sensors might need to resolve linear dimensions as much as another factor of five to ten smaller than we previously described. And, because of the increased timescales for reconstitution, the reliability of inspections might have to be enhanced so that those inspections provide adequate warning of changes in strategic balance.

Technical advances, particularly in remote sensing, are likely to mitigate these additional challenges, and there will be considerable incentive to pursue research and development activities along these lines. However, there will also be a need for increased transparency and further progress in cooperative monitoring, not to mention evolving norms, as has been experienced with respect to biological weapons.

The analogy with biological weapons is imperfect, but it is also significant. This is an example of a deadly technology that can cause mass casualties and is thoroughly proliferated: there is no knowledge or material that can be protected anymore in the biological realm. Yet global norms exist and biological arms-control is a reality, even though there have been notable breaches of the relevant treaties. This fact documents the possibility—at least—that norms can be established for nuclear weapons, as they have been for biological weapons.

If one goes further, imposing complete international control of all fissile materials around the world, this would add additional barriers to cheating. With production and stockpiling of all nuclear materials safeguarded, the distinction between former nuclear weapon states and non-nuclear weapon states would now come as close to vanishing as can be determined in practice. It is conceivable, for example, that a technologically and economically advanced non-nuclear weapon state could, under these circumstances, develop a nuclear weapon capability as readily as one or more of the former nuclear weapon states. This scenario would be so different from present circumstances that we leave further speculation for the future.
We recognize that daunting challenges remain, because a global consensus and commitment would have to be energized and sustained in order to drive progress toward reducing the immediate salience of nuclear weapons. Expressions of support from international leaders have been of major importance. However, a much broader engagement of the public at large is needed, and this can only begin after experts and other interested parties have examined the proposed end states in detail, to determine whether and how these can lead to enhanced security and stability around the world.
CHAPTER 4
Playing for Time on the Edge of the Apocalypse:
Maximizing Decision Time for Nuclear Leaders

Christopher A. Ford

One way to view deterrence is through the prism of maximizing the decision time available to leaders in making nuclear weapons use decisions. The jumping-off point for this exploration is the ongoing debate over nuclear force “de-alerting,” that is, taking nuclear weapons off high alert so that more time is required to elapse between the perception of an attack and the decision to launch a counter-attack. But we should conceptualize the issue more broadly than that—namely, as a question of decision-making time on a broader timescale: from crisis escalation well before any potential attack warning, all the way through to after an attack may have actually occurred. In particular, we should examine the difficulty of balancing presumed deterrent considerations against the risks of accident, error, and loss of control.

“De-alerting” and other decision-time-related debates must take into consideration two different types of risk. The first is “Type A” risk, what one might call “advertence”: things such as crisis stability, preemptive use incentives, etc. (Type A thinking is largely a deterrence discourse.) The second is “Type B” risks of “inadvertence,” which focus upon accidents, errors, and so forth.
Neither side in the de-alerting debate is dismissive of either type of risk. At issue, rather, is the balance between them and tradeoffs that may have to be made in practice. Nuclear command and control is to a great extent a balancing act. It helps to conceive of this in terms of complexity theory: arrangements need to be tightly coupled enough to allow them to remain responsive to leadership control, yet loose enough that they can handle perturbations. The right answer—if there is one as an organization hovers at peak organizational and adaptive fitness, on what complexity folks call the edge of chaos—is not a fixed point but a dynamic tension.

The fact that tradeoffs are often required as one addresses Type A or Type B risks is illustrated by the main thrust of the de-alerting debate. The critique of current nuclear postures offered by Bruce Blair and Scott Sagan—which is the core of the most compelling intellectual case for de-alerting—is that the nuclear command-and-control system is too tightly coupled and full of complicatedly nonlinear interactions to avoid, or be able to cope with, errors and accidents, particularly in the brief time between apparent warning of an incoming attack and the point by which one would have to launch one’s alerted forces in order to get them out from under it.

Because of force vulnerabilities—and, Blair stresses, the fragility of the command systems which would be needed in order to mount and manage a retaliatory strike—nuclear states face incentives to adopt a de facto launch-on-warning (LOW) whether or not this is officially policy. This combination, they argue, is potentially lethal.

This critique obviously involves elements of Type A and Type B thinking, but its main focus is the reduction of Type B “inadvertence” risks. It stresses the need to expand the time before it is physically possible to launch weapons: extending this period, it is felt, will allow more chances to correct errors and think twice about launch.

The counter-narrative generally offered in response to such arguments is one that stresses Type A concerns, though it does acknowledge Type B worries and tries to address them through remedies
associated with what Sagan has discussed as “high reliability” thinking (e.g., sensor redundancies). Type A counter-narrative proponents like preservation of the LOW option, even though they don’t like LOW policy as a rule, because they think it supports the deterrence of aggression. And they worry about de-alerting because they fear instability associated with crisis-stability and re-alert or rearmament “race” issues.

The Type A narrative is thus also about maximizing decision time. The anti-de-alerters, however, see de-alerting itself as being likely to constrict decision-making time by forcing leaders to take provocative steps earlier in a crisis than they would have to if they maintained forces that were already alerted. The two sides in the debate, therefore, are really just talking about different relevant time horizons.

De-alerting as a remedy is problematic precisely because it is a type of Type B solution that demands tradeoffs with Type A concerns on a quasi-zero-sum basis. Depending upon where one sits in the Type A or B camps, it might or might not be necessary actually to make this tradeoff. We should really look for solutions that do not demand a zero-sum tradeoff—and thus serve both Type A and Type B interests in a positive-sum way.

In the process of reducing Type B risks, we may find it valuable to address not the capability for LOW (as de-alerting argues) but in fact the incentives that may drive possessors toward finding it attractive. Ballistic missile defense (BMD) can help provide something of a buffer against accidental launches—or indeed false alarms suggesting limited attacks, such as the Russian scare involving the Norwegian sounding rocket in 1995.

Also needed is much more serious work on command-and-control system survivability of just the sort that Blair has argued has created dangerous LOW incentives. If Blair is right that command-system vulnerability is at the core of the incentive structure that removes the post-attack period from having real relevance to nuclear leaders, we should fix this by restoring the option of “ride-out” that our expensive pursuit of survivable second-strike forces presupposes we
need and desire. (Survivability may have seemed impossible in the cold war context of massive nuclear “laydowns,” but we should not assume that having an architecture capable of ride-out is so quixotic in today’s world—or in a future world of shrinking arsenals.)

The aim in this regard should be to maximize decision-making time by giving leaders more feasible options after the presumed time of enemy warhead impact in ways that do not remove the arguably still aggression-deterring capability of LOW. Simply put, we may want to retain LOW, but make it less attractive—thus addressing both Type A and Type B risks in a way upon which all sides in today’s de-alerting debates may be able to agree.
CHAPTER 5
Arms Control and Deterrence

James M. Acton, Edward Ifft, and John McLaughlin

The aspiration of a world without nuclear weapons raises the fundamental question of how deterrence would work in such an environment. Given the pivotal role that arms control has historically played in setting the conditions for deterrence, especially as the nuclear era unfolded following World War II, important related questions center on whether arms control will be an equally essential component both on the path toward zero and in a world at zero. We think the answer to both questions is yes.

Arms control agreements have seldom referred explicitly to deterrence, largely because of the extraordinary difficulty of achieving agreement on who is entitled to deter whom from what. Yet clearly deterrence has been an underlying theme of most post-war arms control agreements, beginning with the U.S.-Soviet bargaining in the late 1960s and early 1970s that led to the Strategic Arms Limitation Treaty (SALT I) agreements on strategic offensive and defensive arms.

It is impossible to imagine movement toward elimination of nuclear weapons without arms control agreements that bolster deterrence so that today’s nuclear-armed states are reassured that they can protect their vital interests without that capability. For deterrence to be effective and stable as the number of nuclear weapons declines, arms control
agreements will have to deal with much more than quantitative reductions of nuclear weapons. It will also be vital, for example, for arms control to wrestle with the role of defensive systems, the status of delivery vehicles, limitations or controls on conventional weaponry, and ultimately the contingency plans that some countries are sure to formulate for reconstitution of nuclear forces.

On most of these issues, thinking and practice are currently either not well-developed or suffer from long-term neglect.

With regard to defensive systems, the inheritance of post-war declaratory policy and arms control practice is largely confusion and controversy. There were a number of landmarks along the way:

- The 1972 U.S.-Soviet Anti-Ballistic Missile Treaty (ABM), by limiting missile defenses sufficiently to deny an attacker a significant advantage by striking first, ensured that deterrence would depend on mutually assured destruction (MAD).
- The Bush administration’s exit from the treaty in 2002 signaled the U.S. conviction that the treaty posed unacceptable limits on U.S. defensive capability, primarily against “rogue” nations.
- Finally, the 2010 New Strategic Arms Reduction Treaty (New START) simply dodges the issue. In consequence, Russia has conditioned its adherence on future assessments of U.S. defensive capabilities.

The bottom line is that, because of Russian and Chinese concerns, it is hard to imagine substantial movement toward zero, if arms control does not come to grips yet again with the issue of defensive systems. This could take one of three very challenging forms: a new treaty on defensive systems; a unilateral declaratory policy clarifying national intentions; or bilateral or multilateral work on cooperative anti-ballistic missile systems.

Any administration committed to zero will also have to focus on the vexing issue of delivery systems—especially intercontinental ballistic
missiles (ICBMs) and submarine-launched ballistic missiles (SLBMs). A key question will be whether a reduction to dramatically lower or zero nuclear warheads implies corresponding reductions in ICBMs and SLBMs.

What will make this a particular challenging question is the tension between a number of competing objectives. On the one hand, some states will want to retain some ICBM and SLBM delivery systems for conventional weapons. On the other hand, other states will worry that such delivery vehicles would preserve a “breakout” capability, reducing their willingness to work toward zero.

As difficult as it will be to sort through such dilemmas, it is equally clear that focusing solely or primarily on warheads will not ensure stable deterrence at lower levels. Thus, a key challenge on the way to zero will be avoiding a vicious cycle in which retention of some conventionally armed ICBMs and SLBMs for deterrence and hedging purposes leads to calls for anti-ballistic missile systems to counter them, which in turn would make reduction of nuclear weapons much more challenging.

In fact, the certainty that conventional deterrence will have to become more prominent and robust to facilitate a world less dominated by nuclear weapons assures that conventional arms control will have to be part of any strategy designed to create such a world; otherwise we can be sure that some countries will continue to see nuclear weapons as the most effective way to offset conventional inferiority.

This will be a particularly challenging way station on the road to zero because there is so much yet to be done and because there seems so far to be practically no political interest in doing it. The most noteworthy post-war achievement in this arena is the 1990 Treaty on Conventional Armed Forces in Europe (CFE), but this was preceded by twenty years of confidence-building measures that are only at an initial stage (where they are under way at all) in the various arenas that would benefit today from such an approach: India/Pakistan, U.S./China, or Russia/China, to cite just a few examples. And conventional arms control is made still
more complex by the need to deal so often with qualitative factors that require frequent updating—equipment, technology, preparedness—and with complex definitions of who is the adversary (in the Arab-Israeli-Iranian disputes for example). All this said, it is clear that ignoring conventional forces, or considering them too complex for arms control, would clearly imperil any drive to eliminate nuclear weapons.

Finally, even as we draw nearer to a nuclear weapons-free world, a form of nuclear deterrence will continue to exist because of the capacity to expand or entirely reconstitute nuclear arsenals. In fact, states are likely to embrace such contingency reconstitution plans to counter unexpected non-nuclear aggression, potential cheating, or a deliberate reversal of course by other adherents. Arms control efforts will, therefore, have to focus on providing transparency so that other states can be assured that reconstitution plans are not being put into action for more aggressive purposes. Once again, this would be an enormously complicated task, but it would presumably benefit from some of the steps that necessarily would have preceded it on the way to zero—agreements on delivery systems and other aspects of nuclear weaponry, along with monitoring and verification practices far more robust than today’s.

Still, different states would have different levels of anxiety and confidence in this world. Arms control would have to allow for the fact that many states would see this as still a two-tiered world in which some would be able to reconstitute more rapidly, and perhaps more stealthily, than others. In these circumstances, any protocols resulting from arms control negotiations would necessarily have a high degree of transparency, likely liberal use of challenge inspections, and—particularly for states surrendering the most robust nuclear capabilities—a well-developed system of “safeguards” aimed at assuring preservation of a nascent nuclear capability.
CHAPTER 6
Practical Considerations Related to Verification and Compliance¹

Edward Ifft

Deterring illegal activity regarding constraints on nuclear weapons involves three key questions:

1. Can we detect illegal activity?
2. Who decides whether an activity is illegal?
3. If a determination of illegal activity is made, what is our response to it?

Detection

The primary means of detecting illegal activity in a world with few or no nuclear weapons are well-known: National Technical Means (NTM), multilateral technical means, on-site inspection (OSI), open sources, and civil society. NTM cannot be discussed in detail here, but its deterrent value is enhanced by the fact that a potential violator will not know the

¹Many of the issues discussed here are examined in greater detail in Cultivating Confidence: Verification, Monitoring and Enforcement for a World Free of Nuclear Weapons, edited by Corey Hinderstein, Nuclear Threat Initiative, 2010.
capabilities, or even the locations, of the NTM of other states. Though not of great significance in the major nuclear arms control agreements in force today, civil society could play an important, if unpredictable, role in verification in the future. We should insist that whatever becomes illegal under international law is also reflected under domestic law in each country, with serious punishments prescribed for violators. This could be a stronger deterrent than lofty moral arguments or the capabilities of some distant international verification organization.

On-site inspections (OSI) would be expected to play a key role. These would be of four principal types:\(^2\)

- Monitoring the storage of nuclear weapons, nuclear weapon components and fissile material
- Monitoring the dismantlement of nuclear weapons
- Monitoring permitted nuclear infrastructure
- Making challenge inspections to clarify ambiguous situations.

A vast amount of relevant OSI experience has been gained in implementing existing arms control agreements. Thousands of inspections have been successfully conducted under the Non-Proliferation Treaty (NPT), INF, START, CWC, CFE, and Open Skies Treaties. In addition, many “audits and examinations” have been conducted under the Nunn-Lugar Cooperative Threat Reduction Program and unique experience with a semi-cooperative host was gained by UNSCOM, UNMOVIC, and the IAEA Action team in Iraq.

Perhaps the most straightforward inspection task would be verifying the numbers and the elimination of relatively large military items—missiles, launchers, bomber airframes, and so on. We have a great deal of successful experience with this under the INF and START treaties. We also have similar experience under CFE and CWC, as well as in Iraq and under the Nunn-Lugar program.

\(^2\) In addition to the four types discussed, there will also need to be a regime to control fissile materials. It is assumed here that such a (probably separate) regime would have to be in place well before achieving zero nuclear weapons.
Counting *numbers* of permitted nuclear warheads, or major components thereof, in declared facilities would be a straightforward task that we should be able to do well, though working out security issues would not be trivial. This task could also involve perimeter and portal continuous monitoring (PPCM), either manned or through the remote use of optical and radiation sensors. The United States and Russia have years of experience operating PPCM systems. There was also relevant continuous monitoring experience gained in Iraq using closed circuit television (CCTV); somewhat similar activities occur at Chemical Weapon Destruction Facilities under the CWC.

The task of counting nuclear weapons involves both being able to determine that an object is a nuclear weapon and being able to determine that an object is *not* a nuclear weapon—for example, a conventional weapon. This is a relatively straightforward task. Radiation detection equipment for this purpose was used under both the INF and START agreements and is authorized under New START.

An important part of counting, storing, and dismantling nuclear weapons and their major components would be establishing a reliable chain of custody. Inspectors would play an important part in this, aided by a tamper-indicating system of tags and seals. *Designing* such a system is well within our capabilities. *Negotiating* such a system with other countries will be a challenge.

Monitoring the *dismantlement* of nuclear weapons will be a major challenge. This has never been done under agreed procedures with the involvement of international inspectors. However, significant research has been carried out in this area.³

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Another difficult problem would be carrying out *challenge* inspections, especially in undeclared facilities. The vast majority of our OSI experience to date has involved *declared* facilities and there are many unknowns involved in challenge inspections. Both the CWC and START provided for challenge inspections, but none has been held to date. The most obvious, but not the only, task in a challenge inspection would be looking for illegal nuclear weapons. There are size criteria for what inspectors may see in both the START/New START agreements and the CFE treaty. As noted in the Drell/Jeanloz chapter, searching randomly for an object the size of a nuclear weapon is clearly out of the question, even in a small country. Good intelligence from one of the sources noted above on exactly where to look would be essential.

A highly competent, trusted, and objective team of inspectors would clearly be needed for the tasks foreseen in this book. The same group could be used for all four types of inspections listed above. One possible model would be IAEA inspectors, another would be the UNSCOM/UNMOVIC operation directly under the United Nations, and a third would be the international inspector corps used by the Organization for the Prohibition of Chemical Weapons (OPCW) in The Hague to implement the CWC, or the one being trained in Vienna to implement the Comprehensive Test Ban Treaty (CTBT).

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**Decision**

At first glance, deciding who are the judge and jury in compliance cases in a world with few or no nuclear weapons might not seem to be a major issue. Many observers assume that violations would be flagrant and

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obvious, as at some point. However, such cases (North Korea, Iraq) may well take a back seat to ambiguous situations (Iran) involving dual-use or civilian nuclear activities. Such cases may require a difficult decision regarding intent to be made. Both the Chemical Weapons Convention (CWC) and Biological Weapons Convention (BWC) require a distinction to be made between “offensive” and “defensive” purposes, as well as between “peaceful” and “hostile” intent.

Experience in dealing with compliance cases is not encouraging. The United States periodically prepares an analysis of compliance issues for important existing arms control agreements. Existing arms control agreements are surprisingly inconsistent in dealing with compliance issues. Some have executive councils or a board of governors with the power to deal with compliance issues; some do not. Some refer issues to the United Nations Security Council (UNSC), some to the United Nations General Assembly (UNGA), and two (CWC, CTBT) mention possible recourse to the International Court of Justice. The NPT has no overall implementation body at all.

The UNSC is, of course, the supreme authority with the power to impose political or economic sanctions or military action. Under Chapter VI of the U.N. Charter, it can recommend “appropriate procedures or methods of adjustment.” Under Chapter VII, if the UNSC determines that a “threat to international peace and security” has arisen, it can impose obligatory measures on all U.N. member states. The UNSC’s record on arms control cases is not particularly encouraging. It seems clear that the UNSC, at least if the veto power is intact, is not suitable for dealing with accusations against the major powers. The solution must be the result of an international consensus and involve a trusted, representative, technically competent and veto-free organization. Such

5 The latest such report is Adherence to and Compliance with Arms Control, Nonproliferation and Disarmament Agreements, U.S. Department of State, July, 2010.

an organization should be able to issue a “not guilty” verdict and not just a “guilty” one. This is important because we need a mechanism to close out compliance issues so that they do not fester for years and undermine the regime. It is also important to avoid a requirement that inspectors “prove the negative,” which plagued us in Iraq.

Response

Perhaps the most difficult aspect of our experience with compliance issues has been devising an appropriate response to clear violations. It is obvious that deterrence fails if criminals are caught and convicted, but are not punished or made to reform in any way. There are many reasons for such an outcome. The punishment tools available are really quite limited, and it may not be feasible to use those that do exist against major powers. Another important consideration is a prudent desire to avoid making the situation worse. Keeping an offending state inside the tent may be seen as more desirable than driving it outside. Economic and political sanctions have generally been the response of choice in dealing with violations of arms control treaties or international norms, with mixed results. Even in retrospect, it is frequently difficult to determine the results of sanctions, since the situations are dynamic, with many factors at work.7

There is no easy answer to hypothetical situations that could arise in a nuclear-weapon free world. One step that could be taken now is to begin to foster a zero-tolerance attitude toward violations. Thus the fundamental principle *pacta sunt servanda* (agreements must be kept) should be taken more seriously. Technical violations are now largely

7 A recent international study of the use of sanctions is *Sanctions and Weapons of Mass Destruction in International Relations*, by Sitt, Asada, Aust, Eriksson, Ifft, Kyriakopoulos, Mackby, Massinon, and Meerburg, Geneva Centre for Security Policy (Geneva) and Centre d’etudes de Securite Internationale et de Maitrise des Armaments (Paris), July 2010.
met with indifference. The attitude should be not that no violation goes unpunished, but that no violation goes unnoticed. Broader use of “name and shame” could be helpful. Of course, a distinction would need to be made between technical or inadvertent violations and those that constitute a “material breach,” as defined by the Vienna Convention on the Law of Treaties.\(^8\) We also must begin to be more sensitive to the perception that we have a double standard when it comes to compliance—one for allies and friends and another for rogues and adversaries. This perception, which is not entirely unjustified, has been quite damaging to efforts to build consensus for action in serious compliance cases.

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\(^8\) Article 60 of the Vienna Convention on the Law of Treaties defines a material breach as “the violation of a provision essential to the accomplishment of the object and purpose of the treaty.” A repudiation of a treaty which is not sanctioned by the Vienna Convention is also a material breach, but that is a different situation than the one discussed here.
AMONG THE COMMON OBJECTIONS to the vision of a world free of nuclear weapons, there are two that focus attention on the problem of enforcement. The first of these is the “instability objection,” which argues that such a world would not remain free of nuclear weapons for long because the temptation for a state to break out would be great. The “proliferation objection” claims that nuclear disarmament will have, at best, no effect on nuclear proliferation and might even serve to encourage it. If these objections are valid, it is very unlikely that progress can be made on the path to a nuclear-free world.

1. Zero as an end state

Assume that there exists a world free of nuclear weapons and that states are willing to cooperate to keep it that way. Such cooperation will be possible only if each state feels confident enough about the intentions of other states that it can itself make the commitment not to acquire nuclear weapons. Cooperation of this kind requires institutions that can (a) collect the necessary information about states’ nuclear behavior; (b) verify that states are complying with their obligations; and
(c) sanction states that defect. The sense of security needed to sustain a world free of nuclear weapons will be possible only if there is confidence that in the event of an attempted breakout (a) the system of monitoring and verification will provide adequate warning-time for the appropriate action to be taken, and (b) that such action will in fact be taken.

There are three significant issues here:

- Warning-time of a breakout is important, but it is the warning-response nexus that is crucial. We cannot assume that warning of a breakout will always be unequivocal; nor can we assume that the appropriate response will be straightforward, even in a world free of nuclear weapons. Responses and warnings need to be matched. That is an issue that needs to be thought through carefully.

- There could be different kinds of responses to warning signs of a breakout, ranging from gathering more information to the use of force. Against great powers the use of force would be difficult, and the creation of a countervailing nuclear force might be the appropriate response. The knowledge that a breakout would meet with such a response should serve as a deterrent (broadly defined) to the breakout in the first place.

- If the nuclear powers retain the capacity to reconstitute nuclear forces quickly, the security dilemma is likely to present itself in an acute form. The capacity to reconstitute nuclear forces quickly may be reassuring to those states that have that capacity, but it may well look threatening to others; they in turn may want to enhance their capacity to produce nuclear weapons quickly, and their defensive moves may look provocative in their turn.

Thinking about nuclear deterrence in virtual terms does not resolve all the issues of stability and credibility normally associated with deter-
rence. Institutional innovations will be required to enable states to make credible commitments not to acquire nuclear weapons. In dealing with the security dilemma, it would be desirable to separate the capacity to break out from the capacity to respond to a breakout, perhaps by internationalizing or multilateralizing the capacity to respond.

II. Strategic stability and nuclear deterrence

Under certain conditions, virtual nuclear deterrence (or the fear of regressing to a nuclear world) could contribute to sustaining a world free of nuclear weapons. Now, however, the discussion surrounding New START and especially Russian concerns about missile defense suggest that the requirements of deterrence pose an obstacle to further reductions in nuclear forces. How to resolve this apparent paradox?

During the cold war, strategic stability came to be defined very much in technical terms as a consequence of the balance and structure of strategic nuclear forces on either side. A hostile political environment was assumed, with the possibility that one side might attack the other if it could achieve the capability to launch a disarming strike.

In the new political context, strategic stability—which after all refers to the likelihood of war—should take much greater account of political factors in (say) the U.S.-Russian relationship or the U.S.-China relationship. It should take account of the overall state of the political relationship, and especially of the capacity to manage by diplomatic means whatever conflicts may arise.

This is a perfectly logical elaboration of the way the concept of strategic stability was used in the cold war. The concept should be seen as something much broader than nuclear deterrence. This does not mean that the relationship between nuclear forces is irrelevant, but it does mean that it should be put in a broader context. This might ease the requirements of deterrence, thereby making deeper reductions possible and easing the transition to a world free of nuclear weapons.
III. Nuclear proliferation

Only ten states have made the serious effort needed to acquire nuclear weapons. These are the P-5 nations (China, France, Russia, the United Kingdom, and the United States) plus India, Israel, Pakistan, South Africa, and North Korea. The world does not consist of states straining to get nuclear weapons; the norm of nonproliferation has almost universal support, to judge by the number of states that have signed the NPT. Commitment to the norm is, however, conditional on restraint by other states: hence the danger that defection by some states could lead to chain reactions of proliferation in some regions of the world (e.g., the Middle East).

The “proliferation objection” consists of two arguments. The first is that disarmament will stimulate proliferation. This is based on the assumption that extended deterrence (by the nuclear powers) has in the past prevented—and will in the future prevent—some states from acquiring nuclear weapons of their own. Extended deterrence has played a role in the past, but times have changed and it is not clear what call there might be for it in a world free of nuclear weapons. In any case, extended deterrence should be regarded as part of the more general problem of restructuring security relationships to take account of the absence of nuclear weapons.

The second is that proliferation will go ahead as states acquire nuclear weapons for their own reasons, without regard to whether or not the nuclear powers are disarming. The problem of dealing with potential proliferators, especially those that have set up clandestine programs after signing the NPT, has proved to be very difficult. The Bush administration advocated the use of preventive force against so-called rogue states and terrorists, on the grounds that while nuclear deterrence had worked well in the cold war, it was less likely to work against the new nuclear threats. Preventive military action has moved to the fore as an option in dealing with the new threats associated with terrorism and nuclear weapons.
IV. Redefining sovereignty

In recent years there have been moves to redefine sovereignty in terms of “responsibility”: “the responsibility to protect,” for example, and the idea of “responsible sovereignty,” which has been proposed as a framework for thinking about the way in which states might act together to deal with global problems such as climate change and nuclear proliferation. The basic point is that in an interdependent world, states cannot provide for the security of their own citizens without cooperating with other states to counter transnational threats. Even a narrow conception of national interest should lead to the recognition that cooperation is essential.

That means that the international community has to take collective action to deal with global challenges. Cooperation among the “great powers” (or their modern equivalent) will be required both to create a world free of nuclear weapons and to sustain such a world. In the first place, those powers have to agree that a world without nuclear weapons is what they want; and they have to be prepared to keep such a world in being. What is needed is a contemporary equivalent of the nineteenth-century Concert of Europe when the great powers managed their relations by exercising restraint and conferring intensively when crises arose.

Two points about the Concert are relevant today: first, a recognition by states that their national interests were best served through cooperation with other states; and second, a shared conception among states of how the international system should develop and of their place in the system. In the case of a world free of nuclear weapons this shared conception would have to be that a world free of nuclear weapons would be safer for everyone and that the appropriate institutions should be created to make such a world possible and sustainable.

Those institutions should include mechanisms of enforcement. If the norm of non-intervention in the internal affairs of states can be overridden in the name of the “responsibility to protect,” would it not also
be right to intervene to prevent an irresponsible state from acquiring nuclear weapons? The Bush administration made the case for preventive force in such circumstances, but that case did not meet with universal approval. The existence of a world free of nuclear weapons, however, would presumably provide a legal and legitimate basis for the use of force to prevent states from acquiring nuclear weapons. This would mark a significant change in the substance of sovereignty, in the direction of “responsible sovereignty.” Resort to force should of course be the final option, after other measures have been adopted to deal with warnings of a breakout.

Which institutions would have the authority to approve the use of force and what constraints should be imposed on the use of force to make it legitimate are serious questions that require careful analysis.

V. Paths forward

One of the gravest challenges facing the world today is whether the international state system as it is now constituted is capable of confronting the global problems that affect the fate of the earth and cannot be dealt with by the actions of single states. The same question arose in 1945 with respect to nuclear weapons. International control failed, but the worst apprehensions about the likelihood of nuclear war did not come true. The international system, even when divided into two great hostile blocs, provided more scope for new ideas and for institutional creativity than theorists of international relations tend to acknowledge. There is no reason to think that the capacity for creativity has disappeared. The “proliferation objection” raises questions that need to be taken into account in moving toward a world free of nuclear weapons. The “instability objection” raises more serious issues that will require very careful institutional design for their solution.

This paper has discussed some issues to do with nuclear deterrence in a world free of nuclear weapons. Nuclear deterrence has a role—we
would be in a post-nuclear, not a pre-nuclear world—but that role will be restricted and not without difficulties. Deterrence will play two important but distinct roles. The first is that the threat of a countervailing nuclear force should inhibit a powerful state from breaking out of the world free of nuclear weapons. The second is that the threat of punitive action should deter other states (and perhaps powerful states too) from seeking to break out. If force is to be used it will have to be legitimate force, approved by an authoritative source and used in accordance with prescribed criteria. This would be deterrence exercised in much the same way as it is practiced by law enforcement agencies within states governed by the rule of law.

This paper may seem to point only to difficulties on the path to a world free of nuclear weapons, but such a world may look more feasible if the order of issues raised here is changed: agreement among the “great powers” to create a world free of nuclear weapons; approaches to strategic stability that are much broader than nuclear deterrence; institutional innovation to deal with the instability problems that even virtual deterrence could generate; and institutions to sustain and enforce the new order, possibly even with the use of legitimate force.
CHAPTER 8
Deterrence: Its Past and Future

Remarks by George P. Shultz

NOVEMBER 12, 2010

The subject of deterrence deserves to be mulled over, discussed, and massaged because it is such a comfortable idea. You deter something unpleasant by taking a passive stance—making yourself so passively strong that the unpleasant event does not take place. So, deterrence is a special form of prevention.

As I think back over my career, I remember when I became secretary of treasury and the head of the IRS came to update me. He said, “We have the greatest voluntary tax system in the world.” “Really?” I said, and he replied, “Yes, of course. Everybody knows that somebody may be watching, and if you don’t fill out your forms right it could be unpleasant.” I said, “Well, that’s deterrence.” Deterrence makes the tax system work.

Of course, deterrence takes on a different hue when you get into the area of conflict. Having been involved in deterrence during the cold war, I remind myself how important it is to figure out what, exactly, you are trying to deter and how, exactly, you are trying to do that, recognizing that deterrence is a form of prevention. During the Cuban missile crisis, the nuclear deterrent may have led the Soviets to understand that
it wasn’t a good idea to put missiles in Cuba. I’m not a student of that crisis, but I gather there were tradeoffs, and perhaps the specter of a nuclear exchange had something to do with the favorable outcome. However, nuclear deterrence did not deter the Soviets from going into Hungary or Germany or Czechoslovakia. Remember, World War II started because the Germans went into Poland. But the Soviets were not deterred from creating the conditions that led to the Berlin Airlift or from going into Afghanistan. If it didn’t prevent those things, how should we think about deterrence?

What are our main security worries right now? There are many, but a main concern is radical Islamism using the weapon of terror to disrupt our societies in an attempt to change our way of life. In a way, if you say that deterrence is prevention, then we have adopted a form of deterrence. We have said to ourselves, those guys in the mountains of Afghanistan probably don’t care much about our nuclear weapons except for their desire to obtain one, so what can we do? We can exhibit strength and we can bolster our intelligence to the maximum amount. We can try to find out what our enemies are planning, and then we have to be willing to take steps to prevent their plans from materializing. In my opinion, doing that is almost a no-brainer, but I recognize that this issue is surrounded by controversy.

As secretary of state, when I gave a speech in 1984 on the subject of prevention, it seemed there was only one person on my side, and fortunately his name was Ronald Reagan. It was a shock to people to be told that we ought to act in a preventive way when we see something potentially destructive coming at us. But any country will try to prevent impending attacks. When you see something taking shape in another country, under what circumstances should you take preventive action? How confident are you of your intelligence? What would cause you to take action? Deterrence is a means of prevention, so the two are close cousins. If you see that deterrence doesn’t work, you may have to use other forms of prevention.
I think it is important to examine the carefully written papers that have been prepared for this conference. We always need to be aware of the questions underlying the issues of deterrence, such as: What exactly are we trying to deter, and how well positioned are we to succeed? What role do nuclear weapons play in deterrence? Even if we conceive of a day when nuclear weapons will be less important, as papers by Sid Drell and others suggest, can we ever get to a point where nuclear weapons are no longer useful? How do we imagine the concept of deterrence operating with fewer nuclear weapons or even without nuclear weapons? How can we preserve and make use of this concept so that we have a deterrent capacity to prevent attacks?

When I was in Marine boot camp, my sergeant handed me my rifle saying, “Don’t point this at anybody unless you are willing to pull the trigger.” No empty threats. I think the profound point as far as deterrence is concerned is credibility. If what you are threatening is not credible, then it is not a deterrent. In the case of nuclear weapons, their destructive capability is so great that their use could only be conceived of to deter huge dangers. No one would believe that a country would risk using nuclear weapons against anything other than a massive danger, so it would not be seen as a credible threat. In other words, the size of the deterrent must fit the nature of the problem. The saying goes that if you are a hammer, everything looks like a nail. The reverse is also true: if you see a nail, you’ll want to hit it with a hammer, not a nuclear weapon. So, the role of nuclear weapons in deterrence is confined to major dangers. They have little deterrent impact against small threats except, perhaps, that they give you a seat at the table.

The reverse of this is that you want to avoid getting into a vulnerable position where you can be deterred. I think back to my days as secretary of labor when I was asked to chair a cabinet task force on the oil import control program. President Eisenhower had put into effect a quota system because he thought that if we imported more than 20 percent of the oil we used we were asking for trouble in terms of national security. In
our task force study, we could see that this quota would not hold. A few years later, when I was secretary of the treasury and Henry Kissinger was secretary of state, all of a sudden we had the Arab oil boycott. We had a much more robust production capacity at that time; nevertheless, the Arabs sought to cut off our oil in order to change our foreign policy. I thought to myself, President Eisenhower had a point. The boycott did disrupt our economy, and even though we have had periodic disruptions, we can’t seem to sustain an effort to do something about this problem. Every country should ask, “Is something taking place that may put us in a position where we can be deterred from doing something we want?”

The concept of deterrence, basically a concept of prevention, is, then, not necessarily confined to nuclear deterrence. We have to ask ourselves: what kinds of things are we are trying to prevent, and if deterrence doesn’t fit the bill, what does? In this context, the threat of radical Islamism and terrorism dictates that we have good intelligence and are ready to step in to prevent events that could have catastrophic consequences. That is prevention, not deterrence, but the fundamental ideas are the same.

Let me now shift gears to the problem of identifying cheaters in a world with fewer—or even no—nuclear weapons. In an early discussion, we considered enforcement as a chain of decisions starting from technical organizations like the IAEA that determine if a country is cheating in its nuclear weapons activities. That automatically could trigger the ability of any country to take action itself or with a coalition of the willing, after which the U.N. Security Council might make a ruling. Suppose I’m the secretary of state and I have this set up. What am I going to do? First of all, my friend John McLaughlin over there in the CIA is tasked to work on this, too, and he’s smarter than the IAEA. We are watching these guys like hawks and we know everything that is going on. We are wondering if they have the backbone to call them as they see them. The technicians in the IAEA know if they say x, an automatic sequence of events is triggered, so we worry that they may
not be as objective as they should be. Then, of course, if the signal is given, I’ll tell the president, “We had better act fast before this gets to the U.N. Security Council because this is really important to us and who knows what the Council will do.” Then someone else is there saying, “Wait a minute, cowboy, you can’t do this unilaterally.” So the decision goes to the Security Council where action can be vetoed. Verification experts have spoken reasonably confidently about how they can identify a cheater, but we have to focus on enforcement. Enforcement is difficult and, in the end, you are going to have to allow countries that feel threatened to have a chance to take action. In order to move forward on this issue, we need to find an answer to this problem because no country will be willing to strip itself of the deterrent impact of nuclear weapons unless it feels confident that there is an effective enforcement mechanism in place.
CHAPTER 9
Deterrence: Its Past and Future

Address by Henry A. Kissinger

NOVEMBER 11, 2010

GEORGE P. SHULTZ: It is my privilege to introduce Henry Kissinger tonight. I’ve known Henry for a long time, maybe four decades. I’ve known about him for even longer because when I was a young assistant professor at MIT right after the war, I would read these things that a guy named Kissinger who was at Harvard said. He took on the big themes. You know, mostly when people take on the big themes, it’s BS. But when Henry spoke there was a cutting edge to it. There was something special, so I always read whatever he put forward.

Then when we both wound up in the Nixon administration, I got to know him and I got to know him better and better and better. He was a great guy at bureaucracy. He knew how to manage things in the government. For instance, there is always this problem between the secretary of state and the head of the National Security Council. Henry solved it by taking both jobs at the same time. I loved the comment he made once when [Zbigniew] Brzezinski, who was [President Carter’s] national security advisor, was feuding with Cy Vance, who was secretary of state.
Henry says Brzezinski wanted Vance to go to China and explain American foreign policy to the Chinese—one at a time.

But Henry and I have worked together for a long time. At first when I showed up, he didn’t pay much attention because, after all, the field of economics doesn’t matter. And then along came some stuff about oil-import quotas and Arab oil embargos and so on, and he began to turn on. Then when the exchange rate system went wild, he decided economics was pretty good. He got to know more and more about it, and I’m really alarmed now because he’s starting to make pronouncements on economics. But he’s come a long way in this field.

We worked together closely when we were colleagues in the Nixon administration. I remember the occasion when things were kind of rough. The vice president had justifiably been forced to resign through his misdeeds and the Watergate crisis was upon us. At Henry’s leadership, he and I and Arthur Burns, who was chairman of the Fed, had a little tripartite group. We weren’t trying to usurp the president’s functions, but we talked a lot together to be sure that if anything critical came up we would be able to evaluate it quickly and give the president good advice because he was in another world at that point. Henry, in this regard, showed something that has always been a trademark of his as I’ve watched him in operation. He is a deep patriot and he’s looking out for the interests of the United States, defending them, thinking about them, arranging things on our behalf. This has always been one of his great traits.

You’ve also seen, of course, his tremendous contribution as a statesman. The opening to China which he basically engineered was a masterful piece of work as a diplomat. He is a scholar of immense capability. If you’ve read the works that he’s put forward, you know they are masterful. Henry has been working on a book on U.S.-China relations. It will be published next year, and anybody at all interested in China is anxiously waiting to read that book because it will be full of insights.

So this statesman is a scholar of tremendous proportions and, as I said, he is a patriot. From my personal standpoint, it’s wonderful because he’s
such a great friend. He has a wonderful capacity for friendship. He and I have had that and I treasure it. So it is a special privilege and pleasure for me to introduce to this gathering Henry Kissinger.

HENRY KISSINGER: George, ladies and gentlemen, I appreciate the kind remarks. They leave me in a position in which I found myself once at a cocktail party where a lady came up to me and said, “I understand you are a fascinating man. Fascinate me.” It was one of the less than successful conversations that I’ve had.

I’m also glad that George referred to the fact that I held both positions because never before and never since have relations between the White House and the State Department been as smooth as they were in those days.

We’ve had a fascinating day of some staggering scholarship talking about deterrence and the history of deterrence. I will begin by showing my relative ignorance by pointing out that I think deterrence as it is now conceived is a relatively novel event in human history. Of course, there have been conflicts between nations for as long as there has been recorded history. Of course, the military might of a nation or of a state would affect the calculations of other countries. But what is special about deterrence in our period is that the relationship between the threat and the action that is supposed to be prevented is being lost.

In the past, nations fought wars because they thought the consequences of defeat were worse than the consequences of war. But in the nuclear age, the consequences of the war are in all likelihood the worst thing that can happen, especially if it is a general nuclear war. This is the unique dilemma of our period.

Two things are happening: the relationship between the threat and the strategy is being lost; and, secondly, in the past the military forces of a country could be maneuvered to indicate things were getting serious and to reflect the need for some action. But one of the attributes of the modern technology is that either there isn’t anything additional you can do because those missiles are in silos, or, if there is something
you can do that can be noticed, it may trigger the danger that the other side will try to strike first. So the diplomatic use of the military arsenal is shrinking.

I've been thinking about what I could do this evening to illustrate some of these points. I thought I would go over some of my own experiences and some of the things I've studied. By accident, I got involved in writing about nuclear strategy. For those who write books about how I plotted my career carefully, I want to tell you how it happened.

I was writing about nineteenth-century diplomacy when I was walking across Harvard Yard in the rain with Arthur Schlesinger and he had just received a letter from Tom Finletter, who had been secretary of the Air Force, advocating the doctrine of massive retaliation. He handed me that letter and asked, “What do you think of this?” So I wrote him a memo of what I thought of it. I hadn’t thought of it much before, but he made me think of it. He then sent this letter to Foreign Affairs. It was the first article I ever published. So really, one thing led to another. I mention it because this was the mid-fifties. What I wrote then and what many people believed then was that the consequences of massive retaliation were so severe that there was almost no national objective that you could bring into relation to it.

So for a while people, including myself, were playing with the idea of limited nuclear war. Intellectually, that was sort of an attractive alternative until you started studying how you would go about limiting it and how you would go about having the other side understand what you were trying to do without getting into an escalation that got out of control. I had been writing about that for fifteen years when I got into government and a lot of thoughtful people, some of whom are in this room, had all agreed on what the problem was.

I was made national security advisor, and on the second or third day I asked the Joint Chiefs to bring me what was called the SIOP [Single Integrated Operational Plan], the plan for nuclear war, because I was one of the people that the president was going to ask about it. I looked at that and I saw the casualty estimates and the consequences.
I called Bob McNamara, who had been secretary of defense just before, and asked him to come to the White House. I said to him, “What are they holding back? There must be something else.” He said, “There’s nothing else. That’s what it is.” So we thought we’d fix it. We asked for a more discriminating approach. We didn’t hear anything for three years. When we got the more discriminating approach, the targets were more discriminating but the casualties had gone up. Now this raised the question in my mind: What would I do if the president called to me and said, “We’ve gone to the limit of diplomacy. This is the day we execute the SIOP or threaten with the SIOP”? I tell you it was an anguishing issue because, on the one hand, I thought it was a responsibility that nobody could take. On the other hand, it is also true that if you act that way you invite the threat that might make you impotent. This has been the permanent dilemma of the nuclear age.

When I look at other countries, how did they react to it? Well, [Andrei] Gromyko had been [Soviet] foreign minister for decades. After about thirty years they made him president of the Soviet Union, which means he was unemployed. He would sit in his office and I would ask him such questions as, “What exactly does the president of the Soviet Union do?” He said, “Well, the president of the Soviet Union adjudicates disputes between the various republics of the Soviet Union, but that can never happen.” Two years later, a lot of the republics left the Soviet Union. On one occasion, I said to him, “Explain to me what you people were thinking during the Berlin crisis of 1947. How could you start that crisis having just lost 20 million people in the war and run the risk of war?” Gromyko said, “A number of people have gone to Stalin with the same argument, and Stalin answered in the following way: he said, ‘The Americans will never use nuclear weapons. If they attack in battalion size along the autobahn, you can resist. You don’t have to come to me. If they mobilize all along the front, come to me.’” So even when we had an atomic monopoly, according to Gromyko’s story, they assessed that we would probably not use it.
When I thought of the various crises that I’ve lived through and that I was responsible for in the National Security Council and in the secretary of state’s office, I cannot think of a single occasion when we contemplated implementing the SIOP. I can’t even think of a single occasion when we took measures that were moving consciously toward nuclear war. There were two occasions which are often described as having gone on nuclear alert, which is basically nonsense. What we did was the following: When the Syrians invaded Jordan in 1976, all the moves we made were designed to show that we were taking it very seriously, and what moves did we make? We mobilized the Eighty-second Airborne Division. We tried to get the sailors back to their ships on the Sixth Fleet and, in order to do that, technically you had to declare something called DEFCON III. DEFCON I is nuclear war, so DEFCON III has basically very little to do with nuclear weapons. We went out of our way not to threaten with nuclear weapons. We went out of our way to mobilize with conventional weapons because they generated a lot of traffic so the Soviets could see that a lot of things were going on.

I mention these matters only to indicate that we are in a strange position. We have developed sophisticated theories of nuclear warfare. We have developed complex weapons systems and great theories of how they might interact. But not only in my own experience, but in the whole history of the post-world-war period, the only time one could say that nuclear war could have been possible was during the Cuban missile crisis. But even there, Kennedy maneuvered with conventional weapons.

This, then, raises a number of issues. I have been a defense hawk. I have basically favored almost all the weapons systems that exist when they were being built. Like many others, I did not believe we could risk a position of inferiority to the Soviet Union. I believe, in retrospect, that some of the assessments of what the Soviet Union might do were extremely exaggerated in light of what we now know of Soviet capabilities. To me, the essence of the nuclear age is that to prevent the worst
that can happen to you, you have to do a lot of things that you never are able to apply to any of the concrete situations that arise. Now this was the case in a two-power world.

Now we are moving into a more complicated situation. There is the emergence of China. There is the development of nuclear weapons in India and Pakistan. There are the proliferations in North Korea. So when I started thinking about nuclear weapons and the decades that followed, it was essentially a bilateral equation. France and Britain had nuclear weapons, but it was clear they would only be used in very extreme cases that were hard to conceive.

But now we have a number of issues. In the relationship between the Soviet Union and the United States, you could assume a more or less equivalent level of sophistication. Both countries had comparable things to lose and comparable capabilities of protecting their weapons. But now there are emerging a whole set of other deterrent equations between India and Pakistan, between Iran and Israel, between Iran and possibly neighboring countries, and maybe a whole host of other nuclear-weapon states. Their relationships to each other do not have the constraints that I talked about before. I’m not excessively worried about a direct nuclear attack from a new weapons state upon the United States. One would have to be demented in order to invite the total destruction of society that would involve.

One can’t count on the equivalent restraint between other countries. That raises a question I’ve been thinking about and to which I don’t have an answer, and it is this: In the attack on New York, 3,000 people were killed. None of the support systems of a modern city were affected. All the hospitals were operating; bridges were up; tunnels were going. Almost all the casualties were dead so it didn’t require huge emergency measures. But if the world wakes up one morning and finds that 50,000 people have been killed in one hour somewhere in the world, I believe this must affect the thinking about the military establishments that are being developed.
Now, up to this point, this is what many people concerned with disarmament say, and I share that part of their views. But I also believe that the world requires equilibrium. I believe that defense is important and I think that a whole set of issues will arise when proliferation speeds up. What happens if there is a nuclear attack on any one country? What do the other countries do? What _should_ they do? Can one tolerate it if nuclear weapons become conventional weapons?

I know a possible answer is to say, “Abolish all nuclear weapons.” A number of people are working on this, and the four of us have endorsed the idea of a nuclear-free world at the end of a process. But this may not happen fast enough for the contingencies I am describing. So I think when one worries about deterrence now, one ought to worry about the various deterrent balances that emerge. One ought to also address one overarching question, which is: What do the established nuclear countries do when there is a terrorist or an irresponsible use of nuclear weapons? If it is not possible to establish a pattern to prevent it, what should one do to make sure it doesn’t happen again? I think this is a question that requires a lot of thought.

We were talking this afternoon in the group about some things we have not been able to deter in Pakistan and elsewhere. I believe there are things in this world we ought to try to prevent. We may have to employ threats to achieve them, but the threats have to be in some relationship to what one’s moral convictions are and what the international system can stand. It is in this respect that the concepts of the fifties, sixties, and seventies no longer apply and why I think the conference George has organized has been so helpful.

Our problem has been that it is very difficult to develop a concept of what the fundamental issue is in a number of cases that are foreign to our experience. We say we have not been able to prevent Pakistan from helping the Taliban. Well, one problem is that Pakistan looks at this issue from the point of view that their line of defense against India is Islamic solidarity and that the Taliban represents Islamic legitimacy to them. So they cannot deal with this except in a larger frame of refer-
ence. When you look at their situation you will see that there is a whole host of countries that, unlike Vietnam, are directly affected by what goes on in Afghanistan. So my view is that we have to find some way of bringing these other countries—India, Pakistan, China, and Russia—into a common approach not to the immediate tactical problem but to the future of the legal status of Afghanistan.

In the nineteenth century, armies had been marching up and down what is called Flanders in Western Europe. Then, what is today Belgium declared its independence from the Netherlands. The Duke of Wellington came up with the bright idea to say: rather than fight over it, why don’t we declare it neutral and have all of the countries give them the right to help defend it? So a political concept was involved and that worked for nearly a hundred years.

I think something like that will be needed in Afghanistan, but I’m not here to talk about foreign policy. I’m here to talk about the relationship between power and diplomacy and the future equilibrium of the international system. We have to rethink the nuclear principles on which we’ve been operating. We also have to keep in mind the essential role that America, with all its failings, has played in maintaining stability in the world and keeping it from becoming chaotic or being turned over to the most ruthless. That’s the big challenge that we face.

I want to say to George that when I was writing my memoirs years ago, I wrote that if I were ever asked to nominate anyone for a position of responsibility, it would be very easy for me. I’d always nominate George Shultz. Of course, he’s had almost every cabinet job you can have. He’s been a great inspiration to me and a great friend. Whatever you may think of any presentation given during this conference, the question George has asked about the future of deterrence—how we view it, how we can adjust our historic thinking about it—is one that will determine the kind of world we live in.

Thank you very much.
THANK YOU VERY MUCH, and thanks to all of you for attending. We have an ongoing and continuing partnership between the Hoover Institution and the organization that I chair, the Nuclear Threat Initiative. We coordinate the Nuclear Security Project (NSP) that George Shultz, Bill Perry, Henry Kissinger and I—along with Sid Drell and Jim Goodby and Max Kampelman and others who have served in public life—have been part of. And we are here to talk about the very important subject of deterrence.

Napoleon supposedly once said to his gathered troops before they went into battle, “You can do anything with your bayonet but sit on it.” The nuclear equation is almost the opposite. We live in an age that has changed rapidly—with no Soviet Union and no Warsaw Pact. More nations are seeking enrichment technology around the globe. We have the challenges of Iran, Iraq, Afghanistan, and North Korea. And we have the threat of catastrophic terrorism. So we are, as we said in our article in The Wall Street Journal, reaching a tipping point. Four years ago in that article, George Shultz, Bill Perry, Henry Kissinger and I called for a global enterprise to keep nuclear weapons and materials...
out of dangerous hands to avoid the proliferation of those weapons and materials and ultimately to end them as a threat to the world.

We called for ten specific steps and went beyond a general concept of moving toward a world without nuclear weapons to include hard steps required to be able to build the confidence for moving in that direction and eventually arrive at that goal. For the last two days, we have taken a deep dive into a number of those steps, including the concept of deterrence as we know it now and how deterrence would evolve as we move down the scale of nuclear weapons, eventually going to a world without nuclear weapons. We have looked at the whole question of verification and, most importantly, the question of enforcement—how we would develop the will and the institutions to enforce agreements in today’s world or in a world where we are moving down the scale of nuclear weapons.

We’ve talked about the past; we’ve talked about the present, and we’ve talked about the future. I’ve described the vision of moving toward a world without nuclear weapons as beginning to climb a very high mountain with the peak fogged in. Our challenges are to find a pathway or many pathways up the mountain, to talk many into joining us in going up that mountain (because this cannot be a unilateral mission) and to identify a base camp or a series of base camps that we can clearly achieve as we eventually scale the peak. It is easy to see only the potential for avalanches that may come down the mountain, including, but not limited to, North Korea and Iran. We could lose sight of base camp and common paths leading upward. Fortunately, George Shultz, Bill Perry, Sid Drell, Jim Goodby and others here at Stanford and the Hoover Institution have assembled a team of experts who have been very helpful in identifying the obstacles and the avalanches, as well as the paths leading upward that we must find ways to pursue.

I have personally been engaged in trying to reduce nuclear dangers since the early 1970s. On my first trip to NATO as a U.S. senator, I became acutely aware of the tactical nuclear weapon and conven-
tional posture of the United States and NATO—and the corresponding posture of the Warsaw Pact and the Soviet Union. At a very young age, as a senator, it dawned on me that we had a very high probability of using those tactical nuclear weapons and escalating right up the ladder, if we did have a conflict in Europe. It is very easy in a conference like this to spend so much time analyzing the challenges that we almost inevitably come to a point of paralysis-by-analysis. It is easy to get into a gloom-and-doom mode because we all do see the huge challenges. We were in one of those modes for a brief period today. So I decided to jot down a few things I would share with this audience. This is a list of things that have been accomplished, that gives me room for encouragement and gives me the energy for what I think is a very important quest of protecting God’s universe as well as American security.

Let me just share a few of those with you:

1. A half-dozen nations have given up nuclear weapons or nuclear weapons programs in recent years: Ukraine, Belarus, Kazakhstan, South Africa, Libya, and Syria (though inadvertently).
2. We have dramatically reduced the number of nuclear weapons in the world, with the Soviet arsenal having changed dramatically. Three of those nations that inherited Soviet nuclear weapons have given them up entirely. Russia has gone down the scale of nuclear weapons, as has the United States, rather dramatically to about two-thirds of what we had at one time.
3. On protecting nuclear materials, which is a very important topic of our conference and a focus of the Nuclear Threat Initiative, we have moved significantly in the right direction. On a scale of one to ten—one being a poor grade, ten being a perfect grade—in the last ten, fifteen, twenty years, we have moved to at least a “six” or “seven,” in terms of securing nuclear material in the former Soviet Union. When I use the word “we,” I am not talking about just the United States, I am talking about partnerships.
4. We have helped Russia deactivate thousands of nuclear warheads and launchers. We have worked not only in the nuclear arena but also the chemical arena. We have a long way to go on the biological side. If you look at the light bulbs in this room or any other measure of electricity, 10 percent of our electricity in this country comes from highly enriched uranium that was in warheads aimed at the United States twenty-five years ago, then blended down and made into reactor fuel for power generation.

5. We now have a well-funded effort called the Global Threat Reduction Initiative in the Department of Energy, started in the Bush administration to help secure dangerous nuclear material, wherever it is, all over the world. Substantial progress has been made. Along the same lines, a Washington, D.C., gathering in April of this year with over forty heads of state, hosted by President Obama, ended with pledges to get dangerous nuclear material secured wherever it exists. Much work remains to be done. But it is a huge start.

6. We have a better-funded, better-supported and more capable International Atomic Energy Agency (IAEA), a key ingredient in controlling proliferation. There is still more we need to do to strengthen the IAEA, but we have come a long way.

7. The president of the United States and the president of Russia pledged to work toward a world without nuclear weapons. This pledge was endorsed by heads of state at a special summit meeting of the U.N. Security Council in September of last year.

8. Groups of former leaders from fourteen countries, including most recently in Russia, have endorsed the vision and the steps outlined in our Wall Street Journal article, in total or in part. That is very encouraging.

9. We have signed an arms control treaty with Russia. That treaty has the potential to revitalize the verification regime. Without the treaty, we will not have a verification regime. It also includes
confidence building and makes modest reductions in the number of nuclear weapons in both the United States and Russia. This treaty of course awaits U.S. Senate ratification and Russian Duma ratification.

10. We and our organization, NTI, are delighted that we have been able to help create a new organization, the World Institute for Nuclear Security. This organization, based in Vienna, works with people who deal with dangerous nuclear materials around the world to develop and share best practices for materials security. We have over 300 members. So we are making progress in terms of the awareness issue, in communicating how important it is to protect nuclear material worldwide.

We have with us Bill Potter, who runs the Monterey Institute’s Center for Nonproliferation Studies. Bill Potter is doing a marvelous job in helping educate young people from all over the globe in the dangers that we face in the nuclear arena. Those young people in many cases (because Bill’s been around a long time!) are now in leadership positions around the globe. Bill, you have important work in education and it makes a big difference.

Finally, we have a lot of work to do in the next few years. Let me just name a few things in closing.

First of all, a nuclear fuel bank can give countries assurance that they will have a steady supply of civil nuclear fuel; this can help countries avoid the need for building new uranium enrichment facilities which is a proliferation threat at this time.

Second, we need transparency around the number of nuclear weapons. Declarations about the number of nuclear weapons in their arsenals have been provided by the United States, Great Britain, and France, and we hope others will join. Without this kind of baseline, our work will be very difficult. We also need a baseline inventory declaration of nuclear materials held by all states. Without this transparency it will be difficult to be able to have the kind of data we need
for verification and enforcement, as we move toward a world without nuclear weapons.

Third, we have growing support, although we acknowledge there is a long way to go, for a fissile material cut-off treaty which would stop the production of fissile material for weapons around the globe.

And I would list as number four, changes to our declaratory policy which are now being debated. Declaratory policy is what we say about the purpose of nuclear weapons and how we would use them. In my view, changes to declaratory policy must be coupled with changes in operational doctrine. We must not simply declare but also demonstrate through changes to our operations and force posture that things have changed.

We need to add to this list ratification of the Comprehensive Test Ban Treaty, which can help contain and prevent proliferation in new states around the globe.

We also can continue to try to persuade people all over the world that Iran and North Korea and other would-be proliferators are a threat not just to the United States of America, but to global security.

Finally on my list, we know that more than 90 percent of the nuclear weapons are located in Russia and the United States and that is true of nuclear weapons materials, too. One of the great omissions of the post-cold war era is that Russia does not have a place in the Euro-Atlantic security regime. It’s not easy, but we’ve got to start debating and talking with the Russians. That kind of debate and discussion is just beginning and in my view is tremendously important, not just in the nuclear arena, but in the biological arena, the energy arena, the environmental arena, and other arenas. Russia needs to be part of, in some fashion, the Euro-Atlantic security and economic zone.

And finally, on that score the Obama administration, as well as the NATO leadership, is talking to the Russians about some type of cooperation on missile defense, which could be a game changer. With the United States and Russia having the vast majority of the weapons, it is pretty apparent that if we could find ways to work together to defend
against those weapons, people would realize that perhaps we could have many fewer of them—certainly fewer on prompt-launch status.

So those are just a few of the areas that we need to work on. I could make you another list—but I won’t—of all the challenges, avalanches, and rock slides that could come down the mountain, but let me just say that if you look at where we are now, and you look where we were twenty years ago, remarkable progress has been made. I think particularly our young people need to put that in perspective.

A large part of all this is based on George Shultz—his inspiration, his vision, his leadership. George has truly inspired us all. I view this overall effort as critical to protecting our nation’s security and also God’s universe. We are in a race between cooperation and catastrophe. What George and the Hoover Institution are doing is, in my view, making the cooperative side run a whole lot faster. Thank you, George Shultz, and thanks to everybody here at Hoover and Stanford.
ADM. MICHAEL MULLEN: Good afternoon. I want to thank Secretary Shultz, Secretary Perry, Secretary Kissinger, Senator Nunn, Minister Browne and everyone else who has taken time to really focus on this because I really do believe this is a critical, critical subject and there has not been a lot of focus on this in recent years.

It, from my perspective, was a gap in the—sort of the enthusiasm, the glee, the joy that occurred from the Western perspective when the [Berlin] wall came down. And I believe we find ourselves in a position where we’re struggling with what deterrence is and can be in the twenty-first century.

So I really do appreciate the opportunity to be here. And I’m also mindful of the depth and the breadth of the experience here in this room. As current and former high government officials, secretaries of state, defense, senators, you’ve been rightly recognized as the very architects of our national security. So I’m humbled, encouraged, and

Transcript by Federal News Service, Washington, D.C.
thankful for your continued service and your continued leadership because we need it. And we are all in your debt for the decades of leadership that you have provided.

I think, Mr. Secretary, one of your staffers noted that between you and Secretary Kissinger, Secretary Perry and Senator Nunn, there are over 200 years that have been spent thinking about the use, deterrent effect, and elimination of nuclear weapons. Today I bring a little more than forty of those years to bear of my own thinking on the topic off and on, though to be honest, some of those years were spent on visiting some of the greatest ports in the world.

So I make no pretense of expertise, but I do have the microphone here for a few minutes. And what was it that Mark Twain used to say? “The less a man knows, the bigger noise he makes and the higher salary he commands.” By that measure, you’re in for a real treat this afternoon.

Truth is, I’ve been giving the topic of deterrence a great deal of attention since assuming this office. And it’s my view that we haven’t paid enough attention to it nor have we adequately resourced it. Deterrence today—and I don’t have to tell you this—is tougher and more complex. More than one nation can now reach out and touch us with nuclear missiles. Americans are potential targets of terrorism wherever they travel. And regional instability in several places around the globe could easily erupt into large-scale conflict.

Yet we’ve done precious little spadework to advance the theory of deterrence. Many, if not most, of the individuals who worked deterrence in the seventies and eighties, the real experts at this discipline—they’re not doing it anymore. And we’ve not worked very hard to try to find their replacements.

Let me tell a brief story from my own experience: I went to a brief War College course in 1989, and there was an air force lieutenant colonel who’d been in the air force about twenty years. And we had two or three sessions with him on deterrence. I couldn’t imagine someone knew any more about the subject than this individual who had spent his whole career on deterrence and nuclear weapons. I mean, it was
one of those things that just made your head hurt sitting in class. We don’t have anybody in our military that does that anymore. And not unlike the nation, and in fact, even the globe, we’ve let those skills atrophy—and, I think, to our detriment.

Back then, in the ’89 timeframe, it was as if we all breathed a collective sigh of relief when the Soviet Union collapsed. We said to ourselves, well, I guess we don’t need to worry about that anymore. We were dead wrong. The demands of deterrence evolve, and as Dr. Oppenheimer once opined, “The atomic bomb made the prospect of future war undeniable. It has led us up those last few steps to the mountain pass; and beyond there is a different country.”

Frankly, the country beyond Oppenheimer’s mountain pass is significantly different than what most of us imagined prior to the end of the cold war. I won’t bore you with the history, particularly since many of you wrote that history. But suffice it to say that even as often and as quickly as things change, most nuclear arms agreements between the U.S. and the former Soviet Union have two elements in common: the realization that a lack of understanding invites instability through uninformed and unconstrained re-posturing of nuclear forces, and a common desire to improve bilateral relations.

For example, perceived missile and bomber gaps led to the SALT talks, which produced the ABM Treaty and an eventual, albeit temporary, freeze on arms production, all within the backdrop of détente. The ebb and flow of politics and history have made such agreements the products of exquisite timing, requiring a so-called “alignment of the stars” to succeed—as some of my Valley friends from down south might say—while other efforts were doomed to fail.

A flood of Soviet troops into Afghanistan dissolved support for SALT II in the United States, whereas the fall of the Berlin Wall and later the Soviet Union may well have hastened the signing and ratification of START.

Today, we lack a similar treaty with Russia. In fact, we haven’t had one for almost a year now. But the arms buildup in the aftermath of
SALT II’s disintegration highlights the necessity for some sort of understanding, some sort of verifiable reduction and monitoring regime.

And I don’t want to sound like too much of a caricature of my Southern California upbringing, but I think the stars I mentioned earlier have aligned once again. Consider this: President Obama committed to the pursuit of a nuclear weapon-free world and an agenda to reset the U.S. and Russian relationship. Russia has a vested interest in combating the export of terrorism and heroin from Afghanistan, where we are also engaged in costly but critical combat operations.

The world economic situation and outlook have forced governments worldwide to reexamine expenditures, with a particular emphasis on defense budgets. I think these converging interests laid the groundwork for Presidents Obama and Medvedev to sign the New START treaty this spring. And as I have said—and I know to a certain extent I’m preaching to the choir—its ratification and implementation is the right thing to do because we actually took the time to do it right.

And I want to recognize the extraordinary work of so many in that regard, particularly Assistant Secretary of State Rose Gottemoeller who is here with us today. I was with Rose for a lot of these negotiations and she and her team did extraordinary work.

The New START treaty allows us to retain a strong and flexible American nuclear deterrent. It strengthens openness and transparency in our relationship with Russia. It also demonstrates our national commitment to reducing the worldwide risk of nuclear incidents resulting from the continuing proliferation of these most dangerous weapons.

I am convinced that New START, permitting us as it does 1,550 aggregate warheads and the freedom to create our own force posture within that limit, leaves us with more than enough nuclear deterrent capability for the world that we live in. I am convinced that it preserves the strength resident in our nuclear triad and that it retains our flexibility to continue deploying conventional global-strike capabilities.
I’m also convinced that the verification regime is as stringent as it is transparent and born of more than fifteen years of lessons learned under the original START treaty. There will be eighteen inspections annually, a mixture of both deployed and non-deployed strategic systems, and we’ll be working much harder to share data concerning the numbers, locations, and technical characteristics of systems subject to the treaty.

In other words, we’ll know a lot more about Russian systems and intentions than we do right now. And as I have said many times in many different contexts, in this fast-paced, flatter world of ours, information and the trust it engenders is every bit as much a deterrent as any weapon we deploy. It’s what I don’t know and what I can’t see that makes me nervous.

So I believe, and the rest of the military leadership in this country believes, that this treaty is essential to our future security. I believe it enhances and ensures that security, and I hope the Senate will ratify it quickly.

There is, as you know, a separate but equally distinguished cohort that opposes ratification of the New START treaty. Typically they talk about missile defense, pointing to the preamble language that accepts an unspecified interrelationship between nuclear weapons and defensive systems. They say this gives the Russians what they want: no serious effort by the United States to develop and field such systems.

There is nothing in the treaty that prohibits us from developing any kind of missile defense. And the president has made it clear that we have every intention of furthering those goals. We couldn’t possibly be more open about it or about why we are doing it. To wit, we’ve already shared a great deal of our missile defense plans, policy, and programs with Russia and have promised to continue to do so in order to assuage their fears.

Insomuch as the success of deterrence is defined by the absence of attack, I believe Russian adherence, to date, to the tenets of New
START indicates acceptance of our current and future missile defense plans, despite public conjecture to the contrary in both the Eastern and Western hemispheres.

So way in the conclusion of this last chapter in the U.S.-Russia nuclear arms saga, we have the opportunity to peer further into Oppenheimer’s country beyond the mountain pass. And we would be well-counseled to review our climb to this point when we consider a rising nuclear power like China. The greatest lesson I think we can apply from our experiences with Russia to China is that in the realm of nuclear arms, transparency of strategy and clarity of intent—issues which have concerned me about China specifically—go a long way toward promoting stability.

To paraphrase Secretary Kissinger: in deterrence, the assessment of risk becomes less precise in the face of unprecedented destructiveness. In a world with an unfortunately increasing number of nuclear-armed actors, there is precariously little room for error in that assessment. And in light of the U.S. and Russian nuclear stockpile reductions, a lack of understanding about China’s strategy and intent forces new consideration about our security commitments to our allies.

And I would say the same about Iran, although in that case there is very little doubt, indeed, of their intent to further destabilize an entire region and, thus, the entire globe. I’m hopeful that our military relationship with China will grow following Secretary Gates’ visit to Beijing next year. And in doing so, both parties can gain the insight they need to minimize any error in their risk assessments.

And I remain somewhat hopeful that the diplomatic and economic leverage being applied to the Iranian regime will render from it a more responsible and productive approach to their role in the Middle East. The sanctions are beginning to bite, but thus far, I’ve seen no retrenchment from their declared path of nuclear weaponization. This bodes ill for their neighbors and, ultimately, it bodes ill for the Iranian people who must labor and live under the jackboot of a government that has
chosen isolation over engagement, conflict over cooperation, and extremism over moderation.

Indeed, as much as our experience prepares us to engage other rational state-based competitors, it leaves us desperately wanting a philosophical framework for dealing with terrorists armed with WMD.

The world faces a complex and adaptive network of radical and violent ideologies that binds disparate individuals, movements, organizations, and even states. And while not all extremist groups share the same goals or ideology, they do retain sufficient autonomy to make their own strategic choices, which, in my mind, makes them vulnerable to some form of coercion and perhaps even deterrence.

In contrast to most states, violent extremist groups are more prone to expand, regress, splinter, or die. Early in their life cycles, they struggle to survive by recruiting members and acquiring resources. Choices are made by elites who tightly control the use of violence primarily for symbolic or opportunistic reasons.

During growth, where most of these groups currently linger, formal structures form as leaders try to overcome the difference between what they want and individuals actually do. Decision-making pressures grow as leaders seek to accommodate a wider array of stakeholders. We see some of this with the Taliban in Afghanistan who still desire to govern and who continue to reach out to al-Qaida and other like-minded groups for aid and assistance.

This fact, coupled with the increasing pressure being applied by NATO and Afghan forces, helps explain why some of them—though not the very senior leadership—are seeking preliminary talks with the Karzai administration. They want power and influence. They want legitimacy.

As groups like this or like Hezbollah in Lebanon and Hamas in Gaza integrate with and become part of government, they will start losing non-state status. The closer aligned the group is to the state or the more governing responsibilities it assumes, the more susceptible
it is to influence. That’s why I’ve always believed that the ultimate solution in Afghanistan is political, not military.

Individual terrorists, however, are often another matter, because by the time someone makes the decision to commit an act of terrorism our deterrent has already failed. The weapon of choice—be it a suicide vest, an airplane, or a weapon of mass destruction—is just a matter of availability. To really deter terrorism at that level, the conditions that led a person to that decision point must be addressed.

Attacking the humiliation, the hopelessness, the illiteracy, and abject poverty which lie at the core of the attraction to extremist thought will do more to turn the tide against terrorism than anything else. We can continue to hunt and kill their leaders and we will.

But when a person learns to read and he enters a gateway toward independent education and thought, he becomes more capable, more employable, and enjoys a sense of purpose in his life. He will understand the Quran for what it is and not merely what his mullah says it is—who’s equally uneducated. He can raise his children to a higher standard of living than the one he knew—an aspiration shared by parents around the world. And his wife will help him prevent the despair that might lead a child of theirs into the arms of al-Qaida or the Taliban.

These accomplishments delegitimize the terrorist ideology, replacing the fear they hope to engender with a hope they fear to encounter. Now, that is a deterrence of a truly strategic nature. This isn’t dreamy “pie in the sky” thinking. My friend, Greg Mortenson, has lived it in rural Pakistan and Afghanistan as he documented in two books. His story about the elders who keep the Taliban from burning down a village merely by standing in front of it lasts only a few pages but it speaks volumes.

To be sure, in places where terrorists have had free rein as they did in Iraq and continue to do so in parts of Afghanistan, today security is necessary but it is not sufficient. Ultimate solutions cut across the realms of diplomacy, intelligence, economics, and social progress. No clear-cut
line divides these pursuits anymore and none should. They demand a working relationship between host nations, alliances, international organizations, and volunteer groups alike.

Indeed, relationships at every level from personal to institutional are critical to success—but particularly in a crisis. Even during the darkest days of the cold war, the U.S. and Soviet Union maintained a diplomatic relationship. And that relationship brought the world back from the brink during the Cuban missile crisis. Conversely, today we have almost no relationship with the world’s most threatening, aspiring nuclear states: Iran and North Korea. That alone is cause for concern.

And that’s why I spend so much time with Gen. Kayani in Pakistan—a country we abandoned back in 1990. It is why I conferred so regularly with Gen. Makarov during the new START negotiations and why I sat cross-legged at shuras with Afghan elders in the Panjshir Valley. Relationships are vital. And while it is good to have friends on Facebook—and I’m up to 13,000 now—there’s no substitute for actually being there.

The value that underpins any relationship—working, adversarial, or otherwise—is trust. Our allies and partners can trust we will stand by them at bad times and good. We will pursue treaties that allow us to trust but verify among nuclear-armed nations. And our enemies should trust that they will be held accountable for any attack against our nation, our allies, or our interests.

Trust requires credibility and credibility is built on reliability. This applies to our national will as much as our conventional or nuclear forces. The best way to ensure reliability is through the regular exercise of sustainable procurement and life-cycle practices for both hardware and personnel.

Admittedly, this is an area where we’ve been improving and frankly, there was plenty of room for improvement. We cancelled programs that were simply unaffordable such as the F-22. We de-MIRVed all of our Minuteman III missiles, simultaneously making our arsenal more difficult to attack while decreasing the cost and difficulty of maintenance; and we assured the long-range health of our nuclear stockpiles.
by incentivizing careers at the Department of Energy for young engineers. And I might add here that, despite claims to the contrary, we have remained and will continue to remain committed to nuclear-infrastructure modernization. We must do that.

We have been credible enough up to this point in history, but that is no reason to rest on our laurels. And as I said, we need a new model. So as I look to the future I have to do the math. Deterrence is said to be based on a rational calculus of costs and benefits. But I graduated near the bottom of my class at the Naval Academy so I prefer to see it as a multiplication problem as opposed to calculus.

In that equation deterrence is our total national capability, not just our nukes times our national will to engage times a potential adversary’s perception of that capability and will. And if my math is right, and I think it is, there’s every reason to believe the U.S. remains a good friend to our allies and a formidable foe to our enemies and I wouldn’t have it any other way.

Ladies and gentlemen, I want to thank you for everything you’ve done, everything that you continue to do in the service of our nation and I’m honored to have had the privilege to speak with you today and I look forward to your questions. Thank you.

Q: Admiral Mullen, I just wanted to express my appreciation to you. People who know the details, he mentioned how much he did engage with his counterpart, Gen. Makarov, and it was an extraordinarily effective intervention—the two of them at various times on negotiations—so a word of appreciation.

And as you look further down the road, you’ve furthered your relationship with Gen. Makarov recently with a number of visits. You met with him but also among your subordinates they’ve been meeting with their Russian counterparts. So how do you see that military-to-military relationship developing form here on out?

ADM. MULLEN: The relationship that I see is, quite frankly, a direct byproduct of the relationship between our two presidents and both of
them had worked it hard. I’m at a point now where I can routinely call him if I have questions and he me. And in fact, we’ve actually, recently, started a very robust set of staff talks. Some of my most senior officers have established a relationship across a whole host of issues.

And I’d go to Senator Nunn and I think that the criticality of including Russia in the Euro-Atlantic security architecture is absolutely critical. And I’ve been inside NATO on a lot of this as well, as NATO tries to figure out what its relationship with Russia is going to be. And I think it is something leaders have to continue to focus on for many, many reasons in terms of the overall assurance of security in ways globally and certainly in the areas that we have both focused on for many, many years.

**Q:** Admiral Mullen, what do you think of the prospects of the ratification of the START treaty? And what do you think citizens can do?

**ADM. MULLEN:** What do I think?

**Q:** What can we do to enhance the prospects?

**ADM. MULLEN:** Well, as always, I mean, you can certainly recommend yourself to your congressman or your senator on what to do—your senator, very specifically.

It’s difficult to predict, Secretary Perry, how this is going to come out. I know it’s a priority for the president. It’s something that I’ve said time and time again. I’m very comfortable with every aspect of it to include the reductions.

We have plenty of military capabilities and investment in the nuclear infrastructure. There’s some $80 billion or so over the next decade to invest in there. It isn’t all just about investing and upgrading our facilities because we need to invest in our young people. We need to invest in our intellectual capacity and capability in this area, as well, and I think there’s a lot of opportunity there.

And I spoke specifically about the missile defense issue, the global-strike issue. You know, from a military perspective, I’m very comfortable
with the treaty and, quite frankly, so are my counterparts. So I really think it’s critical that we move forward. I’m hopeful that it will be ratified as soon as possible.

Q: (Off mike.)

ADM. MULLEN: Probably the most significant argument I’ve seen against it has been the missile-defense piece. I mean, as I participate in this there’s nothing that I see in any way, shape, or form which jeopardizes our ability to develop missile-defense capability and we’re doing that. I mean, we haven’t slowed one bit since we’re engaged in this treaty.

The issue of global strike, the issue of verifications—we work very hard on verification. The number of inspections, the exchange of data—and it is very robust and it’s robust, in particular, in the world that we’re living in. This is not 1991, this is 2010, and that we would adjust the verification regime, given where we are with the numbers, made all the sense in the world to me. And we’re exchanging data that we’ve never exchanged before.

So I’m very comfortable with that. Those, I think, are the three areas that are of big concern.
PART II

The Complete Text of a Paper Presented at a Conference at the Hoover Institution

NOVEMBER 11–12, 2010
I. Summary and Introduction

In the parlance of deterrence theory, specialists often caution against “mirror-imaging”—imparting one’s own values and beliefs on another. The issue, they argue, is that leaders might have different strategic cultures, value structures, and cost-benefit calculations, and therefore political and military decision-makers in one state cannot simply assume that another country’s leaders will think or behave as they would in a particular situation. In the United States, the concept of “tailored deterrence” has emerged in recent years to describe the process of designing country-specific deterrence strategies that take into account each state’s unique set of perspectives.1 The concept of “tailored assurance” has also taken hold, reflecting the fact that the United States must

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1 See M. Elaine Bunn, Can Deterrence be Tailored? Strategic Forum No. 225, Institute for National Strategic Studies, National Defense University, January 2007. Of course, to some extent deterrence has always been “tailored,” since the United States spent considerable time and effort during the cold war trying to understand what the Soviet leadership valued in order to enhance deterrence. Throughout the cold war, U.S. nuclear strategy—particularly targeting strategy—continually evolved as new information about Soviet strategic culture and values became available, and as the Soviets (and the United States) deployed new strategic capabilities.
also pay close attention to the specific beliefs and concerns of its many allies in order to effectively assure them of the continued credibility of U.S. extended deterrence commitments. In addition, the renewed emphasis on achieving a nuclear weapons-free world similarly underscores the importance of a sophisticated and nuanced understanding of how nuclear-armed states think about their weapons, as the process of developing and implementing practical steps toward achieving abolition must take into account the specific views of the parties involved.

As part of these efforts, this paper analyzes and interprets how other countries view nuclear weapons and deterrence. Utilizing public documents published by foreign governments, as well as scholarship by academics and policy analysts exploiting foreign language sources from the nations under study, we examine the role of nuclear weapons in national security and military strategies; the range of actions they seek to deter with nuclear weapons; employment doctrine, targeting strategies, and strategic objectives for nuclear use; and views on arms control and the vision of a nuclear weapons-free world.

While there is already a growing body of literature in the United States on other countries’ views on deterrence and nuclear issues, our objective is unique in that we survey what is known—or at least what is believed to be known—in the United States about how others think about deterrence in order to spark a dialogue with specialists from the countries. By examining the available documents, scholarship, and debates in the United States, this paper is intended to present what “we” think “they” think about deterrence, as well as to raise questions and identify gaps in what is known in the United States about others’ views, in order to open a discussion that can be used to share and clarify perspectives and correct potential misunderstandings and misinterpretations. Indeed, perhaps the only thing worse than mirror-imaging is utilizing incorrect or incomplete information about a state’s views on deterrence, nuclear weapons, and arms control.

This paper analyzes the views and policies on deterrence, nuclear weapons, arms control, and abolition in the nuclear weapon states
under the Non-Proliferation Treaty (Russia, China, United Kingdom, and France), the NATO Alliance, the non-NPT nuclear weapon states (India, Pakistan, Israel, and North Korea), and a possible nuclear aspirant (Iran). For each, we analyze what is believed to be that state’s (or NATO’s) perceptions of the broad international security environment; how that state views the role of nuclear weapons in deterrence; the role of other, non-nuclear—and potentially non-military—elements of national power in deterrence; and the nation’s view on arms control and the goal of eventual global nuclear abolition.

**Russia**

In the aftermath of the cold war, the role and importance of nuclear weapons in Russia’s deterrence strategy has increased. This rise in importance is due in large part to the state of Russia’s conventional military forces, which have been plagued by outdated equipment; a bloated officer corps; a lack of competent and experienced soldiers; and rampant corruption. Consequently, Russia has increasingly relied on nuclear weapons to compensate for its conventional weakness. According to the new Russian Military Doctrine, released in February 2010, Russia “reserves the right to utilize nuclear weapons in response to the utilization of nuclear and other types of weapons of mass destruction against it and (or) its allies, and also in the event of aggression against the Russian Federation involving the use of conventional weapons when the very existence of the state is under threat.”

While Moscow has rhetorically embraced abolition, Russian leaders believe that global and verifiable disarmament is at best a very distant goal, more akin to a long-term vision for a transformed international environment than a practical and immediate policy objective. Russia has a long and daunting list of prerequisites for abolition, including the prevention of the weaponization of outer space; a curb on U.S. efforts to develop and deploy Conventional Prompt Global Strike weapons and ballistic missile defense; the cessation of conventional weapons
development and buildups; the elimination of incentives for nuclear proliferation; and the resolution of regional conflicts.

For Russia, the primary purpose of arms control is to maintain parity and strategic stability with the United States, rather than to reduce and limit nuclear forces as an end in itself. While Russia was willing to negotiate and sign New START, prospects for a follow-on agreement, especially one dealing with tactical nuclear weapons (TNW), is likely to be especially difficult. The dramatic disparity in the size of respective TNW arsenals; Russian demands that the United States remove TNWs from European bases as a prerequisite for arms control; concerns about China; and Russian domestic politics will complicate efforts to successfully negotiate a new arms control agreement.

**China**

From the outset of China’s entrance into the nuclear club in October 1964, official policy pronouncements have consistently stated that China maintains a relatively small nuclear arsenal for purely defensive purposes. Immediately after the nuclear detonation on October 16, 1964, Beijing publicly committed to a No First Use (NFU) policy and called for an international conference to discuss the “complete prohibition and thorough destruction” of all nuclear weapons.

In Chinese thinking about deterrence, nuclear weapons serve two fundamental and interconnected purposes: to deter nuclear coercion or blackmail and to deter the use of nuclear weapons. In order to achieve these objectives, China has traditionally maintained a small, unsophisticated, and vulnerable nuclear arsenal. For several decades, the dominant view in China has been that it does not need a large and diverse nuclear arsenal because only a handful of weapons is needed to inflict the unacceptable damage that is required for successful deterrence. More recently, however, Chinese leaders and strategists have come to the view that credible deterrence requires a visibly secure, survivable, second-strike capability. In its current efforts, China seeks
China has been a vocal proponent of arms control and disarmament from the outset of its nuclear weapons program, and official Chinese policy firmly embraces the vision of a nuclear weapons-free world. In addition, China has advocated on many occasions for a global agreement on the No First Use of nuclear weapons. However, despite its consistent rhetorical commitment to arms control and disarmament, China has been reticent to be proactive or take the lead in these initiatives. Rather, Beijing has been cautious and reactive, choosing to make its actions in these arenas contingent on those of other countries, particularly the United States and Russia. While Beijing has indicated that it would participate in a future multilateral arms control agreement, it has been noncommittal on when, and has even changed and made more demanding the necessary criteria for its participation.

**United Kingdom**

The U.K.’s security context overlaps to a great degree with that of its closest ally, the United States, as well as France and NATO. A combination of new and emerging threats, accentuated by the globalization paradigm, now dominates the U.K.’s security landscape. Terrorism (including through the use of weapons of mass destruction), cyber attacks, accidents or natural disasters, and international military crises between states are cited as the most pressing risks to U.K. security.

Against this backdrop, Britain today maintains a minimum effective nuclear deterrent, deployed on four strategic ballistic missile submarines, with one boat on continuous at-sea deployment. The new British Prime Minister, David Cameron, recently announced that the U.K. will retain and renew its nuclear deterrent and will begin the work of replacing its existing submarines. However, the U.K. now plans to extend the
life of the current Vanguard class submarines and defer a decision to start building new submarines to 2016. In addition, Mr. Cameron announced that the U.K. will reduce the number of operational missiles and warheads on each submarine and reduce the number of operationally available warheads, enabling a reduction in the overall nuclear stockpile to no more than 180. U.K. declaratory policy now significantly overlaps with that of the United States, emphasizing that Britain will not use or threaten to use nuclear weapons against non-nuclear weapon states [that are] parties to the NPT (reserving the right to review this assurance in light of future biological and chemical weapon threats).

Britain would appear to have the strongest cross-party support for the vision and steps of any of the nuclear weapon states, and has been a strong supporter of bringing the Comprehensive Test Ban Treaty (CTBT) into force and negotiating a Fissile Material Cutoff Treaty (FMCT). With respect to future steps, London would welcome and may even lead multilateral initiatives that would increase transparency in all nuclear weapon states, and support a global “no increase” commitment, though further reductions in the U.K. stockpile may well require a subsequent agreement on U.S.-Russian nuclear reductions, as well as a multilateral commitment to reductions that included, in particular, China.

**France**

The security environment as seen by Paris underlines a common theme in Western security policies: that the world is not necessarily more dangerous, but it has become more unstable and unforeseeable. The French highlight new crises from the Middle East to Pakistan, and jihadism-inspired terrorism that aims directly at France and Europe. The French also foresee greater vulnerability to ballistic missiles and new risks such as cyber attacks or health-related or environmental crises. Terrorism and the threat of ballistic and cruise missiles are cited as new vulnerabilities, with the possibility of sudden strategic upsets, including the possibility of nuclear use.
For France, nuclear deterrence thus remains an essential concept of national security and the ultimate guarantee of French security and independence. The French maintain a nuclear deterrent of four operational nuclear-powered ballistic missile submarines and, like the British, maintain at least one submarine at sea at any given time. While declaring France has no other nuclear weapons besides the 300 in its operational stockpile, the French are modernizing their submarine-launched ballistic missiles and warheads. In addition, France has a number of nuclear air-to-surface missiles that can be deployed on land-based and carrier-based aircraft—also in the process of being upgraded. France has stated that the sole purpose of its nuclear deterrent is to prevent any state-originating aggression against the vital interests of France, and that France’s nuclear deterrent will provide the president with an autonomous, wide, and diversified range of assets and options—underscoreing France’s nuclear independence both in terms of capability and strategy. That said, since the end of the cold war France is increasingly willing to discuss the role of its nuclear deterrent in protecting French allies, including in the NATO context, and appears to be moving in the direction of closer strategic ties with Britain.

France remains reluctant to endorse the vision of a world free of nuclear weapons in isolation from the broader strategic framework and Article 6 of the NPT, and is skeptical about the idea that emphasizing the vision is needed to persuade NPT parties to subscribe to tougher nonproliferation norms or to reduce the risk of nuclear terrorism. France has reportedly resisted aligning its own nuclear declaratory policy with that of the United States (and now the United Kingdom), preferring to retain a greater degree of ambiguity regarding the circumstances that could lead to nuclear use. France has, however, committed to a series of specific steps and transparency initiatives consistent with those of the NSP (Nuclear Security Project). Like the U.K., France may support a global “no increase” commitment, but further reductions in France’s nuclear stockpile may well require a multilateral commitment to reductions that included, in particular, China.
NATO

Today, the main focus of security concerns for many NATO members is no longer Russia or the threat of conventional attack against NATO territory but the related threats posed by the proliferation of nuclear weapons and other weapons of mass destruction (most urgently in a conflict-prone Middle East), their means of delivery, and terrorism. Security concerns regarding Russia, however, remain—in particular with respect to many new NATO member states. In this context, NATO’s core commitment of collective defense to shield member states from armed aggression has a particular saliency in member states that at one point were members of another alliance, the Warsaw Pact. Tensions between the United States/NATO and Russia remain in relation to the future alignment of NATO as well as missile defense. More broadly, questions associated with Russia’s role in Euro-Atlantic security continue, with countries divided over their analysis of the direction of Russian foreign and security policy and the terms and conditions under which cooperation with Russia could take place.

The alliance has significantly reduced its reliance on nuclear forces since the end of the cold war; however, the United States still deploys approximately 150–240 air-delivered nuclear weapons that are deliverable by NATO aircraft at six air force bases in five NATO countries. NATO nuclear use policy underscores that the circumstances in which any use of nuclear weapons might have to be contemplated are extremely remote.

In the aftermath of President Obama’s 2009 Prague speech proclaiming support for the vision of working toward a world free of nuclear weapons, certain NATO countries—e.g., Germany, the Netherlands, Belgium, Luxembourg and Norway—have made clear they embrace the vision, want less of an emphasis on the nuclear component in NATO’s deterrence policy, and support the objective of withdrawing all non-strategic nuclear forces (NSNF) from Europe. That said, some NATO countries—including France and some new member states—still see
NSNF as symbolic of NATO cohesion and commitment to collective defense, and link any NATO action to action on the part of Russia. The new Strategic Concept—agreed to on November 19, 2010—appears to be a flexible framework that points in the direction of further change in NATO nuclear policies, including further consolidation and reductions in U.S. NSNF in Europe, along with a renewed commitment to engage Russia on NSNF, leaving much of the detail to a subsequent NATO nuclear review. This suggests NATO nuclear policy and the role of nuclear weapons in NATO deterrence will remain a front-burner issue for the United States and NATO in 2011–2012.

**India**

India’s security context includes two potentially hostile nuclear weapons states—Pakistan and China—each with significant conventional force capabilities and a legacy of hostility with India; and increasing concerns regarding terrorism and the prospect of the use of WMD. Indeed, the dual challenge posed by China and Pakistan is reflected throughout India’s nuclear weapons program, where specific capabilities are being developed, tested, and deployed to provide a deterrent tailored to both nations.

India is estimated to have approximately seventy assembled warheads. While India does not maintain a constituted nuclear force on alert, India has the capability to deploy nuclear payloads on aircraft and short- and medium-range ballistic missiles rapidly during a crisis. Longer-range land-based ballistic missile, cruise missile, and submarine-launched ballistic missile programs are under way, as India appears committed to pursuing a triad of nuclear delivery systems in the context of maintaining a credible minimum nuclear deterrent. India has specified that the fundamental purpose of Indian nuclear weapons is to deter the use and threat of use of nuclear weapons by any state or entity against India and its forces, and has declared a policy of No First Use (though retaining the option of retaliating with nuclear weapons in the...
event of a major attack against India or Indian forces anywhere by biological or chemical weapons).

India will not seriously consider the CTBT (Comprehensive Test Ban Treaty) unless the United States ratifies the treaty; and even with U.S. ratification, China may need to ratify before India, and Pakistan may need to commit to ratify simultaneously with New Delhi. Even if all of these pieces are in place, Indian adherence to CTBT will be a difficult step for any Indian government. India has participated in discussions at the Conference on Disarmament (CD) on an FMCT (Fissile Materials Cutoff Treaty), and stated in 2007 that it would not pose a hurdle toward any movement on drafting an FMCT. More broadly, India will argue that the focus for nuclear threat reduction should be on the safety and security of Pakistan’s nuclear assets and further steps by the United States, Russia, and China—not on Indian nuclear forces. India continues to support the conclusion of a “time-bound framework” for nuclear disarmament, as well as a global agreement among nuclear weapon states on No First Use, followed by an agreement on non-use of nuclear weapons against non-nuclear weapon states. Broader constraints on India’s nuclear weapons program would almost certainly require dramatic changes in its relations with both China and Pakistan.

**Pakistan**

Pakistan’s external security environment today retains a heavy dose of historical animosity vis-à-vis India combined with high levels of instability along the Pakistani-Afghan border directly linked to internal political instability within Pakistan. Pakistan continues to view India as a major external threat, possessing large conventional and nuclear forces that could threaten the Pakistani state.

Today, Islamabad appears to be expanding and diversifying its nuclear weapons capability by pursuing uranium enrichment and plutonium production, as well as aircraft and short- and medium-range ballistic and cruise missiles that can target much of India. Perceptions
in Islamabad of a growing conventional imbalance in favor of India could lead Pakistan to proceed with a more visible nuclear posture, including the deployment of nuclear weapons at higher levels of alert. Unlike India, Pakistan has not adopted a policy of No First Use.

Pakistan’s signature and ratification of the CTBT could only be expected after Indian adherence. And even then, the Pakistani government may not have the political space to take such a dramatic step. With respect to FMCT, Pakistan continues to block the CD from moving forward, insisting any FMCT cover reduction of existing fissile material stockpiles and not just halt new production (to ensure India’s relatively larger fissile material stockpile is addressed). Pakistan’s willingness to move forward with broader constraints on its nuclear weapons program that would involve greater transparency and verification remains doubtful in the absence of a dramatic improvement in its regional security environment.

**Israel**

Compared to all other nuclear-armed states, Israel is unique in that it has never admitted to having nuclear weapons. Since the 1960s, Israel has said only that it “will not be the first to introduce” nuclear weapons into the Middle East. In Israel, the Hebrew word amimut, meaning “opacity” or “ambiguity,” is used in reference to the country’s official nuclear policy. While official Israeli policy has remained committed to not confirming nuclear possession, it also has not denied it. Israeli officials recognize that a completely secret nuclear capability would not be an effective deterrent. As such, Israel has employed a form of subtle and unofficial nuclear signaling—leaks, rumors, and veiled statements—to convey a nuclear danger to current and potential adversaries. Israel regards nuclear weapons as a deterrent against existential threats—situations that endanger the survival of the state. Nuclear weapons, according to this view, are weapons of last resort. From this perspective, nuclear weapons serve as the ultimate guarantor
of Israel’s security and are not intended for war-fighting purposes or for use in situations that do not directly threaten national survival.

Overall, Israel has not been an enthusiastic participant in international arms control and disarmament efforts. While Israel has signed (but not ratified) the CTBT, supports in principle the creation of a Nuclear Weapons Free Zone (NWFZ) in the Middle East, and occasionally pays lip service to broader arms control and abolition initiatives, at this point Israel is unwilling to take meaningful actions. Israel believes that disarmament, if it can be achieved at all, is at best a very distant goal. In Israel’s view, disarmament should not be the goal in itself; rather, the primary objective should be to create a lasting peace and normalization of relations. If this can be achieved, disarmament would naturally follow.

North Korea

North Korea’s external security environment cannot be divorced from its internal security, in particular the imperative of preserving the DPRK (Democratic People’s Republic of Korea) regime. Maintaining the perception of an existential threat to the state remains an important factor in regime legitimacy. The North Korean leadership believes South Korean and U.S. military forces (with Japan as a staging area) present a serious threat to its survival. Moreover, the North perceives the gap between North and South Korean conventional military capabilities to greatly favor the South. While the DPRK still possesses large conventional forces—the foundation of its deterrent against South Korea and the United States for decades—it may view these forces as insufficient today and for the foreseeable future as a deterrent to external attacks on the state and regime. Beyond deterrence of external attacks, the DPRK may also view its nuclear program as a tool for coercive diplomacy, a source of hard currency, and a means to extract external aid from other nations in exchange for concessions relating to its nuclear file.
Thus, North Korea’s willingness to verifiably dismantle its nuclear weapons program—now estimated to include nuclear material for at least half a dozen nuclear weapons—remains doubtful, further complicated by an apparent leadership transition. At a minimum, compared to a decade ago, the problem appears more complex following pursuit of uranium enrichment, additional plutonium production, and now two nuclear tests. CTBT ratification does not appear likely in the absence of a broader agreement pertaining to the DPRK’s nuclear program—though the CTBT’s value as a stand-alone measure is objectively less now that the DPRK has tested twice (and the regime now has the ability to test again at any time, with a track record of ignoring international commitments). To what extent a resumption of six-party talks last convened in December 2008 could change this dynamic is also uncertain.

**Iran**

The removal of Saddam Hussein from power in Iraq eliminated what had been both a strategic threat to the survival of the Iranian regime and the original impetus to restarting Iran’s current nuclear program. Tehran, however, now finds itself largely encircled by a combination of states either allied with or friendly to the United States, some with significant American land, air and/or naval forces in place or the ability to support U.S. forces in a crisis. In addition, the United States maintains powerful naval and naval-air forces in and around the Persian Gulf and Gulf of Oman.

Against this backdrop, the rationale for an Iranian nuclear weapons program may reflect a combination of factors. First is self-defense, in the wake of the Iraq-Iran war and Iran’s continued isolation in the region. Second is status, given Iran’s self-image as a major power in the region and in comparison to other rising powers—and, in this context, Iran’s determination to prevent itself from being denied advanced technology and advanced weapons. Third comes ambition
(perhaps fueled or at least cloaked by an ideological dimension), given Tehran’s determination to extend its influence in the region. Also, from Tehran’s perspective, an Iranian nuclear weapons capability could provide both greater freedom of action vis-à-vis Israel and insurance against an existential Israeli or American threat to the regime—and with more security against an attack on its own territory, Iran would be freer to act elsewhere. Iran appears to be keeping open the option to develop nuclear weapons through its uranium enrichment program, though uncertainty remains as to whether it will eventually decide to build nuclear weapons; that said, estimates suggest Iran is capable of producing enough highly enriched uranium (HEU) for a weapon in the next few years, if it chooses to.

Iran’s uranium enrichment program presents the most immediate and severe challenge to getting international control of the uranium enrichment process and ultimately halting the production of fissile material for weapons globally. Progress on both of these steps will be severely limited if the Iranian nuclear program continues on its present course and Iran succeeds in developing a nuclear weapons capability. Conversely, Iranian inclusion in an international fuel bank arrangement and participation in the negotiation and conclusion of an FMCT—in the context of a halt to Iran’s indigenous enrichment program—would be a significant boost to the vision and steps agenda.

II. The NPT Nuclear Weapon States

A. Russia

1. Security context
After a difficult and tumultuous decade following the collapse of the Soviet Union, Russia has reemerged as an increasingly powerful and important actor in the international arena. Whereas in the 1990s Russia’s political, military, and economic weaknesses meant that its national interests could be discounted or even ignored, by other powers, since
the early 2000s Russian leaders, particularly former president and current Prime Minister Vladimir Putin, have sought to position Russia as a major “pole” in the emerging multi-polar world. Russia has always placed great value on being an influential great power; the influx of capital from high oil and gas prices has provided Moscow with the financial resources to reclaim this status. Over the last decade Russia has transformed from the ideologically driven power of the twentieth century to a capitalist state intently focused on financial gain and international influence.

Old habits, however, die hard. Russia has historically been an insecure state, believing that potential threats are always looming on the horizon and that security requires expansion or, at least, a sufficient “buffer zone” of friendly nations between it and potential threats. Consequently, Russia has vehemently opposed further NATO expansion to former Soviet republics, especially Georgia and Ukraine, as this would encroach on Russia’s security by bringing more NATO powers near its borders. From Russia’s perspective, the region encompassing the former Soviet republics is its “sphere of privileged interests,” and Moscow views U.S. and Western expansion in this area as a threat. The 2008 Russia-Georgia War forcefully demonstrated Russia’s continued concerns about its immediate neighborhood and its willingness to use force if necessary. In sending Russian forces to defend the

5 On Russian insecurity, see Thomas Graham, “The Sources of Russia’s Insecurity,” Survival (February-March 2010), pp. 55–74.
breakaway regions of South Ossetia and Abkhazia, Moscow sought to punish Georgia for its pro-Western stance, reassert its authority in the South Caucasus, and send a message to Ukraine about the dangers of continued flirtations with NATO.\(^7\)

Beyond its immediate neighborhood, Russia’s primary security focus is the United States and, to a lesser extent (at least for the near-term), China. U.S.-Russian relations plummeted during George W. Bush’s presidency, as Moscow viewed the U.S.-led war in Iraq as emblematic of an administration that was drunk with power, willing to use force wherever and whenever it pleased, and unwilling to take others’ views and concerns into consideration. While Russia did not give a particularly strong response to the Bush administration’s decision to abrogate the ABM Treaty, the administration’s plan for placing missile defense interceptors in Poland and a radar station in the Czech Republic—the so-called “third site”—raised serious concerns in Moscow. From Russia’s perspective, the missile defense plan was an important component of a larger U.S. effort to achieve nuclear superiority and negate Russia’s deterrent. According to many in Russia, the United States was seeking the capability to conduct a disarming first strike.\(^8\) This perception was exacerbated by two widely read and debated articles by a pair of American academics positing that the United States has the ability to execute a disarming first strike against Russian nuclear forces.\(^9\) While the initial missile defense deployment was to be quite small, involving only ten ground-based interceptors, many in Moscow worried that this was just the initial step in what would eventually be a much larger

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\(^7\) Svante E. Cornell, “War in Georgia, Jitters All Around,” Current History (October 2008), pp. 312–313.


missile defense architecture deployed in Europe.\textsuperscript{10} Immediately after the 2008 U.S. presidential election, President Medvedev threatened to deploy Iskander missiles to Kaliningrad to “neutralize” the third site, presumably to send a strong message to the new president about Russia’s deep animosity toward the Bush administration’s plans.\textsuperscript{11}

Despite the “reset” in U.S.-Russian relations and the negotiation and signing of the New START Treaty, Russia remains deeply concerned about the development of U.S. offensive and defensive capabilities that could weaken or negate Russia’s deterrent. The Obama administration’s decision to scrap President Bush’s missile defense plan was welcomed in Russia, but the administration’s “phased, adaptive approach” to missile defense has raised new concerns. In particular, there are trepidations in Moscow about the fourth phase of the plan, which involves the deployment of the “Block IIB” variant of the Standard Missile-3 around 2020. Since this missile would have the ability to intercept ICBMs, Russian officials and analysts worry that this would threaten their deterrent. Despite repeated assurances by the Obama administration, as well as the Bush administration before it, that U.S. missile defense systems are not focused on Russia, many in Moscow remain unconvinced. According to Russian Defense Minister Anatoly Serdyukov, “they [U.S. leaders] tell us their missile shield is not aimed against us, but we tell them our calculations show it is aimed against us.”\textsuperscript{12}

Beyond missile defense, Russia has also expressed concern about U.S. plans to develop and deploy Conventional Prompt Global Strike


\textsuperscript{12} “U.S. Missile Defenses Aimed at Russia, Minister Asserts,” \textit{Global Security Newswire}, 17 September 2010.
(CPGS) weapons. Russia has argued that CPGS would be dangerous and destabilizing because it might not be able to distinguish between a conventional and a nuclear ballistic missile launch. In addition, Russian analysts also worry that an expanded CPGS program could give the United States a non-nuclear counterforce capability against Russian nuclear weapons. In this context, Russia worries that in a severe crisis or conflict the United States might use CPGS weapons to launch a disarming first strike against Russian nuclear forces, while using its missile defenses to deter or defend against Russian nuclear retaliation with any remaining weapons.

Over the long term, Russian officials and defense analysts are concerned about the rise of China. As is well known, Russia and China have a troubled history. During the cold war, the Soviet Union and China went from political, economic, and military allies—which included early Russian technical support for China’s nuclear weapons program—to bitter enemies. Since the end of the cold war there has been a warming in relations, including the creation of a “strategic partnership” in 1996. Moscow and Beijing have engaged in some important and high-value commerce, particularly in the energy and arms sectors. Russia has also employed its relationship with China as


a lever against the United States, using improved relations with Beijing to incentivize Washington to pay more attention to its interests. But despite the many benefits of the Sino-Russian partnership, there is no evidence that Moscow (or Beijing) wants to move toward a closer relationship such as an alliance. While Sino-Russian relations have been relatively good in recent years, many in Russia are increasingly concerned about China’s intentions and objectives over the long term, especially the prospect of a powerful China that would dominate East Asia and attempt to assert its influence around the world.

2. NUCLEAR COMPONENT OF DETERRENCE

In the aftermath of the cold war, the role and importance of nuclear weapons in Russia’s deterrence strategy has increased. Whereas during the cold war the Soviet Union’s massive conventional forces were an important component of deterrence, since that time nuclear weapons have become Russia’s primary—indeed, the only—military tool for deterrence. Since the 1990s, the Russian military has been plagued by outdated equipment, a bloated officer corps, a lack of competent and experienced soldiers, and rampant corruption. Consequently, Russia has increasingly relied on nuclear weapons to compensate for its conventional weakness. According to an October 2003 statement by then-President Putin, nuclear weapons are the “main foundation of

Russia’s national security.”21 Ironically, Russia’s current reliance on nuclear weapons to offset its conventional inferiority resembles NATO’s military strategy in the cold war, which relied on the threat of nuclear escalation to deter the numerically superior Warsaw Pact conventional forces. Russia, it would appear, has inadvertently taken a page out of NATO’s cold war playbook.22

Beginning in the 1990s, Russia’s views on deterrence and nuclear weapons have steadily evolved. In 1993, amidst the turmoil of the early years of post-Soviet Russia, Moscow revoked the No First Use declaratory policy that it had issued in 1982. From Russia’s perspective, a shift away from NFU was necessary in light of its conventional weaknesses as well as the degradation and vulnerability of its strategic forces and command and control apparatus, which weakened deterrence by jeopardizing its ability to launch a retaliatory strike. Moreover, Russian officials argued that its NFU policy had been largely propaganda anyway, so renouncing it brought declaratory policy more in line with the realities of its declaratory nuclear doctrine.23 However, while the revocation of NFU was certainly an important shift in its nuclear policy, the 1993 Military Doctrine maintained that nuclear weapons would only be used in a large-scale global war, and the document contended that such a war was highly unlikely. Nuclear weapons were thus regarded as an existential deterrent, a “just-in-case” asset that would provide deterrence against some unknown future threat.24

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In April 2000, Russia issued a new Military Doctrine that further widened the range of actions that it would use nuclear weapons to deter, thereby expanding the range of potential scenarios in which it might use nuclear weapons. Whereas the 1993 doctrine indicated that nuclear use would only be contemplated in the case of a global war, the new Military Doctrine included the possibility of nuclear use in a regional conflict.\textsuperscript{25} According to the new doctrine, Russia “reserves the right to use nuclear weapons in response to the use of nuclear weapons and other types of weapons of mass destruction against it and (or) its allies, as well as in response to large-scale aggression utilizing conventional weapons in situations critical to the national security of the Russian Federation.”\textsuperscript{26} Such phrasing created ambiguity, perhaps deliberately, regarding the conditions under which Russia might cross the nuclear threshold, as the document did not specify what kinds of situations were “critical” to Russian national security.\textsuperscript{27}

On February 5, 2010, Russia released a new Military Doctrine. According to some reports, President Medvedev also approved a document entitled, “Foundations of State Policy in the Area of Nuclear Deterrence to 2020,” though the document remains classified.\textsuperscript{28} In the run-up to its publication, which was delayed several times, there were some indications that the Military Doctrine would significantly lower the nuclear threshold, perhaps to include the possibility of nuclear use in small-scale, local conflicts. The source of this information was primarily from Nikolai Patrushev, the secretary of the Russian Security Council and former director of the Federal Security Service (FSB). According to Patrushev, Russian doctrine was being revised to include

\textsuperscript{26} The 2000 Military Doctrine is reprinted in “Russia’s Military Doctrine,” Arms Control Today (May 2000).
the option of nuclear use “to repel an aggression with the use of conventional weapons not only in a large-scale but also in a regional and even local war.” In addition, Patrushev said, “in situations critical to national security, options including a preventative nuclear strike on the aggressor are not excluded.”

Ultimately, the 2010 Military Doctrine did not include such options. The document states that Russia “reserves the right to utilize nuclear weapons in response to the utilization of nuclear and other types of weapons of mass destruction against it and (or) its allies, and also in the event of aggression against the Russian Federation involving the use of conventional weapons when the very existence of the state is under threat.” According to several commentators, the new Military Doctrine is very similar to its predecessor; in fact, the language in the new version regarding nuclear weapons is somewhat more restrained than the 2000 version. Whereas the 2000 Military Doctrine allowed for nuclear use in an unspecified range of conventional conflicts involving important national security interests, potentially including wars outside of its immediate region, the new version limits nuclear use in the context of a conventional war to contingencies in which the survival of the state is in jeopardy. Nevertheless, the new formulation still

29 David Nowack, “Report: Russia to Allow Pre-Emptive Nukes,” http://www.breitbart .com/article.php?id=D9BAUJ680. These statements likely reflected a contentious internal debate among Russian decision-makers about the role of nuclear weapons in Russian strategy. In developing the Military Doctrine, Russian officials had to carefully balance the need to retain a robust nuclear deterrent given Russia’s conventional weakness with the reinvigorated movement for nuclear abolition and the U.S. commitment to reduce the role of nuclear weapons in its national security strategy. By making his views public, Patrushev was likely attempting to sway the debate toward his views.


retains some ambiguity, as it is not immediately clear what constitutes a threat to national survival. While most would assume that such a threat would come only from a major conventional war in which Russia was in danger of being overrun and completely defeated, it is ultimately up to the Russian leadership to decide when survival is at stake. For example, it is possible that a conventional conflict, while not directly threatening Russian sovereignty and territorial integrity, could be perceived by Moscow to be a threat to the legitimacy and therefore the survival of the regime. In addition, an aggressor’s intentions and objectives might be difficult to discern, thereby raising the possibility that Russia could believe that the conflict threatened the survival of the state while the opponent actually had more limited goals.

Beyond the publication of its Military Doctrine, an increasingly important component of Russian thinking about deterrence and nuclear strategy in recent years is the concept of “nuclear de-escalation.” This concept involves the deliberate escalation of a conflict for the purposes of de-escalation. Under this strategy, in the event of a losing conventional war Russia might initiate a limited nuclear attack designed to create a pause in the conflict and open a pathway for a negotiated settlement on favorable terms.\(^3\) In this context, the principal objective of nuclear use would not be for its military utility on the battlefield, but rather to signal Russian resolve—to forcefully communicate the importance and value of the stakes involved in order to influence the opponent’s cost-benefit calculations. By crossing the nuclear threshold, Russia would be deliberating raising the shared risk of a nuclear conflagration, thereby incentivizing the opponent to agree to negotiate.

3. **Other Possible Elements of Deterrence**

Given the weakened state of its conventional forces, Russia does not have any other military capability that it believes can contribute to deterrence. However, in examining Russia’s non-military tools of power and influence, one area in which Russia might believe that it has some coercive leverage is energy. Russia possesses the world’s largest natural gas reserves, the second largest coal reserves, and the eighth largest proven oil reserves. It is the largest supplier of natural gas and the second largest oil exporter.\(^{33}\) Energy exports underpin much of the Russian economy, and the influx of capital due to high energy prices in the mid-2000s was an important underlying driver of Moscow’s assertiveness in the foreign policy arena.

Over the last several years, Russia appears to have used energy as a tool of foreign policy.\(^{34}\) In 2005, following the election of a Western-leaning government in Ukraine, the Russian gas monopoly, Gazprom, began discussions with Kiev about significantly raising the price of gas, which up to that point had been well below market value. Kiev’s refusal to pay the higher price resulted in Russia briefly halting gas supplies to Ukraine, as well as allegations by Moscow that Ukraine had stolen gas intended for other European customers.\(^{35}\) Although the immediate crisis was quickly resolved, Moscow and Kiev have since clashed over gas issues on several occasions, leading to additional disruptions in the gas supply. In early 2009, Russia again cut the gas flow transiting to and through Ukraine, causing significant gas shortages in several European countries, including Bulgaria, Romania, and

\(^{33}\) [http://www.eia.doe.gov/cabs/Russia/Background.html](http://www.eia.doe.gov/cabs/Russia/Background.html).


Slovakia. In June 2010, Gazprom reduced the flow of gas to Belarus in order to recoup a $192 million debt claimed by Moscow. According to some analysts, this action was driven in part by Moscow’s desire to take revenge on Belarus for its continued refusal to join a Belarus-Kazakhstan-Russia customs union promoted by Prime Minister Putin, as well as for its flirtations with the West, its refusal to recognize South Ossetia and Abkhazia, and its decision to give refuge to ousted Kyrgyzstan leader Kurmanbek Bakiyev.

Russia’s apparent willingness to leverage its energy resources for political objectives suggests that it might believe it could use these assets for deterrence purposes. The threat to drastically reduce or completely sever critical energy supplies to European states—especially to those that are highly dependent on Russian gas and oil—could be a powerful deterrent against undesirable actions or policies. However, while this might provide some coercive leverage, there are also some important drawbacks to incorporating energy into Russia’s deterrence strategy. For example, Russia’s reputation as a reliable energy supplier has been significantly damaged as a result of the past gas cutoffs. Given the centrality of energy exports to Russia’s economy, an increasingly poor reputation as a reliable supplier, as well as the financial strain resulting from a sharp downturn in sales in the event of a prolonged supply disruption, could significantly hurt Russia. The credibility of Russian threats to halt energy supplies might be weakened by the fact that executing such a threat would likely cause damage to the Russian economy. In addition, a number of new pipelines are in the works, thereby creating new sources of energy and potentially limiting Russia’s ability to use its natural resources for coercive purposes.


4. IMPLICATIONS FOR NUCLEAR SECURITY PROJECT
(VISION AND STEPS) AGENDA

As the role of nuclear weapons in Russian deterrence and military strategy has increased since the end of the cold war, many in Moscow are at best lukewarm to the prospect of further arms control and the goal of abolition. While Moscow has rhetorically embraced abolition, including in a joint statement by Presidents Obama and Medvedev that declared both states as committed to “achieving a nuclear free world,” Russian leaders believe that global and verifiable disarmament is at best a very distant goal, more akin to a long-term vision for a transformed international environment than a practical and immediate policy objective. Russia has a long and daunting list of prerequisites for abolition, including the prevention of the weaponization of outer space; curbing U.S. efforts to develop and deploy Conventional Prompt Global Strike weapons and ballistic missile defense; the cessation of conventional weapons development and buildups; the elimination of incentives for nuclear proliferation; and the resolution of regional conflicts. Indeed, as long as it believes that nuclear weapons are an important symbol of great power status, necessary to compensate for conventional weaknesses, and an im-

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portant hedge against geopolitical uncertainties, Russia is likely to be reticent to take concrete and significant actions toward nuclear abolition.

Although Russia remains skeptical of abolition, the conclusion and signing of the New START treaty demonstrates Russia’s interest in arms control. Russia has a rather traditional view of the objectives of arms control. For Russia, the primary purpose is to maintain parity and strategic stability with the United States, rather than to reduce and limit nuclear forces as an end in itself.\(^{41}\) In this context, New START was important for Russia because several of its strategic systems are beginning to reach the end of their service lives and are not slated to be replaced on a one-for-one basis, thereby giving Russia a strong incentive to engage in arms control to bring U.S. force levels down in tandem. In other words, since Russian force levels are declining anyway, New START was a useful mechanism for Russia to maintain parity with the United States.

According to the Nuclear Posture Review, President Obama directed a review considering the possibility of nuclear reductions below New START levels, and the administration has committed to pursuing a follow-on agreement with Russia that would include tactical nuclear weapons (TNW).\(^{42}\) Notwithstanding the successful—and mutually beneficial—conclusion of New START, there are several reasons why further U.S.-Russian arms control is likely to be an especially challenging task. First, there is a dramatic disparity in the size of the respective TNW arsenals, thereby complicating efforts to make meaningful mutual reductions. According to available evidence, Russia has approximately 2,000 TNWs in its operational arsenal, whereas the

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United States has roughly 500, of which 150–200 are reported to be deployed in Europe.43 Russia does not appear to be too concerned about U.S. TNW given the relatively small arsenal size; therefore it does not provide much as a bargaining chip or an incentive for Russia to agree to reduce its TNW.44

The second reason why TNW negotiations could be especially difficult is that Russia has indicated that an important first step in any future arms control agreement on TNW would be for the United States to remove its TNW for European bases—a move that, as present debates within NATO about the future of U.S. forward-deployed TNW forcefully demonstrates, could cause great consternation among some U.S. allies.45 Third, some analysts contend that Russian TNW are necessary to balance U.S. and NATO conventional superiority.46 As such, Russia may be reticent to reduce its TNW while its military remains in disarray. In fact, it is possible that Russia might link TNW reductions to movement on resolving differences regarding the Treaty on Conventional Forces in Europe (CFE).47 Fourth, some specialists also contend that Russia believes its TNW are essential to help deter and, if neces-

sary, defend against future Chinese aggression. If this is correct, then Russia may be unwilling to make significant TNW reductions regardless of the conventional balance in Europe or the status of U.S. TNW in Europe. Finally, Russian domestic politics appears to be an important factor. Entrenched views about TNW among the Russian elite, the reluctance to give up any numerical advantage regardless of its strategic utility, and the desire to avoid the intrusive verification regime that a TNW treaty would require all contribute to Russia's reticence about a follow-on arms control agreement.

Beyond the specific challenges of negotiations on TNW, two additional issues complicate the prospects of a future arms control agreement. First, over the last several years Russia has been spending vast sums of money to modernize its nuclear forces, albeit at lower levels. After dedicating scarce resources to build, test, and deploy these weapons, all of which will have service lives extending over the next couple of decades, Moscow is likely to be reluctant to agree to an arms control treaty that requires reducing these systems. Second, as noted above, Russia is greatly concerned about U.S. developments in missile defense and CPGS. Consequently, it is possible that Russia could condition any future arms control agreement on limitations of these capabilities. Given the U.S. domestic political discourse over these systems—especially on missile defense—Russian demands for concrete limitations risk torpedoing a future agreement at the outset.


5. Issues for Consideration

- What is the role of TNW in Russian deterrence and nuclear strategy?
- Would Russia be willing to negotiate a follow-on arms control agreement if the United States, for domestic political reasons, cannot agree to any limits on missile defense? Is some limit on U.S. missile defenses a necessary condition for Russian participation in another round of arms control?
- Will Russia reduce the role of nuclear weapons in its national security strategy if and when its conventional military situation improves?
- What role does China play in Russian thinking about deterrence, nuclear strategy, and force posture? How do possible concerns about China affect Russia’s willingness to participate in arms control with the United States and its commitment to achieving a nuclear weapons-free world?

B. China

1. Security Context

The political, economic, and military rise of China is one of the most important and consequential developments in the international system of the early twenty-first century. For some, China’s rise to great power status is something to be feared, if not slowed or even thwarted, since significant shifts in the international balance of power have historically been turbulent and violent. According to John Mearsheimer, as China grows more powerful it will inevitably seek to dominate Asia as a regional hegemon, thereby coming into direct conflict with U.S. interests in the region.50 China and the United States, in this view, are likely

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to become locked in a competitive, adversarial relationship with significant possibilities for war. Others, however, contend that Chinese leaders believe that a peaceful international security environment is essential to their nation’s continued growth and prosperity. China, according to this view, will rise peacefully and will seek to be a positive and productive player in the international arena.\footnote{For various arguments, see, for example, John Wilson Lewis and Xue Litai, *Imagined Enemies: China Prepares for Uncertain War* (Stanford: Stanford University Press, 2006), pp. 21–33; Zheng Bijian, “China’s ‘Peaceful Rise’ to Great-Power Status,” *Foreign Affairs* (September/October 2005), pp. 18–24; Alastair Ian Johnston, “Is China a Status Quo Power?” *International Security* (Spring 2003), pp. 5–56; and Avery Goldstein, *Rising to the Challenge: China’s Grand Strategy and International Security* (Stanford: Stanford University Press, 2005).}

The emergence of a new center of power situated in Asia—and the subsequent transition from a unipolar to a multipolar world—creates new challenges and opportunities for China’s neighbors and for the United States. China continues to have several outstanding territorial disputes with states in the region, including over claims in the South China Sea, the border with India, Tibet, and, of course, Taiwan. While many of China’s past territorial disputes have been settled peacefully, others have led to conflict.\footnote{M. Taylor Fravel, *Strong Borders, Secure Nation: Cooperation and Conflict in China’s Territorial Disputes* (Princeton: Princeton University Press, 2008).} In addition, China’s impressive growth in all elements of national power has already begun, and will likely continue, to stress the credibility of U.S. extended deterrence commitments in the region, most notably with Japan. While Japan continues to place very high value on its alliance with the United States, the rise of China has prompted Tokyo to raise new questions about the U.S. commitment to its defense.\footnote{Michael J. Green and Katsuhsu Furukawa, “Japan: New Nuclear Realism,” and Kang Choi and Joon-Sung Park, “South Korea: Fear of Abandonment and Entrapment,” both in Muthiah Alagappa, ed., *The Long Shadow: Nuclear Weapons and Security in 21st Century Asia* (Stanford: Stanford University Press, 2008).}

In recent years Japanese officials have asked for more detailed information about U.S. nuclear war plans, and reportedly have lobbied the United States to retain the nuclear variant
of the sea-launched Tomahawk Land-Attack Missile/Nuclear (TLAM/N) before the DPJ (Democratic Party of Japan) government took power.\textsuperscript{54}

Taiwan, too, has felt the pressure of China’s rise. Cross-strait relations have waxed and waned over the years, ranging from outright hostility and military posturing and provocation, as in the Third Taiwan Straits Crisis of 1995–1996, to a warming in bilateral relations and a dramatic increase in economic ties, especially after the 2008 election of President Ma Ying-jeou in Taiwan. Notwithstanding the improvement in cross-strait relations since 2008, both Taiwan and China continue to focus a very large portion of their military efforts on each other. According to a 2010 report by the U.S. Department of Defense, by December 2009 China had deployed between 1,050 and 1,150 short-range ballistic missiles opposite Taiwan and is improving the range, accuracy, and payload of these weapons.\textsuperscript{55} Taiwan continues to procure advanced military equipment to defend against a Chinese attack, including in 2010 a $6.4 billion arms deal with the United States that resulted in a sharp rebuke from Beijing, including the cancellation of U.S.-China military-to-military exchanges.\textsuperscript{56}

2. Nuclear Component of Deterrence

From the outset of China’s entrance into the nuclear club in October 1964, official policy pronouncements have consistently stated that China maintains a relatively small nuclear arsenal for purely defensive purposes. Immediately after the nuclear detonation on October 16, 1964,


China publicly committed to a No First Use (NFU) policy, declaring that it “will never at any time or under any circumstances be the first to use nuclear weapons.” In addition, China called for an international conference to discuss the “complete prohibition and thorough destruction” of all nuclear weapons and advocated that the nuclear powers “undertake not to use nuclear weapons either against non-nuclear countries and nuclear-free zones or against each other.”\(^57\) Chinese statements since that time have continued these themes. According to the most recent defense white paper, China “remains committed to the policy of no first use of nuclear weapons, pursues a self-defensive nuclear strategy, and will never enter into a nuclear arms race with any other country.”\(^58\)

In Chinese thinking about deterrence, nuclear weapons serve two fundamental and interconnected purposes: to deter nuclear coercion and blackmail; and to deter the use of nuclear weapons.\(^59\) Official and semi-official Chinese texts consistently state that its nuclear weapons are used to prevent the threat or use of nuclear weapons and are not for offensive war-fighting or damage-limitation purposes.\(^60\) Numerous PLA (People’s Liberation Army) writings indicate that the only military mission of Chinese nuclear forces is a nuclear counterattack


campaign, whereby China “rides out” a nuclear attack and responds with its nuclear forces.61 This view of nuclear weapons stands in stark contrast to Chinese thinking about its conventional ballistic and cruise missiles, which envisions the possible use of these weapons for offensive, perhaps even preemptive, war-fighting purposes in some circumstances.62

In analyzing Chinese views on nuclear weapons and deterrence, two important differences between Chinese and American thinking stand out. First, Chinese nuclear doctrine includes the explicit mission of deterring nuclear coercion and blackmail. Whereas in the United States the discourse on nuclear deterrence is almost exclusively focused on preventing the use of nuclear weapons—and the concept of deterring nuclear threats is either not discussed or simply subsumed by the ability to deter nuclear use—China places great importance on preventing or otherwise denying opponents from successfully using the threat of nuclear attack for coercive purposes. This emphasis on nuclear threats stems from China’s own historical narrative, in which nuclear-armed states, particularly the United States and later the Soviet Union, used the threat of nuclear attack to bully and coerce a weak China. The United States, for example, used the threat of nuclear attack against China in the Korean War, in the Quemoy-Matsu crisis of 1954–1955, and again in a similar crisis involving Quemoy-Matsu in 1958. These incidents played a major role in Mao’s desire for a nuclear arsenal of his own to prevent future attempts at nuclear coercion or


attack. Indeed, following China’s nuclear test in October 1964, Chinese Premier Zhou Enlai wrote a letter to President Lyndon Johnson proclaiming that China had been “compelled to conduct nuclear testing and develop nuclear weapons” in order to “[protect] the Chinese people from the U.S. nuclear threat.”

Second, and closely related to the issue above, a key component in Chinese deterrence doctrine is the mission of “counter-nuclear deterrence.” This concept, while counterintuitive—even nonsensical—in the U.S. strategic lexicon, stems from the Chinese translation of the word “deterrence.” Whereas in the United States deterrence is typically defined in terms of preventing some unwanted action and is viewed as passive, status quo-oriented, and reactionary, the traditional Chinese word for deterrence, weishe, is defined as “to intimidate militarily.” Deterrence, according to this view, has an offensive, threatening, and coercive connotation—more akin to the concept of “compellence” in U.S. strategic discourse—and hence something that must be “countered.” In fact, for many years Chinese strategists refrained from using the word “deterrence” to describe the central mission of China’s nuclear forces, since this implied an offensive nuclear posture. Beginning in the 1990s, however, Chinese strategists began to distinguish between “defensive” deterrence, as practiced by China, and “offensive” deterrence. According to one Chinese text, “There is the offensive nuclear deterrence of hegemonism,

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63 Lewis and Xue, China Builds the Bomb, pp. 13–15; and Medeiros, “Evolving Nuclear Calculus,” p. 46.
64 Telegram from U.S. Embassy, Warsaw, to the Secretary of State, 19 October 1964, p. 1, National Security File, Country File, Asia and the Pacific–China, box 238, Lyndon Baines Johnson Presidential Library.
and then there is the defensive nuclear deterrence used for self-protection.\textsuperscript{66}

In order to achieve the objectives of deterring nuclear coercion and attack, China has traditionally maintained a small and unsophisticated nuclear arsenal. For several decades China maintained a rudimentary and relatively vulnerable nuclear arsenal, with warheads unmated to missiles.\textsuperscript{67} From the outset of China’s nuclear program, the concept of nuclear minimalism has pervaded much of Chinese strategic thought.\textsuperscript{68} China, according to this view, does not need a large and diverse nuclear arsenal because only a handful of weapons are needed to inflict the unacceptable damage that is required for successful deterrence. In this context, the core element of China’s deterrence strategy has been “first strike uncertainty”—a prospective attacker’s uncertainty about executing a successful disarming first strike and the resulting possibility that a few of China’s weapons would survive and be used in retaliation.\textsuperscript{69} As part of this strategy, China has relied on ambiguity,


\textsuperscript{67} On the contention that Chinese warheads are unmated to missiles, see Lewis, “Chinese Nuclear Posture and Force Modernization,” p. 43.


secrecy, and deception regarding its nuclear force posture to increase uncertainty—and therefore enhance deterrence—in the strategic calculus of current and potential adversaries.  

More recently, however, Chinese thinking about the force structure requirements of credible deterrence has shifted. Whereas in the past China relied on ambiguity and uncertainty to underpin deterrence with a small and vulnerable arsenal, in the last two decades Chinese leaders and strategists have come to the view that credible deterrence requires a visibly secure, survivable second-strike capability. In its current efforts, China seeks an “assured retaliation” force posture, which emphasizes the relative certainty—rather than a prospective attacker’s uncertainty, as in the past—that enough weapons will survive a nuclear first-strike and be capable of inflicting unacceptable damage in retaliation. China’s nuclear modernization programs, including the development and deployment of solid-fueled, road-mobile ballistic missiles, a new SSBN (nuclear-powered, ballistic missile-carrying submarine) and corresponding submarine-launched ballistic missile, and the development of MIRV (multiple independently targetable reentry vehicle) and MARV (maneuverable reentry vehicle) capabilities, are intended

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Noted Chinese nuclear expert Li Bin argues that China’s nuclear development is entering a new era in which China will have a credible and visible minimum deterrent. This “third stage” is in contrast to the previous “second stage,” where China’s deterrence strategy rested on “quantitative ambiguity” and relied in a prospective attacker’s uncertainty about destroying all of China’s nuclear forces in a preemptive first strike. See Li Bin, “The Impact of U.S. NMD on Chinese Nuclear Modernization,” Pugwash Online, April 2001, http://www.pugwash.org/reports/rc/rc8e.htm. See also Medeiros, “Evolving Nuclear Calculus,” p. 54.

to ensure the survivability and penetrability—and therefore the potency and credibility—of its deterrent.73

China’s nuclear modernization is the subject of intense scrutiny and debate in the United States and around the world, as many use these efforts as a lens through which to view and interpret Beijing’s broader political and military intentions. For some, ongoing nuclear modernization is emblematic of significant changes in China’s thinking about nuclear weapons and deterrence. According to one group of analysts, China’s current nuclear programs represent a “dramatic departure” from its previous strategy of “minimum deterrence.”74 Others, however, see important continuities between past and present nuclear policies. According to M. Taylor Fravel and Evan Medeiros, “To the extent that change has occurred, it has involved further explication of existing ideas and, to a greater degree, a convergence of operational doctrine with nuclear capabilities . . . by 2010 China arguably had deployed a credible second-strike capability against all of its nuclear adversaries—its very goal from 1964 onward.75

While China’s decision to begin modernizing its nuclear arsenal appears to have come from internal analysis and deliberations beginning in the late 1980s and early 1990s about the logic, strategy, and force posture requirements of credible deterrence, it is important to note that external factors likely play an important role in shaping the trajectory of its nuclear force posture. Although China is modernizing


75 Fravel and Medeiros, “China’s Search for Assured Retaliation,” p. 75.
its forces anyway, nuclear and conventional force developments in other countries—particularly the United States—affect the pace and scope of China’s modernization.

According to Chu Shulong and Rong Yu, “the real meaning of Chinese ‘minimum deterrence’ is the minimum required to deter stronger powers; it is a ‘minimum’ relative to the strategic forces of stronger powers such as the United States and Russia.” As such, China’s view of the force structure requirements of credible deterrence can be modified by developments in offensive and defensive capabilities in other countries. In this context, a central element affecting the pace and scope of Chinese modernization is the trajectory of U.S. ballistic missile defense capabilities and Conventional Prompt Global Strike. Chinese officials and analysts are particularly concerned about the combination of U.S. missile defenses and long-range precision conventional strike capabilities, as this might allow the United States to launch a conventional preemptive strike on Chinese nuclear forces and use its missile defenses to “mop up” any remaining weapons that were launched in retaliation. Such a scenario would also strain China’s NFU policy, as it would put the burden of nuclear escalation on China. Despite efforts by the Bush and Obama administrations to assure Beijing that missile defense and conventional strike capabilities are not focused on China, these efforts so far have not assuaged Beijing’s concerns or diminished the perceived need to develop capabilities to counter or otherwise offset U.S. systems. According to a 2010 report by the U.S. Department of Defense

on China’s military capabilities, “China is currently working on a range of technologies to attempt to counter U.S. and other militaries’ ballistic missile defense systems, including maneuvering re-entry vehicles, MIRVs, decoys, chaff, jamming, thermal shielding, and anti-satellite (ASAT) weapons.”

A final element of China’s nuclear strategy that receives considerable attention is its steadfast public commitment to NFU. As noted above, China announced its NFU policy immediately after the detonation of its first nuclear device in 1964, and from that point onward virtually every major document and speech about China’s nuclear strategy has contained a statement about the importance and sincerity of this policy. For some, China’s commitment to NFU is mere propaganda—a useful rhetorical statement that has no meaningful influence on operational doctrine. China, according to this view, might threaten nuclear first-use in a stressful military situation, such as in a severe crisis or a losing conventional war with the United States over Taiwan. Others, however, contend that NFU is genuine and imposes real operational constraints on China. Proponents of this view point to internal Chinese writings that discuss the use of nuclear weapons only after a nuclear attack. These writings stress that nuclear operations will take place under “grim” conditions, suggesting that a nuclear attack on China has already occurred, and emphasize that strategic

79 Military and Security Developments Involving the People’s Republic of China, 2010, p. 34.
80 See, for example, Schneider, “The Nuclear Doctrine and Forces of the People’s Republic of China,” pp. 246–248.
missile units must survive a nuclear attack for three to five days before emerging for retaliation.\textsuperscript{84}

However, while Chinese officials continually attempt to convince the United States and others of the sincerity of its NFU pledge, there remains some ambiguity—perhaps deliberately so—regarding when and where it applies. In particular, China’s NFU policy suggests that it will not use nuclear weapons first against another country; this raises important questions about its applicability regarding Taiwan, since China regards Taiwan as part of its territory. In 1996, Chinese ambassador Sha Zukang said, “As far as Taiwan is concerned, it is a province of China, not a state. So the policy of no first use does not apply.”\textsuperscript{85} While the Chinese government corrected this statement, it raised important concerns about the universality of NFU. In addition, there is some ambiguity regarding what constitutes nuclear first use in Chinese thinking. China might not believe that it has to wait for a nuclear detonation on its soil before initiating a nuclear counterattack. It is possible that China might consider an opponent’s apparent intention or preparation to initiate a nuclear first strike, or the use of conventional weapons against Chinese nuclear forces, as crossing the first-use threshold and thereby permitting a nuclear response.\textsuperscript{86}

3. Other Possible Elements of Deterrence

Beyond China’s nuclear capabilities, an equally important and consequential element of its military power and deterrence strategy is the impressive growth and modernization of its non-nuclear forces. Whereas for decades China’s concept of “People’s War” stressed the centrality of “man over weapons,” more recent Chinese thinking about


military strategy, particularly after the United States forcefully demon-
strated the speed, accuracy, and lethality of sophisticated conventional
forces in the first Gulf War, has gravitated toward the concept of “Local
Wars under Modern High-Technology Conditions.” This form of war-
fare envisions localized, short-duration, and high-intensity conflicts
using technologically advanced weapons for both symmetric and asym-
metric combat.87 Over the past several years China has been develop-
ing a wide range of advanced conventional and non-kinetic military
capabilities, including an increasingly sophisticated arsenal of conven-
tional ballistic and cruise missiles; a growing navy, including an aircraft
carrier research and development program; cyber operations; and anti-
satellite weapons.88 As these forces mature and are incorporated into
PLA doctrine, it is possible that they could play an important role in
China’s deterrence strategy.

One aspect of China’s conventional force posture of particular inter-
est and importance is the development of anti-access/area-denial capa-
bilities. These forces are intended to deter, or at least complicate, the
ability of extra-regional powers to deploy, operate, and sustain combat
power in the region. In particular, China is developing an Anti-Ship
Ballistic Missile (ASBM), which is intended to hold at risk aircraft car-
rriers and other naval assets deployed in the East Asia region. Accord-
ing to published reports, the ASBM is a variant of the DF-21 medium
range ballistic missile, a two-stage, solid-fueled, road-mobile missile.89
This development could have profound consequences for deterrence
and military strategy, particularly in a Taiwan scenario, as the ability—

and Richard H. Yang, eds., The People’s Liberation Army in the Information Age
(Santa Monica, Calif.: RAND, 1999).

88 For a recent Department of Defense assessment of these capabilities, see Military and

89 Andrew S. Erickson and Andrew D. Yang, “On the Verge of a Game-Changer,”
Proceedings (May 2009), http://www.usni.org/magazines/proceedings/2009–05/verge-
game-chan ger.
whether real or perceived—to prevent or complicate U.S. power projection in the theater is likely to affect the cost-benefit and risk-taking calculations of all states involved.

In addition to the qualitative and quantitative growth in its conventional forces, China’s development of ASAT and cyber weapons might also play an important role in deterrence. The decision to shoot down a weather satellite in January 2007 was a forceful and visible demonstration of China’s growing interest and sophistication in a wider range of capabilities with potential military utility. According to one analyst, China’s development of ASAT and other counter-space weapons is designed to counter U.S. conventional dominance and power projection by holding at risk the space-based assets upon which U.S. conventional military operations depend.\textsuperscript{90} In this context, these capabilities are an asymmetric response to U.S. conventional advantages. China is also reported to be developing wide-ranging and sophisticated cyber capabilities that can be used to collect intelligence in foreign countries and disrupt an opponent’s military operations during a conflict.\textsuperscript{91} According to press reports, many known intrusions into U.S. Defense Department computers have come from China.\textsuperscript{92} In addition, reports indicate that hackers from China and Russia have penetrated U.S. power grids and planted software that could be used to disrupt the power supply.\textsuperscript{93} Although it is unclear if or how China has incorporated these capabilities into its thinking about deterrence, the fact that the United States and others are keenly aware of China’s interest and growing ability to use


cyber- and counter-space weapons to attack military and civilian targets is likely to affect political and military calculations about the potential consequences of conflict.

4. IMPLICATIONS FOR NUCLEAR SECURITY PROJECT (VISION AND STEPS) AGENDA

China has been a vocal supporter of arms control and disarmament from the outset of its nuclear weapons program, and official Chinese policy firmly embraces the vision of a nuclear weapons-free world. According to the 2008 defense white paper, “China holds that all nuclear-weapon states should make an unequivocal commitment to the thorough destruction of nuclear weapons, undertake to stop research into and development of new types of nuclear weapons, and reduce the role of nuclear weapons in their national security policy.” However, while official policy supports nuclear arms control and abolition, some in China’s defense and academic communities are more skeptical about the feasibility and desirability of these efforts. Some Chinese analysts assert that the United States and Russia have in the past used nuclear arms control as a mechanism to constrain China and maintain nuclear superiority, and Chinese texts underscore that arms control must not be used by the strong to contain the weak. In addition, Chinese nuclear experts emphasize that reducing the role of nuclear weapons in national security is an important first step toward disarmament, and it is possible that meaningful movement in this arena would be used to gauge the sincerity of the U.S. and Russian commitment to abolition. In this context, China has advocated on

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94 Hui, “China’s Perspective on a Nuclear-Free World,” p. 143.
95 Jing-dong, “Chinese Perceptions of the Utility of Nuclear Weapons,” p. 34.
many occasions for a global agreement on the No First Use of nuclear weapons.\textsuperscript{97}

Despite a consistent rhetorical commitment to arms control and disarmament, China has been reticent to be proactive or take the lead in these initiatives. Rather, Beijing has been cautious and reactive, choosing to make its actions in these arenas contingent on those of other countries, particularly the United States and Russia. Nowhere is this more evident than China’s stance on participation in a multilateral arms control agreement on nuclear reductions. While Beijing has indicated that it would participate in future reductions agreements, it has been noncommittal on when, and has even changed and made more demanding the necessary criteria for its participation.\textsuperscript{98} The 2008 defense white paper pushes Chinese participation further down the road, stating, “The two countries possessing the largest nuclear arsenals bear special and primary responsibility for nuclear disarmament” and they must “further drastically reduce their nuclear arsenals in a verifiable and irreversible manner” in order to “create the necessary conditions for the participation of other nuclear-weapons states in the process of nuclear disarmament.”\textsuperscript{99}

Beyond nuclear reductions, China has also supported the Comprehensive Test Ban Treaty (CTBT) and the Fissile Materials Cutoff Treaty (FMCT), though its actions on these issues have also tracked closely with the United States. For example, China signed the CTBT in 1996

\textsuperscript{97}Hui, “China’s Perspective on a Nuclear-Free World,” pp. 140, 145–146.

\textsuperscript{98}In 1982, China said that it would participate in arms control after the United States and the Soviet Union reduced their arsenals by 50 percent and halted nuclear testing, manufacturing, and deployment. In 1988, however, China shifted positions, stating that it would only join after more “drastic reductions.” In 1995, China said that it would not join arms control initiatives until U.S. and Russian forces were reduced to levels beyond those set by START II, and until the United States and Russia eliminated tactical nuclear weapons, forswore missile defense, and issued a joint NFU declaration. See Brad Roberts, “Arms Control and Sino-US Strategic Stability,” in Twomey, ed., Perspectives on Sino-American Strategic Nuclear Issues, pp. 186–187.

but has not yet ratified it, in large part because the United States failed to do so in 1999. It is widely believed that if the United States ratifies the CTBT, China would likely follow suit. China also supports the negotiation of the FMCT, and is reported to have halted the production of highly enriched uranium in 1987 and weapons-grade plutonium in 1991. Given China’s concerns about U.S. missile defense and the weaponization of space, it has often tried to link its support for the FMCT to negotiations on the “prevention of an arms race in outer space” (PAROS). In 2003, however, China abandoned its insistence on this issue linkage and agreed to negotiate on the FMCT independent of movement on PAROS. Still, Chinese concerns about U.S. capabilities are real and growing, and it is possible that Beijing might decide to respond to these systems, particularly U.S. missile defense, by increasing its offensive nuclear forces. Such an increase might potentially necessitate producing additional HEU or plutonium, thereby endangering continued Chinese support for the FMCT.

5. ISSUES FOR CONSIDERATION

◊ Are there any conditions or situations in which China might publicly modify or abandon NFU? What kinds of confidence-building measures could China undertake to continue to assure states of the sincerity and credibility of its NFU pledge, particularly as China’s nuclear arsenal is modernized and expanded?

◊ If the United States adopted NFU, as China has often advocated, would China believe it? How could the United States

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convince China of the sincerity and credibility of an NFU pledge?

• How will China’s growth and technological advancement in conventional capabilities affect Chinese thinking about deterrence? Will Chinese strategists develop theories and strategies of conventional deterrence?

• How does the conventional military balance affect Chinese views on arms control and abolition? Would China be willing to reduce and eventually abolish nuclear weapons if the United States maintains conventional superiority and power projection in the Pacific?

• How does China view the Obama administration’s Nuclear Posture Review (NPR) and the New START treaty? Does the NPR sufficiently demonstrate a reduction in the role of nuclear weapons in U.S. national security strategy? Do the central limits in New START constitute sufficient reductions such that China would be willing to participate in a future multilateral nuclear reductions treaty?

C. United Kingdom

1. Security Context

The United Kingdom’s security context overlaps to a great degree with that of its closest ally, the United States, as well as France and NATO. Most significantly, the collapse of the Soviet Union almost twenty years ago removed an existential threat to the U.K. and the Western allies. In its place, a combination of new and emerging threats, accentuated by the globalization paradigm, now dominates the U.K.’s security landscape. Similar to the United States, France, and NATO, international terrorism and unconventional attacks are now the most direct threats to British security; and China and India are recognized
as emerging powers with a growing ability to influence and affect global issues.

Over the past decade, consistent themes run through official government reviews of U.K. defense, nuclear, and security policies. In general, the security context is characterized as involving more diverse risks and numerous crises of a wider range and geographical area. The reviews reaffirm that European security is central to U.K. national interests, and that those regions immediately adjacent (the Near East, North Africa, and the Gulf) are likely to continue to have the most significant bearing on U.K. and Western security interests.

Significantly in the context of deterrence, the British reviews cite a range of other factors that could lead to an increased risk of conflict involving a nuclear-armed state, including weak and failing states and international terrorism; pressure on key resources such as energy and water (driven by population growth, increasing economic development, and climate change); and the spread of military technology. The potential for nuclear risks are cited in three specific areas:

- The re-emergence of a major direct nuclear threat to the U.K. or NATO
- The emergence of one or more states with a more limited capability that could pose a grave threat to U.K. vital interests

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State sponsored terrorism, in which a state might transfer nuclear-related technology or weapons to terrorists.

On October 18 and 19, 2010, the government of the U.K. released its latest National Security Strategy (NSS) and Strategic Defense and Security Review (SDSR). Terrorism (including through the use of WMD), cyber attacks, accidents or natural disasters (e.g., influenza pandemic, floods), and international military crises between states are cited as the most pressing risks to U.K. security. Significantly, the U.K.’s ability to meet current and future threats is now tied to tackling the budget deficit, forcing tough choices relating to the defense budget as it relates to both nuclear and conventional forces. Nevertheless, the U.K. is committed to sustaining its position as a major power with a global reach disproportionate to its size.

2. Nuclear Component of Deterrence
The U.K.’s over-arching policy on nuclear weapons was set out in the December 2003 Defense White Paper, referenced again in the December 2006 White Paper on the Future of the United Kingdom’s Nuclear Deterrent:

We are committed to working towards a safer world in which there is no requirement for nuclear weapons and continue to play a full role in international efforts to strengthen arms control and prevent the proliferation of chemical, biological and nuclear weapons. However, the continuing risk from the proliferation of nuclear weapons, and the certainty that a number of other countries will retain substantial nuclear arsenals, mean that our minimum nuclear deterrent capability, currently represented by Trident, is likely to remain a necessary element of our security.103

The 2010 SDSR maintains this basic framework, underscoring the continuing need for a minimum effective nuclear deterrent and restating that the U.K. “also remains committed to the long-term goal of a world without nuclear weapons.”

Continuous-at-sea deterrence has been the foundation for Britain’s strategic nuclear deterrent since the first Polaris submarines were deployed in 1968. Today, the U.K. has four Vanguard submarines—its only remaining nuclear deterrent since the 1990s—each with up to sixteen Trident D5 missiles (U.S. manufactured) armed with no more than forty-eight nuclear warheads in each boat, with at least one submarine on patrol at all times. That one submarine is normally at several days “notice to fire” and its missiles are not targeted at any country.

In this context, the future of the British submarine force is now central to the U.K. nuclear deterrent. Former British Prime Minister Tony Blair took the first significant decision on this question when, on December 4, 2006, he outlined plans to spend between £15 billion and £20 billion on a new generation of submarines for Trident missiles. Blair said that the options of changing to a land-based or air-based nuclear deterrent had been considered and ruled out.

In announcing his decision, Blair also placed the British nuclear deterrent in a historical and strategic context. He said that while the cold war was over, Britain could not be certain that a major nuclear threat to the U.K.’s strategic interests would not emerge, specifically citing North Korea and Iran as new threats and the possible connection with international terrorism. Blair concluded, “In these circumstances it would be unwise and dangerous for Britain, alone of any of the nuclear powers, to give up its independent nuclear deterrent. . . . Would we want to drop [the ultimate] insurance and not as part of a


global move to do so, but on our own? I think not.” Significantly, Blair conceded the U.K.’s nuclear deterrent would not deter or prevent terrorists, but stated it was bound to impact governments that might sponsor them, and said it could serve as an additional insurance “against circumstances where we are threatened but America is not.”106 Three years later, Blair reflected on this decision in his memoirs, stating, “... in the final analysis I thought giving it up too big a downgrading of our status as a nation, and in an uncertain world, too big a risk for our defense,” adding it was “frankly inconceivable we would use our nuclear deterrent alone, without the U.S.”107

At the time of Blair’s decision, then-Conservative leader David Cameron said his party agreed with Mr. Blair’s position on substance and on timing. Now the prime minister, Mr. Cameron announced in the SDSR that the U.K. will retain and renew its continuous submarine-based independent nuclear deterrent and begin the work of replacing its existing submarines. However, the U.K. now plans to extend the life of the current Vanguard class submarines into the late 2020s and early 2030s, and defer a decision to start building new submarines (including number of replacements) to 2016. It was announced that a new warhead was not needed until at least the late 2030s, thereby postponing any related decision beyond 2015. The U.K. will also reduce the number of operational missiles on each submarine from twelve to eight and the number of warheads from a maximum of forty-eight to a maximum of forty. The number of operationally available warheads will be reduced from fewer than 160 to no more than 120, enabling a reduction in the overall nuclear stockpile from no more than 225 to no more than 180 by the mid-2020s.108

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106 Ibid.
U.K. declaratory policy has also changed as a result of the SDSR. While restating that the U.K. would only consider using nuclear weapons in extreme circumstances of self-defense (including defense of NATO) and would remain deliberately ambiguous about precisely when, how, and at what scale the U.K. would contemplate nuclear use, the SDSR also provides a new assurance that “the UK will not use or threaten to use nuclear weapons against non-nuclear weapon states parties to the NPT,” while noting this assurance would not apply “to any state in material breach of those nonproliferation obligations” and reserving the right to review this assurance in light of future chemical and biological weapon threats. Thus, U.K. declaratory policy now significantly overlaps with that of the United States, although it is noticeably less restrictive in relation to chemical weapons (as the U.S. in its new declaratory policy reserves the right to make any adjustments in its assurance based on the evolution and proliferation of the BW, not the CW, threat).109

3. OTHER POSSIBLE ELEMENTS OF DETERRENCE

The security and stability of Europe and the maintenance of the transatlantic relationship remain fundamental to the U.K.’s security and defense. Britain’s continuing commitment to collective security through NATO—reaffirmed in the 2010 NSS and SDSR—make clear NATO and the special relationship with the United States remain core elements of deterrence and defense. Most recently, the SDSR states that the U.K. will also intensify its security and defense relationship with France, noting the two countries have similar national security interests.110

The capacity to project conventional military force—alongside European Union and NATO allies—is viewed as a vital component of U.K. security policy. The SDSR maintains that the U.K. expects to

110 Ibid., p. 60.
continue with the fourth largest military budget globally and that the defense budget will rise in cash terms and will meet NATO’s 2 percent target throughout the next four years, with some scaling back in the overall size of the armed forces (including the immediate decommissioning of the U.K.’s existing carrier-based air capability, not to be replaced for ten years) and the withdrawal of all U.K. forces from Germany by 2020. The SDSR states the U.K. remains committed to retaining the capability to deploy and sustain a brigade-size force anywhere in the world indefinitely; or for a limited time, committing to a three-brigade intervention with maritime and air support (or two-thirds of the force deployed in Iraq in 2003).111

That said, the emphasis now on deficit reduction may well force the U.K. to weigh again the relative contributions of nuclear and conventional forces to deterrence over the next four years—in particular if the success of current economic and budget policies is not as forecasted. With respect to missile defense, the 2006 Review stated that such defenses “are only designed to be able to defend against limited missile attacks. They do not, on their own, provide a complete defense against the full range of risks set out in this White Paper. They should be regarded as complementary to other forms of defense or response, potentially reinforcing nuclear deterrence rather than superseding it.” Most recently, the 2010 SDSR states that the U.K. will “maintain our existing policy of close cooperation with the U.S. and our other allies on ballistic missile defenses, and . . . support proposals to expand NATO’s role.”112

4. IMPLICATIONS FOR NUCLEAR SECURITY PROJECT
(VISION AND STEPS) AGENDA
On June 25, 2007—six months after Tony Blair’s Trident announcement—then-U.K. Foreign Secretary Margaret Beckett gave a speech in

111 Ibid., pp. 3–6, 19.
112 Ibid., p. 28.
Washington outlining a path forward for dealing with nuclear threats. Explicitly drawing on the views of the authors of the *Wall Street Journal* article, Beckett stated that while the conditions for the total elimination of nuclear arms do not exist today, that does not mean we should resign ourselves to the idea that nuclear weapons can never be abolished in the future. “What we need is both a vision—a scenario for a world free of nuclear weapons—and action: progressive steps to reduce warhead numbers and to limit the role of nuclear weapons in security policy. These two strands are separate but they are mutually reinforcing. Both are necessary, but at the moment too weak.”113

Britain would appear to have the strongest cross-party support for the vision and steps of any of the nuclear weapon states, and has been a strong supporter of bringing the CTBT into force and negotiating an FMCT. The U.K. Top Level Group, convened by former U.K. Defense Secretary Des Browne, includes parliamentarians and former officials from the Labour, Liberal Democrat, and Conservative parties.

Significantly, the U.K. adjusted its own declaratory policy so that it now largely overlaps with that of the United States. On the question of U.S. non-strategic nuclear forces in Europe, at present, the U.K. appears to be observing the ongoing debate within NATO, open to whatever outcome might prevail—but not leading the charge in any direction.

With respect to future steps, consistent with Foreign Secretary William Hague’s stated emphasis on being “more open” with respect to British nuclear forces, London would welcome and may even lead multilateral initiatives that would increase transparency in all nuclear weapon states. Moreover, since the U.K. possesses the smallest nuclear arsenal of any of the five NPT nuclear weapon states, it is possible to infer that the U.K. could support a global “no increase” commitment, though further reductions in the U.K. stockpile may well

require a subsequent agreement on U.S.-Russian nuclear reductions, as well as a multilateral commitment to reductions that included, in particular, China.

5. **ISSUES FOR CONSIDERATION**

- What, if any, further adjustments in the U.K.’s independent nuclear deterrent force might be anticipated over the next five to ten years, or have the most dramatic changes already been announced? Could any such changes by the U.K. have a broader impact on the direction of deterrence policies in other nations, and what might that impact be?
- Could further changes in U.K. nuclear forces be accompanied by increased cooperation with French or U.S. nuclear forces?
- How might plans for the U.K.’s nuclear forces be affected by changes in the nuclear plans of others, in particular deeper U.S./Russian reductions or convincing success in countering Iran’s nuclear program?

**D. France**

1. **SECURITY CONTEXT**

The most recent articulation of the security environment as seen by Paris underlines a common theme in Western security policies—that is, the impact of globalization and a change in the hierarchy of powers: “The world is not necessarily more dangerous, but it has become more unstable, more unforeseeable.”

In their own official government statements, the French highlight new crises from the Middle East to Pakistan and jihadism-inspired terrorism that “aims directly at France and Europe, which are in a situation

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of greater direct vulnerability.” The French also foresee greater vulnerability to ballistic missiles by new powers, and new risks, such as cyber attacks, or health-related or environmental crises. Terrorism and the threat of ballistic and cruise missiles are cited as “new vulnerabilities,” with the possibility of “sudden strategic upsets,” including the breaking of the “nuclear taboo.”

France’s strategic focus for conflict prevention and intervention capabilities concentrates “on a priority geographical axis from the Atlantic to the Mediterranean, the Arab-Persian Gulf and the Indian Ocean,” corresponding to “the areas where the risks related to the strategic interests of France and Europe are highest.”

2. NUCLEAR COMPONENT OF DETERRENCE

Nuclear deterrence remains “an essential concept of national security,” the “ultimate guarantee of the security and independence of France.” Specifically, nuclear weapons serve three principal functions for France: life insurance against a major threat, including possible blackmail from a regional power or military intervention; protection of French territory; and preservation of strategic autonomy for Europe.

On March 21, 2008, French President Nicolas Sarkozy stressed the continued importance of nuclear weapons to France’s security, noting “certain nuclear stockpiles keep on growing” and the continuing proliferation of nuclear, biological, and chemical weapons. He specifi-

115 Ibid., section 2, p. 5.
116 Ibid., section 5.
117 Ibid., section 2, p. 6.
118 Ibid., section 2, p. 7.
cally highlighted Iran as a threat to Europe, and stated “technological breakthroughs may create new threats.”

Against this backdrop, Sarkozy stated, “all those who would threaten our vital interests would expose themselves to severe retaliation by France resulting in damages unacceptable to them, out of proportion with their objectives. Their centers of political, economic, and military power would be targeted on a priority basis.” He added, “It cannot be ruled out that an adversary might miscalculate the delimitation of our vital interests or our determination to safeguard them. In the framework of nuclear deterrence, it would be possible, in that event, to send a nuclear warning that would underscore our resolve. That would be aimed at reestablishing deterrence.”

Consistent with Sarkozy’s statements, the Defense White Paper states that the sole purpose of France’s nuclear deterrent is to “prevent any state-originating aggression against the vital interests of the nation wherever it may come from and in whatever shape or form”—and that France’s nuclear deterrent was based on the ability to provide the president “with an autonomous and sufficiently wide and diversified range of assets and options.” The White Paper also underscores the “total nuclear independence of France both in terms of capability and strategy.”

Since the end of the cold war, France is increasingly willing to discuss the role of its nuclear deterrent in protecting French allies, including in the NATO context. Sarkozy has reaffirmed France’s close strategic ties with Britain—“There can be no situation in which the vital interests of either of our nations could be threatened without the vital interests

121 Ibid.
of the other also being threatened”—and restated France’s commitment to Article V of NATO’s charter, noting France’s nuclear weapons “are a key element in Europe’s Security.” Cooperation between France and the U.K. in the nuclear field took another step forward on November 2, 2010, when President Sarkozy and Prime Minister Cameron announced that France and Britain would work together to ensure the safety and effectiveness of their nuclear warheads.

The French maintain a nuclear deterrent of nuclear-powered ballistic missile submarines (SSBNs), with four operational by the end of 2010, each with sixteen submarine-launched ballistic missiles capable of carrying three warheads each. Currently, at least one French SSBN is at sea at any given time, with one boat in overhaul. Starting in 2010, the current French SLBM—the M45—will be replaced with the M51, improving range capabilities from 4,000 to at least 6,000 kilometers. Currently, the M45 and M51 are deployed with TN75 warheads; however, starting in 2015, the M51 missile will be modified to carry a new warhead, the TNO. In addition, France has a number of nuclear air-to-surface missiles that can be deployed on land-based Mirage 2000N aircraft, carrier-based Super Etendard aircraft and Rafale aircraft. The aircraft, missile, and warhead are all in the process of being upgraded. Sarkozy stated in 2008 that he was convinced that it was essential to maintain both a sea-based and air-based deterrent.

3. OTHER POSSIBLE ELEMENTS OF DETERRENCE

France clearly views its relationship with the U.K. and membership in NATO and the EU as an essential component of French national security

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and foreign policy, including French deterrence. Consistent with this outlook, the 2008 White Paper proposes a number of goals for European defense, including an overall intervention capability of 60,000 soldiers; the capability to deploy two or three peace-keeping or peace-enforcement operations; an increase in European planning and operational capability both military and civilian; and a restructuring of the European defense industry. The paper also called for the full participation of France in the structures of NATO.

Looking ahead, France anticipates a significant investment in the field of “knowledge and anticipation (i.e., knowledge-based security, observation, electronic intelligence, early warning),” including surveillance and armed drones and offensive and defensive cyber-war capabilities, and a “new format” for French armed forces. From 2008, spending on defense will initially increase at the pace of inflation and, starting in 2012, increase 1 percent above the inflation rate.\footnote{126\textsuperscript{126}The French White Paper on defense and national security, 2008, section 2, p. 9, http://www.ambafranceca.org/IMG/pdf/Livre_blanc_Press_kit_english_version.pdf.}

With respect to missile defense and its role in deterrence, Sarkozy has stated that “missile defense capabilities against a limited strike could be a useful complement to nuclear deterrence, without being a substitute for it. Let us not lose sight of the fact that missile defense will never be efficient enough to protect our vital interests.”\footnote{127\textsuperscript{127}Nicholas Sarkozy, Nuclear Policy Speech, March 21, 2008, http://www.acronym.org.uk/docs/0803/doc09.htm.}

\section*{4. Implications for Nuclear Security Project (Vision and Steps) Agenda}

In general, France remains reluctant to endorse the vision of a world free of nuclear weapons in isolation from the broader strategic framework and Article 6 of the NPT, and is skeptical about the idea that emphasizing the vision is needed to persuade NPT parties to subscribe to tougher nonproliferation norms or to reduce the risk of nuclear terrorism. That said, France has endorsed working to create the conditions
for a world without nuclear weapons, in accordance with the goals of the NPT, and has committed to a series of specific steps and transparency initiatives consistent with those of the NSP.\footnote{128 Bruno Tertrais, “France and Nuclear Abolition: The Odd Country Out?” Proliferation Analysis, Carnegie Endowment, September 3, 2009, http://www.carnegieendowment.org/publications/index.cfm?fa=view&id=23789.}

In 2008, Sarkozy announced that the airborne component of France’s nuclear deterrent—weapons, missiles, and aircraft—would be reduced by one third and that France “has no other weapons besides those [300] in its operational stockpile”—noting that none of France’s weapons are targeted against anyone. Sarkozy also said he had “decided that France could and should be more transparent with respect to its nuclear arsenal than anyone ever has been,” and noted that international experts had been invited to observe the dismantlement of its fissile material production facilities. Sarkozy also called on all nations to ratify the CTBT, dismantle all nuclear testing sites, launch negotiations for an FMCT and a treaty banning short- and intermediate-range surface-to-surface missiles, and increase transparency.\footnote{129 Nicholas Sarkozy, Nuclear Policy Speech, March 21, 2008, http://www.acronym.org.uk/docs/0803/doc09.htm.}

More recently, Sarkozy has struck what many perceive to be a skeptical note regarding the “vision” of a world free of nuclear weapons, noting the immediate challenges posed by North Korea and Iran. At the September 2009 UNSC meeting chaired by President Obama, Sarkozy stated:

“If we want in the end to have a world without nuclear weapons, let us not accept the violation of international rules. . . . this is what I believe, in full support of what was decided in the resolution and in full support of President Obama’s initiative. What I believe is that by having the courage to strengthen sanctions, together, against countries that violate Security Council resolutions, we will give credibility to our
commitment to a world whose future holds fewer nuclear weapons and perhaps, one day, no nuclear weapons.”

With respect to specific nuclear policy issues now in play for the November 2010 NATO Strategic Concept, France has reportedly resisted aligning its own nuclear declaratory policy with the new U.S. declaratory policy announced in the April 2010 U.S. NPR, preferring to retain a greater degree of ambiguity regarding the circumstances that could lead to nuclear use—including possibly nuclear first use. There may also be concern in Paris that an expressed willingness on the part of NATO to further reduce and consolidate U.S. NSNF now deployed in Europe could undermine the premise of NATO as a nuclear alliance and the culture of nuclear deterrence among non-nuclear NATO members.

With respect to future steps, both the White Paper and President Sarkozy emphasized France has taken the initiative in nuclear disarmament and will continue to do so. Moreover, it is possible to infer from Sarkozy’s statement (“certain nuclear stockpiles keep on growing”) that France may support a global “no increase” commitment; but, as with the U.K., further reductions in France’s nuclear stockpile may well require a multilateral commitment to reductions that included, in particular, China.

5. ISSUES FOR CONSIDERATION

- How might a large-scale reduction in the role and number of nuclear weapons in the United States and Russia over the next decade affect France?
- How might changes in the U.K. with respect to deterrence—including a decision to abandon the nuclear component of Britain’s deterrent—affect France?

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What specific commitments from China with respect to nuclear weapons and transparency might further influence French thinking on deterrence?

III. NATO

1. Security context

The strategic context facing NATO today has evolved significantly from circumstances that existed when the NATO Strategic Concept—the document which sets out the fundamental purpose, tasks, and strategy of NATO—was published in 1999. The evolution over the past decade—documented in a new Strategic Concept adopted by NATO leaders on November 19, 2010, in Lisbon—as well as uncertainties about the future security environment will shape NATO deterrence and nuclear policy discussions going forward the next ten years.

Most obviously, the threat to NATO has evolved. Today, the main focus of security concern for many NATO members is no longer Russia or the threat of conventional attack against NATO territory, but the related threats posed by the proliferation of nuclear weapons and other weapons of mass destruction (most urgently in a conflict-prone Middle East), their means of delivery, and terrorism. The wars in both Iraq and Afghanistan had their roots in concerns over the potential nexus between the spread of weapons of mass destruction and terrorism. Today, these concerns are a central driver with respect to other

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related issues, including missile defense. Moreover, they are a central aspect to U.S. and NATO relations with a number of states, including Iran, Saudi Arabia, Pakistan, Syria, Egypt, and Israel. In addition, instability and conflict beyond NATO’s borders, cyber attacks, energy dependency, and environmental and resource constraints will further shape the security environment in areas of concern to NATO.

Security concerns regarding Russia, however, remain—in particular with respect to many new NATO member states. As recently noted in the NATO Experts Group Report chaired by Madeleine Albright, incidents of instability along Europe’s periphery have revived historic tensions. In this context, NATO’s core commitment of collective defense to shield member states from armed aggression has a particular saliency in member states that at one point were members of another alliance, the Warsaw Pact. As noted by the Group of Experts, “Although the Alliance neither poses a military threat to Russia, nor considers Russia a military threat to the Alliance, doubts persist on both sides about the intentions and policies of the other.”

It is also evident that NATO nuclear policy issues do not exist in a security or political vacuum—in particular with respect to Russia. As former Senator Sam Nunn has recently noted, if there is to be success in dealing with the hydra-headed threats of emerging new nuclear weapons states, proliferation of enrichment, poorly secured nuclear material, and catastrophic terrorism, many nations must cooperate. It must be recognized, however, that these tasks are virtually impossible without the cooperation of Russia. It is abundantly clear that Russia itself faces these same threats and that its own security is dependent on cooperation with NATO and the United States.

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The negotiation of the New START agreement suggests there is some scope for further progress in cooperation, but the timing of a final vote in the U.S. Senate and the ultimate fate of the treaty—or what may come next—remains uncertain. Moreover, tensions between the U.S./NATO and Russia remain in relation to the future alignment of NATO as well as missile defense (though in what appears to be a positive step forward on missile defense, NATO and Russia agreed in Lisbon to discuss pursuing missile defense cooperation, beginning with a resumption of theater missile defense cooperation and development of a comprehensive joint analysis of the future framework for missile defense cooperation).136 More broadly, questions associated with Russia’s role in Euro-Atlantic security continue, with countries divided over their analysis of the direction of Russian foreign and security policy and the terms and conditions under which cooperation with Russia could take place.

2. Nuclear component of deterrence

Since the end of the cold war, the NATO alliance has significantly reduced its reliance on nuclear forces. NATO’s strategy, while remaining one of war prevention, is no longer dominated by the possibility of escalation involving nuclear weapons, as was the case during much of the cold war. Moreover, its non-strategic nuclear forces are no longer targeted against any country and readiness is now described in terms of “months.”

While NATO continues its policy of “neither confirm nor deny,” the number of U.S. weapons has declined significantly since a peak of approximately 8,000 during the cold war. Data from various non-governmental sources indicate that the U.S. currently deploys approximately 150–240 air-delivered nuclear weapons (B61 gravity bombs) that are deliverable by NATO aircraft (F-15s, F-16s, Tornados) at six

air force bases in five countries: Belgium (Kleine Brogel), Germany (Buchel), Italy (Aviano [USAF] and Ghedi-Torre), the Netherlands (Volkel), and Turkey (Incirlik [USAF]). This reduction in forward-deployed U.S. nuclear forces has not taken place in isolation. It has been part of a wider demilitarization of Europe, and Central Europe in particular, since 1990.

NATO aircraft in the current inventory of Dual Capable Aircraft (DCA) are reaching the end of their original service lives. It is therefore inevitable that the question of modernization of capabilities will arise in the next few years and that countries which propose to retain DCA and nuclear weapons on their soil will have to explain the rationale for doing so to their parliaments and publics. Belgium, Germany, Italy, and the Netherlands are likely awaiting the outcome of the comprehensive review of NATO’s overall posture—including NATO’s nuclear posture, tasked in the Lisbon Summit Declaration accompanying the new Strategic Concept—before deciding whether to proceed with programs for retaining nuclear sharing arrangements with the United States and DCA to support those arrangements.137 This could have significant implications for procurement of replacement aircraft and/or other capabilities in all four countries—with the Germans facing the earliest decision (circa 2011–13), which may have a trickle-down effect on the others. As of today, prospective cuts in NATO defense spending are making it increasingly problematic to maintain all the fleets of DCA on which NSNW deployment now depends. It remains unclear how long Belgium will continue with deployment of the F-16 or whether the Netherlands will support the acquisition of the (potentially nuclear-capable) F-35 to replace the current F-16s. Germany is replacing its own nuclear-capable Tornado aircraft with Eurofighters, which do not currently have a nuclear capability.

Declaratory policy is in play for the first time in decades. In April 2010, the Obama administration announced the results of its Nuclear Posture Review (NPR), including a revision in U.S. declaratory policy. Noting that the strategic situation has changed in fundamental ways—together with the advent of U.S. conventional military preeminence and continued improvements in U.S. missile defenses and capabilities to counter and mitigate the effects of chemical and biological weapons—the administration stated the United States is now prepared to strengthen its negative security assurance by declaring that the United States will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the NPT and in compliance with their nuclear nonproliferation obligations.

In making this declaration, the administration stated that the United States reserves the right to make any adjustments in the assurance that may be warranted by the evolution and proliferation of the biological weapons threat and U.S. capacities to counter that threat. Finally, noting that there remains a narrow range of contingencies in which U.S. nuclear weapons may still play a role in deterring a conventional, chemical, or biological attack against the United States or its allies and partners from states that possess nuclear weapons and states not in compliance with their nonproliferation obligations, the NPR stated that the United States is not prepared at present to adopt a universal policy that deterring nuclear attack is the sole purpose of nuclear weapons, but will work to establish conditions under which such a policy could be safely adopted.

The 2010 NATO Strategic Concept, however, does not appreciably move in the direction of the new U.S. (or U.K.) declaratory policy, instead stating a more general and ambiguous formula: “The circumstances in which any use of nuclear weapons might have to be contemplated are extremely remote”\footnote{NATO, “Active Engagement, Modern Defense,” 19 November 2010, paragraph 17, http://www.nato.int/lisbon2010/strategic-concept-2010-eng.pdf.}—identical to language from the 1999 NATO Strategic Concept.\footnote{NATO, The Alliance’s Strategic Concept, 24 April 1999, paragraph 64, http://www.nato.int/cps/en/natolive/official_texts_27433.htm.}
3. Other Possible Elements of Deterrence

For over six decades, the existence of the NATO alliance—linking North American and European security through the combined political and military capabilities of NATO member states—has broadly served as a deterrent to all forms of aggression. For this to continue, NATO must agree on defense priorities in a new security context, and then match these priorities to capabilities, in particular in the area of conventional forces.

More flexible, mobile, and versatile conventional force capabilities are generally regarded as more suitable to the new security context and a more effective deterrent to aggression today than the powerful but static conventional defense capabilities that were the focus of NATO defenses during the cold war. At the Riga summit in 2006, Alliance leaders committed to developing national land forces that were at least 40 percent deployable and 8 percent deployable on a sustainable basis (targets that were later raised to 50 percent and 10 percent).

Such a transformation, however, will require additional resources as well as defense reforms in many NATO member states—and such a commitment of resources or reforms is by no means certain. Today, only six of twenty-six European NATO member states contribute at least 2 percent of their GDP to defense; and only about a dozen have met goals for making military forces deployable and sustainable, resulting in a significant gap between U.S. capabilities and the rest of NATO’s. As stated by the NATO Experts Group, “a significant distance still separates potential missions and available capabilities.”

At the November 2010 NATO Lisbon Summit, allies pledged to “sustain the necessary levels of defense spending, so that our armed forces are sufficiently resourced” and to “maximize the deployability of our forces, and their capacity to sustain operations in the field,

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141 Ibid., paragraph 19.
including by undertaking focused efforts to meet NATO’s usability targets,”
noting that, “Particularly in light of these difficult economic times, we must exercise the utmost financial responsibility over defense spending.”

Finally, as this transformation in capabilities unfolds, there are elements—such as missile defense—whose net effect on strengthening deterrence will depend on whether they can be implemented cooperatively, both within NATO and between NATO and Russia. At the Lisbon Summit, NATO agreed to “develop the capability to defend our populations and territories against ballistic missile attack as a core element of our collective defense” and to “actively seek cooperation on missile defense with Russia and other Euro-Atlantic partners.”

As noted, Russia continues to view the evolution of NATO conventional force capabilities and missile defense through the lens of its own security—and Russian perceptions of NATO will obviously factor in to the Russian deterrence calculus, including nuclear deterrence.

4. IMPLICATIONS FOR NUCLEAR SECURITY PROJECT
(VISION AND STEPS) AGENDA

In the aftermath of President Obama’s 2009 Prague speech proclaiming support for the vision of working toward a world free of nuclear weapons, certain NATO countries—e.g., Germany, the Netherlands, Belgium, Luxembourg, and Norway—have made clear they embrace the vision, want less of an emphasis on the nuclear component in NATO’s deterrence policy, and support the objective of withdrawing all NSNF from Europe. That said, some NATO countries—including France and some new member states—still see NSNF as symbolic of

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142 Ibid., paragraph 37.
NATO cohesion and commitment to collective defense and link any NATO action to action on the part of Russia.

On nuclear policy and the question of the continuing deployment of U.S. tactical nuclear weapons in Europe, the new NATO Strategic Concept appears to be a flexible framework that points in the direction of further change, including further consolidation and reductions. Specifically, the Concept:

- Clearly commits NATO to “the goal of creating the conditions for a world without nuclear weapons, but reconfirms that, as long as there are nuclear weapons in the world, NATO will remain a nuclear Alliance”\(^{145}\)
- States, “Deterrence, based on the appropriate mix of nuclear and conventional capabilities, remains a core element of our overall strategy”\(^{146}\) and “The supreme guarantee of the security of the Allies is provided by the strategic nuclear forces of the Alliance, particularly those of the United States; the independent strategic nuclear forces of the United Kingdom and France, which have a deterrent role of their own, contribute to the overall deterrence and security of the Allies”\(^{147}\)
- States that NATO will “ensure the broadest possible participation of Allies in collective defense planning on nuclear roles, in peacetime basing of nuclear forces, and in command, control, and consultation arrangements”\(^{148}\)
- States that NATO “will seek to create the conditions for further reductions [in nuclear weapons stationed in Europe] in the future” and that “In any future reductions, our aim should be to seek Russian agreement to increase transparency on its nuclear

\(^{145}\) Ibid., Preface.
\(^{146}\) Ibid., paragraph 17.
\(^{147}\) Ibid., paragraph 18.
\(^{148}\) Ibid., paragraph 19.
weapons in Europe and relocate these weapons away from the
territory of NATO members. Any further steps must take into
account the disparity with the greater Russian stockpiles of
short-range nuclear weapons.”149

But it is also clear that NATO has more work to do to hammer out
a NATO consensus on strategy and tactics with respect to tactical
nuclear weapons, in particular with respect to engaging Russia. In
the Lisbon Summit Declaration, the North Atlantic Council (NAC)
was tasked to review NATO’s overall posture in deterring and defend-
ing against the full range of threats, including “the range of NATO’s
strategic capabilities required, including NATO’s nuclear posture,
and missile defense and other means of strategic deterrence and
defense.”150 The NAC was also tasked to establish a committee to
provide advice on WMD control and disarmament in the context of
this review.151

The new Strategic Concept therefore signals NATO’s openness to
further adjustments in its nuclear policies, along with a renewed com-
mitment to engage Russia on NSNF, leaving much of the detail to a
subsequent NATO nuclear review. This suggests NATO nuclear policy
and the role of nuclear weapons in NATO deterrence will remain a
front burner issue for the United States and NATO in 2011–2012.
Progress, however, will require the sustained engagement of NATO
political leaders and a commitment by NATO to address issues sur-
rounding alternatives for nuclear sharing, reassurance of allies, and
engaging Russia.

149 Ibid., paragraph 26.
151 Ibid., paragraph 31.
5. Issues for Consideration

- Are there alternatives to current arrangements for nuclear sharing, so the balance might be shifted from operational roles to planning ones?
- What are the benefits and risks involved in alternative means for providing reassurance to allies against future nuclear threats (for example through cooperation in the provision of territorial missile defense or conventional contingency planning in newer member states)?
- How can NATO and Russia move toward a cooperative concept of security, making conceptual and operational changes in both strategic and non-strategic nuclear postures as well as cooperating on missile defense and non-threatening conventional force deployments?

IV. Non-NPT Nuclear Weapon States and Potential Nuclear Weapon States

A. India

1. Security Context
India’s security context extends broadly to include two potentially hostile nuclear weapon states—Pakistan and China—each with significant conventional force capabilities and a legacy of hostility with India; it also includes increasing concerns regarding terrorism and the prospect of the use of WMD.

India’s best known and most unstable security problem is its age-old rivalry with Pakistan, due to which it has fought three wars and one short, sharp military engagement. Today, a weak Pakistani government and state make Pakistan potentially even more dangerous to India. The most sensitive part of the rivalry involves their conflicting claims to Kashmir, where India controls the parts that both countries care about most. Alienation of Kashmir’s Muslim population has generated periodic
insurgency there, which Pakistan and Pakistan-based militants have supported. In addition, India believes Pakistan has been exacerbating internal insurgencies in other parts of India and is implicated in terrorist attacks such as the 2008 attacks in Mumbai.

India’s security managers consider China to be their principal strategic threat. China’s larger nuclear arsenal, its network of relationships around the rim of the Indian Ocean, and especially its assistance over the years to Pakistan’s nuclear and missile programs are India’s most important concerns. At the same time, Sino-Indian relations have improved in some respects, including trade and environmental cooperation. India is carefully watching China’s military modernization and nuclear and missile programs. In addition, India’s rapidly growing need for imported oil and gas accentuates the importance of the Indian Ocean in its overall security outlook.

On a more positive note, U.S.-Indian relations have improved dramatically in the past two decades. The 2008 U.S.-Indian agreement on civil nuclear cooperation made it possible for India to engage in international nuclear trade with the United States and other members of the Nuclear Suppliers’ Group. That said, the U.S.-India agreement has also led to a new nuclear agreement between China and Pakistan, perhaps further cementing nuclear ties between India’s two potential adversaries.

2. Nuclear Component of Deterrence

India’s nuclear weapons program provides a deterrent with respect to two countries: Pakistan and China. Indeed, the dual challenge posed by China and Pakistan is reflected throughout India’s nuclear weapons program, where specific capabilities are being developed, tested, and deployed to provide a deterrent tailored to both nations.

India’s nuclear weapons program was initially spurred by India’s defeat in a 1962 war with China and by China’s 1964 nuclear test. In 1974, India tested a fission device, describing the test as a “peaceful nuclear explosion.” In the late 1980s, now prompted by advances in Pakistan’s nuclear program, India moved forward with weaponization of its nuclear program, developing the capability to deliver nuclear weapons using aircraft and missiles. In 1998, India conducted two rounds of nuclear tests, after which it formally declared India’s nuclear status. Pakistan’s nuclear tests followed weeks later.

There are questions surrounding the yield and reliability of India’s nuclear devices, based on independent analysis of India’s 1998 tests suggesting the announced yield of the thermonuclear device was less than claimed, perhaps indicating a failure. The Indian government, however, continues to refute any allegations that it has not successfully tested a fusion device.

The *Bulletin of the Atomic Scientists* has estimated that India has approximately seventy assembled warheads, based on estimates of the stockpile of weapons-grade plutonium that India has produced. Currently, India does not maintain a constituted nuclear force on alert; however, India has the capability to deploy nuclear payloads on aircraft and short- and medium-range ballistic missiles rapidly during a crisis. Longer-range land-based ballistic missile, cruise missile, and submarine-launched ballistic missile programs are under way, as India appears committed to pursuing a triad of nuclear delivery systems.

Since conducting nuclear tests in 1998 and declaring itself a nuclear weapon state, India has based its nuclear defense and deterrence policy on two principles. First, it has stated its intention to maintain a “credible minimum nuclear deterrent,” requiring a comprehensive and integrated nuclear defense capability. Government spokesmen have avoided publicly defining “credible minimum”; they have also indicated, at least...
indirectly, that it does not mean that India needs to match China in the number of nuclear weapons. Second, India has declared a policy of No First Use, specifying that “nuclear weapons will only be used in retaliation against a nuclear attack on Indian territory or on Indian forces anywhere,” noting that “nuclear retaliation to a first strike will be massive and designed to inflict unacceptable damage” and with the qualification that “in the event of a major attack against India, or Indian forces anywhere, by biological or chemical weapons, India will retain the option of retaliating with nuclear weapons.”\textsuperscript{154} India sees its nuclear doctrine as overwhelmingly defensive and focused on deterrence—a doctrinal clarity India sees as more advantageous to deterrence than more numerous or vague redlines that exist in other states.\textsuperscript{155}

Finally, India has established a Nuclear Command Authority (NCA) controlled by civilian authorities (though actual control of the specific delivery systems reportedly remains with individual services).

3. Other possible elements of deterrence

India is not a member of any military alliance or strategic grouping. For this reason, India does not then derive any additional increment of deterrence through an overt alliance or security accord—which also has led New Delhi to conclude that India thus requires a certain independent deterrent capability.

India does possess conventional forces that give it the capability to conduct deep offensive operations into Pakistan. Pakistan by comparison does not have the capability to press for a strategic advantage with its conventional capabilities; it has instead focused on sub-conventional warfare and infiltration, such as the movement of Pakistani forces into


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the Kargil area in Kashmir in 1999. While this conventional imbalance in favor of New Delhi probably provides an additional layer of deterrence from India’s perspective vis-à-vis Pakistan, it also provides an incentive for Pakistan’s nuclear program.

4. Implications for Nuclear Security Project (Vision and Steps) Agenda

India’s nuclear program is directly related to some NSP steps. In particular, Indian signature and ratification of the CTBT are required for the test ban treaty to enter into force, and would almost certainly be a prerequisite for Pakistani adherence to CTBT. Indian participation would also be required for a meaningful FMCT.

With respect to CTBT, after its May 1998 nuclear tests India announced it would abide by a self-imposed testing moratorium and declared it would not be the first state to resume nuclear tests.

Following an extended series of discussions with the United States, the then-Indian prime minister made a carefully qualified pledge in late 1998 not to block the entry into force of the CTBT. However, the U.S. Senate’s rejection of the test ban in the fall of 1999 effectively ended any chance of securing Indian signature in the near-term—a period extended by the Bush administration’s refusal to seek Senate approval of the treaty.

Today, India’s position with respect to CTBT is perhaps the most immediate and important India-specific issue relating to the vision and steps agenda. India will not seriously consider the CTBT unless the United States ratifies the treaty; and even with U.S. ratification, China may need to ratify before India, and Pakistan may need to commit to ratify simultaneously with New Delhi. Even if all of these pieces are in place, Indian adherence to CTBT will be a difficult step for any Indian government.

With respect to the FMCT, India has participated in discussions at the Conference on Disarmament on an FMCT, and stated in 2007 that it would not pose a hurdle toward any movement on drafting an FMCT. India supports an FMCT applied to new production that is “universal, non-discriminatory, and internationally and effectively verifiable”—conditions that will require the adherence of both China and Pakistan.

More broadly, Indian strategic thinkers will argue that deterrence between India and Pakistan is stable, noting that neither side has deliberately taken escalatory steps. They believe the focus for nuclear threat reduction should be on the safety and security of Pakistan’s nuclear assets and further steps by the United States, Russia and China—not on Indian nuclear forces.

India continues to support at least rhetorically the conclusion of a “time-bound framework” for nuclear disarmament that was first put forward by then-Prime Minister Rajiv Gandhi in 1988. Since President Obama’s Prague speech, officials from the prime minister on have welcomed the increasing global attention to nuclear disarmament. Most recently, the Indian prime minister publicly expressed India’s support for a global agreement among nuclear weapon states on No First Use of nuclear weapons and, ultimately, to an agreement on non-use of nuclear weapons against non-nuclear weapon states.157

Broader constraints on India’s nuclear weapons program would almost certainly require dramatic changes in its relations with both China and Pakistan. Most recently, the Indian government announced in September a major policy shift in Kashmir, which may be the beginning of a new process of political dialogue on this issue.158

Finally, the U.S.-India civil nuclear agreement made it possible for India to engage in international nuclear trade outside the NPT frame-

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work. This is not without cost vis-à-vis nonproliferation and arms control: Pakistan now seeks a similar agreement, and it has complicated efforts to bring Pakistan into FMCT talks.

5. **Issues for Consideration**

- What actions if any by Pakistan and China might influence India’s nuclear force deployments and posture over the next decade? Could a No First Use pledge by the United States, Russia, China, the United Kingdom and France influence Indian actions?
- Along with U.S. and probably Chinese ratification, can a commitment to CTBT safeguards provide a context for Indian signature and ratification of the CTBT? (These conditions would be similar in concept to those undertaken by the United States in 1995: e.g., commitment to a stockpile stewardship program and the maintenance of modern laboratory facilities, combined with a reaffirmation of the CTBT’s supreme national interest clause.)
- What specific actions (that is, beyond existing agreements on nuclear risk reduction) might be taken vis-à-vis Pakistan to provide for a more stable near-term deterrence and, over time, a foundation for moving away from nuclear deterrence?

**B. Pakistan**

1. **Security Context**

Pakistan’s external security environment today retains a heavy dose of historical animosity vis-à-vis India combined with high levels of instability along the Pakistani-Afghan border directly linked to internal political instability within Pakistan.

Pakistan continues to view India as a major external threat, possessing large conventional and nuclear forces that could threaten the Pakistani state. Pakistan views India’s continuing possession of the Muslim-majority Valley of Kashmir as the heart of its six-decade rivalry with
India, and has stoked the fires of insurgency there on a number of occasions in the two countries’ stormy history.

Pakistan has been a critical partner for the United States in its military involvement in Afghanistan and has maintained a substantial military presence along the Pakistan-Afghanistan border. Pakistan has traditionally had a difficult relationship with Afghanistan. Pakistan’s desire to maintain the dominant influence in Kabul has led it to maintain ties with some of the Taliban groups that are the mainstay of the insurgency there; and inside Pakistan, local militant groups, including the Pakistani Taliban, have been conducting an insurgency against the Pakistani state. The largest ethnic group in Afghanistan, the Pashtuns, straddles the border with Pakistan. Except during the time of the Taliban government, Afghanistan has generally had good relations with India, a situation Pakistan regards as threatening.

One result of this complex security situation is a mercurial relationship with the United States. Pakistan continues to receive substantial economic and military assistance from the United States; however, it is troubled by expanding U.S. ties to India (as seen in its nuclear deal with that country, but refusal to have a similar agreement with Pakistan). Doubts as to Washington’s continued engagement in the region and commitment to Pakistani security persist in Islamabad.

Finally, Pakistan has had extremely close political and security ties to Beijing for nearly half a century, in particular in the nuclear field. Beijing has recently agreed to supply two nuclear reactors to Pakistan’s Chashma nuclear complex, where China has already built one reactor and is constructing a second. The issue of the Chinese sale is currently being discussed within the Nuclear Suppliers Group (NSG).

2. **Nuclear Component of Deterrence**

Two recent statements by prominent Pakistanis encapsulate both the rationale and future for Pakistan’s nuclear weapons program. In an

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interview published in *Newsweek* in September, Pakistani nuclear scientist Dr. A.Q. Khan said that Pakistan’s nuclear weapons have prevented a conventional war with India, stating, “Our nuclear program has ensured our survival, our security, and our sovereignty.”

Three months earlier, the Chairman of Pakistan’s Joint Chiefs of Staff Committee, General Tariq Majeed, reiterated that nuclear weapons are the basis for the country’s minimum deterrence strategy and that they would be retained at any cost.

Pakistan’s nuclear weapons program began in the 1970s, prompted by successive conflicts with India and fueled by New Delhi’s own nuclear weapons program. By the mid-1980s, Pakistan had a clandestine uranium enrichment facility; by the end of the decade, the United States concluded that Pakistan had the ability to manufacture a nuclear device. In the late 1990s, Pakistan also acquired the capability to produce plutonium for weapons. According to the *Bulletin of the Atomic Scientists*, the Pakistani arsenal today is comprised of about sixty warheads. China has provided significant assistance to Pakistan’s nuclear weapons program.

Following Indian nuclear tests, Pakistan conducted a series of nuclear tests in May 1998 and declared itself a nuclear weapon state. Today, Islamabad appears to be expanding and diversifying its nuclear weapons capability by pursuing uranium enrichment and plutonium production, as well as aircraft and short- and medium-range ballistic and cruise missiles that can target much of India. Perceptions in Islamabad of a growing conventional imbalance in favor of India could lead Pakistan to proceed with a more visible nuclear posture, including the deployment of nuclear weapons at higher levels of alert.

Pakistan has not formally issued a “nuclear doctrine.” However, Pakistan has publicly indicated that it would consider using nuclear weapons if India were to conduct large-scale conventional attacks.

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161 Ibid.
against Pakistan that resulted in the loss of territory; the destruction of a large part of its military; economic strangulation; or the political destabilization of the Pakistani state.\textsuperscript{162} There is also an apparent correlation between Pakistan’s acquiring a nuclear capability and a pattern of provocative behavior vis-à-vis India (through at least the 2001–2002 crisis), with Pakistan’s military believing its nuclear capacity serves as a “nuclear shield” against full-scale Indian retaliation.\textsuperscript{163} Unlike India, Pakistan has not adopted a policy of No First Use; the Pakistani military remains the main decision-maker with respect to nuclear weapons.

3. Other possible elements of deterrence

The most prominent features of Pakistan’s “deterrent” beyond its nuclear and ballistic missile capability are its close bilateral relationships with China—a significant contributor to Pakistan’s nuclear and missile programs—and the United States. Both relationships aim to provide Islamabad with a degree of strategic reassurance vis-à-vis India (though neither is perceived as sufficient, even in combination with significant Pakistani conventional force capabilities, as a deterrent to New Delhi). Pakistan may also perceive its capability to support violent movements in Kashmir as an element of deterrence.

4. Implications for Nuclear Security Project (Vision and Steps) agenda

Pakistan’s nuclear program is also directly related to some NSP steps, such as CTBT, where Pakistani signature and ratification are required


for the test ban to enter into force; and a global FMCT, where Pakistan is currently singularly preventing negotiations from getting underway in the CD.

In the case of CTBT, Pakistan’s signature and ratification could only be expected after Indian adherence—and even then, the Pakistani government may not have the political space to take such a dramatic step. With respect to FMCT, a consensus work program was approved in May 2009 to begin FMCT negotiations in the CD; however, Pakistan changed its mind and has blocked the CD from moving forward, insisting any FMCT cover reduction of existing fissile material stockpiles and not just halt new production (to ensure India’s relatively larger fissile material stockpile is addressed). A senior U.S. official said on September 24 that it is “unwarranted for a single country to . . . frustrate everyone else’s desire to resume serious disarmament efforts” and “if we cannot begin these negotiations in the CD, then we will need to consider other options . . . The treaty is too important to allow the CD’s dysfunction and the interests of one state to dictate the pace of progress on disarmament.”164 Pakistani non-participation in FMCT negotiations outside the CD would, however, be a significant setback in concluding a global FMCT, and perhaps preclude both Pakistani and Indian adherence to any agreement.

Today, Pakistan’s willingness to move forward with CTBT or FMCT—or broader constraints on its nuclear weapons program that would involve greater transparency and verification—remain doubtful in the absence of another key NSP step: progress on “efforts to resolve regional confrontations and conflicts that give rise to new nuclear powers.” In the case of Pakistan and India, that will require progress on their large agenda of bilateral disputes, including the issue of Kashmir. India and Pakistan have talked about resuming their bilateral back-channel talks, but political problems on both sides have slowed this process.

Meanwhile, three months of disturbances in Indian-held Kashmir have further complicated the situation (though India’s recent political initiative regarding Kashmir announced September 26, 2010, could be a small step forward).

5. Issues for Consideration
   - Are there opportunities for the United States and China, separately or together, to influence Pakistan’s nuclear force deployments and posture over the next decade?
   - What are the most significant risk factors that could lead to a breakdown in the India-Pakistan deterrence equation, and how might they be mitigated in ways that strengthen deterrence?
   - Is there a process beyond bilateral India-Pakistani engagement that could help facilitate a more stable near-term deterrence and, over time, a foundation for moving away from nuclear deterrence? If not, what might be done to invigorate the bilateral India-Pakistan track?

C. Israel

1. Security Context
From the beginning of its creation in 1948, Israel has always believed that it is under constant and severe threat. As a tiny landmass situated among historically hostile neighbors, having fought several wars with states in the region, engaged in an ongoing struggle against terrorism, accused by many of “stealing” or “occupying” land rightfully belonging to the Palestinians, and with few steadfast allies other than the United States, Israeli strategic culture is imbued with the idea that the Jewish state must be able to fend for itself. As a state created soon after the horrors of the Holocaust and with a strong commitment to the mantra of “Never Again,” national survival is not something that Israel takes lightly or for granted.
From Israel’s perspective, threats abound. Although relations with some traditional adversaries in the region have improved in recent decades, most notably with Egypt and Jordan, Israel’s relations with other Arab neighbors, as well as with Hamas and Hezbollah, remain hostile. The 2006 war in Lebanon and Israel’s 2007 strike on a suspected nuclear site in Syria reinforced Israel’s continued perception of a dynamic and dire regional security environment and demonstrated its willingness to use force if necessary.

Over the last few years, Iran has been at the top of the list of Israel’s principal security concerns. Iran’s continued uranium enrichment program, as well as numerous statements by Iranian President Mahmoud Ahmadinejad denying the Holocaust and questioning Israel’s legitimacy and right to exist, convinced the Israeli public and leadership that a nuclear-armed Iran poses a significant threat to its security. According to Israeli Prime Minister Benjamin Netanyahu, Iran “is a great danger to all of us, to Israel specifically, and to the moderate Arab regimes, [and] to America.” In Tel Aviv’s view, a nuclear-armed Iran would not only pose a direct nuclear threat to Israel, but also would embolden Iran to more vigorously support terrorist groups fighting against Israel, spark an arms race in the Middle East, and generate internal instabilities in neighboring states as Shiite minorities rise up and make new demands on Sunni leaders. Given these possibilities, Israel has consistently stated that is reserves the right to strike Iranian nuclear facilities if the nuclear standoff is not resolved through diplomacy, and has argued that it is under no obligation to inform or seek permission from the United States before an attack.

2. **Nuclear Component of Deterrence**

Israel has always believed that nuclear weapons are necessary for its security. David Ben Gurion, Israel’s first prime minister, was firmly convinced that Israel was (and would continue to be) under constant threat, and therefore the Jewish state needed to rely on science and technology—and in particular nuclear weapons—for its security, as this was one area in which he was confident that Israel could out-perform its adversaries. In 1956, he wrote, “What Einstein, Oppenheimer and Teller, the three of them are Jews, made for the United States, could also be done by scientists in Israel for their own people.” In his view, nuclear weapons provided Israel with an “insurance policy” if it could not successfully compete in a conventional arms race with its Arab neighbors, as well as a weapon of last resort in case of an extreme onslaught.168

With a steadfast commitment to an Israeli nuclear weapon, beginning in the 1950s Ben Gurion and others set out to develop the infrastructure, human capital, and international suppliers required for a secret atomic bomb project. France played a key role in Israel’s nuclear program, agreeing after Israeli support in the 1956 Suez Crisis to provide sensitive nuclear assistance and equipment. By at least the mid-1960s, Israel had developed a nuclear weapons capability. On the eve of the Six-Day War in June 1967, Israel reportedly assembled two deliverable nuclear devices, although the leadership ultimately decided not to directly or indirectly inject a nuclear dimension into the conflict.169 Though still under debate, some scholars contend that during the Yom Kippur War in October 1973 the Israeli leadership instructed the military to alert its nuclear-capable Jericho missiles and arm eight F-4 Phantom jets with nuclear weapons, ostensibly to signal the United States and the Soviet Union (and, by extension, the Arab

states in the region) about the gravity of the situation and to encourage
the United States to undertake an emergency airlift of military equip-
ment and supplies to Israel to support the war effort.170

Compared to all other nuclear-armed states, Israel is unique in that
it has never admitted to having nuclear weapons. Since the 1960s,
Israel has said only that it “will not be the first to introduce” nuclear
weapons into the Middle East. In international relations theory, Israel
is defined as an “opaque” nuclear state—a nation that, while not
admitting to a nuclear capability, is widely believed to have nuclear
weapons. This belief factors into the calculations of others.171 The
concept of nuclear opacity is not merely an academic term. In Israel,
the Hebrew word animut, meaning “opacity” or “ambiguity,” is used
in reference to the country’s official nuclear policy.172 The codifi-
cation of this policy dates to September 26, 1969, when President Nixon and
Israeli Prime Minister Golda Meir reached a secret agreement in which
Israel agreed not to announce, test, or overtly threaten anyone with its
nuclear capabilities, and in return the United States agreed to cease its
visits to the once-secret Israeli nuclear site at Dimona and to stop pres-
suring Israel to sign the Non-Proliferation Treaty.173

To be sure, while offi cial Israeli policy has remained committed to
not confi rming nuclear possession, it also has not denied it. Israeli

170 See, for example, Seymour M. Hersh, The Sampson Option: Israel, America, and the


173 See Ibid., chap. 1; and Avner Cohen and Marvin Miller, “Bringing Israel’s Bomb Out of the Basement,” Foreign Affairs (September–October 2010), p. 34.
officials recognize that a completely secret nuclear capability would not be an effective deterrent. As such, Israel has employed a form of subtle and unofficial nuclear signaling—leaks, rumors, and veiled statements—to convey a nuclear danger to current and potential adversaries.\textsuperscript{174} For example, after reaffirming Israel’s commitment not to be the first to introduce nuclear weapons into the region, Prime Minister Itzhak Rabin indicated that it would not be the second, either. According to Rabin, “I believe that we cannot afford to be the second country to do so. But we will have to be neither the first nor the second to introduce such weapons.” Similarly, in 1978 Moshe Dayan said, “Israel possesses the scientific and technological capacity to produce the atomic bomb—in case the Arabs threaten to use such a bomb—but Israel would never be the first to open nuclear warfare in the Middle East.” In response to Saddam Hussein’s threat to use chemical weapons against Israel in the first Gulf War, Rabin, then Israeli defense minister, said, “We have the means for a devastating response, many times greater than [the magnitude of] Saddam Hussein’s threats.”\textsuperscript{175}

Given the lack of discussion and debate in Israel about nuclear weapons, there is no official information regarding the role of nuclear weapons in Israeli national security, what kinds of scenarios might necessitate nuclear use, or employment and targeting doctrine. However, indirect evidence suggests that Israel regards nuclear weapons as a deterrent against existential threats—situations that endanger the survival of the state. Nuclear weapons, according to this view, are weapons of last resort. From this perspective, nuclear weapons serve as the ultimate guarantor of Israel’s security, and are not intended for war-fighting purposes or for use in situations that do not directly


\textsuperscript{175} See Shai Feldman, \textit{Nuclear Weapons and Arms Control in the Middle East} (Cambridge, MA: MIT Press, 1996), chap. 3.
threaten national survival. Threats that jeopardize the state might include a successful Arab penetration into Israel; the destruction of the Israeli Air Force; conventional strategic bombing campaigns against Israeli cities; the use of chemical or biological weapons in mass-casualty attacks; and the use of nuclear weapons on Israeli territory. Interestingly, it appears that some Israeli strategists believe that, given its policy of opacity, it is necessary for political purposes for Israel to issue some kind of warning before using nuclear weapons. Consequently, Israeli nuclear doctrine might call for a “demonstration” or “warning” shot before nuclear weapons are used against important targets.

3. OTHER POSSIBLE ELEMENTS OF DETERRENCE

Since nuclear weapons are intended only to deter or respond to threats to its existence, conventional forces play an important role in Israel’s deterrence strategy. Israel possesses one of the most advanced and battle-tested militaries in the world, and these forces have been used to deter both small- and large-scale attacks, particularly from its Arab neighbors.

Israel’s conventional deterrence strategy has traditionally been based on a combination of deterrence by punishment and deterrence by denial. Israel has used its military capabilities both to threaten to defeat aggression and to prevent its adversaries from achieving their objectives (denial), as well as the threat to inflict pain on the opponent in retaliation (punishment). While ultimately defensive in nature, Israel’s conventional deterrence doctrine has been based on the threat of a rapid offensive against an opponent designed to achieve a quick, decisive

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177 Ibid., pp. 252–253.
victory. For Israeli strategists, an offensive-oriented deterrence strategy, rather than a defensive posture that waited for an enemy attack on Israeli territory, is necessary because Israel lacks strategic depth. As a small landmass, Israeli officials contend that successful conventional deterrence requires the ability to project power and fight quickly and effectively on the opponent’s soil. In case of a conventional deterrence failure, Israeli officials have argued that deterrence can be “restored” by executing a rapid penetration of the opponent’s territory, destroying a large part of its military, and seizing territory that can then be used for bargaining purposes.

Although successful deterrence—whether conventional or nuclear—is nearly impossible to definitively prove, some scholars argue that Israeli conventional deterrence has been effective against Arab aggression. Despite the major conflicts in 1967 and 1973, as well as Iraqi Scud attacks in 1991, these scholars contend that the long periods of the absence of major conflict were the result of successful deterrence.

A more difficult issue, however, is Israeli deterrence of terrorist attacks. On balance, it does not appear that Israel’s conventional (or nuclear) forces have been an effective deterrent against terrorism. Israel’s repeated retaliations after terrorist attacks do not appear to have deterred or otherwise lessened the threat, and in some cases retaliatory strikes may have further inflamed the conflict and provided additional motivation for future attacks.

4. Implications for Nuclear Security Project (Vision and Steps) Agenda

Overall, Israel has not been an enthusiastic participant in international arms control and disarmament efforts. While Israel has signed (but not

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180 Ibid., p. 332.
181 See, for example, Yair Evron, Israel’s Nuclear Dilemma (Ithaca: Cornell University Press, 1994), chap. 2; and ibid., p. 333.
ratified) the CTBT, supports in principle the creation of a Nuclear Weapons Free Zone in the Middle East, and occasionally pays lip service to broader arms control and abolition initiatives, at this point Israel is unwilling to take meaningful actions. While there have been repeated calls by the international community, including at the 2010 NPT Review Conference, for Israel to join the NPT, Tel Aviv remains unwilling to sign the treaty.

As a declaratory policy, Israel has always been a proponent of global and verifiable nuclear abolition. In practical terms, however, Israel believes that disarmament, if it can be achieved at all, is at best a very distant goal. Israel attaches several preconditions to progress toward a NWFZ and disarmament, most importantly the resolution of regional conflicts and the creation of an atmosphere of peace and trust.\(^\text{182}\) In Israel’s view, disarmament should not be the goal in itself; rather, the primary objective should be to create a lasting peace and normalization of relations. If this can be achieved, disarmament would naturally follow.\(^\text{183}\)

Israel’s central perspective on the international arms control and abolition agenda is best characterized by its fear of a “slippery slope towards premature nuclear disarmament.”\(^\text{184}\) Tel Aviv is concerned that international enthusiasm for further arms control and eventual abolition could lead to unwise decisions by nuclear-armed states that result in a less stable and more dangerous security environment. In order to prevent this situation, Israel believes that arms control and disarmament should be done slowly and carefully, with particular attention to the details. In this context, Israel attaches great importance to confidence building measures (CBMs) and robust verification mechanisms and procedures. According to one Israeli official, the process

\(^\text{182}\) Feldman, *Nuclear Weapons and Arms Control in the Middle East*, p. 244.


of disarmament in the Middle East should begin with CBMs, which would be followed by a normalization of relations; conventional arms control agreements; and then the creation of a mutually verifiable NWFZ.\textsuperscript{185}

5. ISSUES FOR CONSIDERATION

- Under what conditions might Israel decide to announce that it has nuclear weapons? Are there situations in which Israel might decide to test a nuclear weapon?
- What kinds of concrete measures would facilitate the normalization of relations in the region that would allow for progress toward arms control, a Middle East NWFZ, and abolition?
- In the event of an existential threat to Israel’s security, how might Israel use nuclear weapons? What kinds of targets would be attacked?

D. North Korea

1. SECURITY CONTEXT

North Korea’s external security environment is hard to divorce from its internal security, in particular the overarching imperative of preserving the DPRK regime. In this context, maintaining the perception of an existential threat to the state remains an important factor in regime legitimacy—one that must be balanced against opportunities for improving relations with historic enemies.

The North Korean leadership also believes South Korean and United States military forces (with Japan as a staging area) present a serious threat to its survival. Moreover, the trends as viewed from Pyongyang are ominous: as noted in the 2010 Annual Threat Assessment of the U.S. Intelligence Community presented by the Director of National

\textsuperscript{185} Ibid., p. 37.
Intelligence (DNI) to Congress, the North Korean leadership perceives the gap between North and South Korean conventional military capabilities to be “overwhelmingly great” in favor of the South and prospects for reversal of this gap “remote.”

Diplomatically and economically, the DPRK is isolated from much of the world, relying largely on China—a very important exception to its isolation, more so now than in many years—for essential economic and diplomatic support, as well as on arms sales to a handful of nations for hard currency. The DPRK had been slowly opening its economy over the past decade, including trade with South Korea (25 percent of total imports, second to China at 57 percent in 2008) and, recently, India (imports of $1 billion last year, most of that in refined petroleum products). However, in the aftermath of the sinking of a South Korean warship, the Cheonan, South Korea announced in May it was stopping all trade and most investment in North Korea; the United States imposed further economic sanctions in July. More broadly, the Cheonan incident has led to closer diplomatic and security ties between Washington, Seoul, and Tokyo, increasing Pyongyang’s isolation—and dependence on Beijing.

2. **Nuclear Component of Deterrence**

In 1999, the Perry report on U.S. policy toward North Korea concluded: “deterrence of war on the North Korean Peninsula is stable on

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both sides, in military terms."190 More than a decade later, maintaining stability may be from Pyongyang’s perspective increasingly dependent on the North’s possession of a nuclear weapons capability. While the DPRK still possesses large conventional forces—the foundation of its deterrent against South Korea and the United States for decades—it may view these forces as insufficient today and for the foreseeable future as a deterrent to external attacks on the state and regime.

The 2010 Annual Threat Assessment reported that North Korean conventional capabilities are limited by a number of factors, including aging weapons, low production of military combat systems, deteriorating physical condition of soldiers, reduced training, and increasing diversion of the military to infrastructure support. In addition, inflexible leadership, corruption, low morale, obsolescent weapons, a weak logistical system, and problems with command and control serve as constraints on capabilities and readiness. For all of these reasons, the report concludes that Pyongyang relies on its nuclear program to deter external attacks, and that while there are other reasons for the North to pursue its nuclear program, “redressing conventional weaknesses is a major factor and one that Kim and his likely successors will not easily dismiss.”191 Beyond deterrence of external attacks, the DPRK may also view its nuclear program as a tool for coercive diplomacy, a source of hard currency, and a means to extract external aid from other nations in exchange for concessions relating to its nuclear file.

To what extent U.S. missile defense or plans to develop “prompt global strike” capacity affect North Korean decision-making regarding its nuclear program is unknown. The North Korean drive to produce nuclear material for a weapon began decades ago, prior to the emer-


gence of these U.S. programs and capabilities, so in that sense they are unrelated. That said, North Korean perceptions of U.S. and allied defense programs, capabilities, and intentions all appear to be factors in the North’s commitment to its nuclear program—specifically the perception that North Korean conventional capabilities are falling further behind those of South Korea and the United States.

Over the past eight years, North Korea has made important advances in its nuclear program and capabilities. In December 2002, North Korea ended an eight-year suspension of its known plutonium production program, expelled IAEA inspectors, and restarted facilities that had been frozen under the 1994 Agreed Framework. In January 2003, North Korea declared its withdrawal from the NPT, and in February 2005 announced it had manufactured nuclear weapons. In October 2006, it tested a nuclear weapon. In September 2007, Israel attacked a site in Syria reported to be a partially constructed nuclear reactor, modeled on North Korea’s—underscoring the possibility of an indigenous DPRK covert plutonium production infrastructure. In May 2009, North Korea conducted a second nuclear test, and in November 2009 claimed it had again reprocessed spent fuel at Yongbyon and had begun to weaponize the resulting plutonium. In February 2010, the DNI concluded that “while we do not know whether the North has produced nuclear weapons, we assess it has the capability to do so.”

Beyond its plutonium program, there is also evidence dating back to at least 2002—when the United States first raised the issue with the DPRK—pointing to a North Korean uranium enrichment program, a second route to producing material for a bomb. Pakistani President Musharraf revealed in his September 2006 memoir, In the Line of Fire, that Pakistani scientist Abdul Qadeer Khan “transferred nearly two dozen P-1 and P-2 centrifuges to North Korea” (during the late 1990s).

In 2009, following the June 12 U.N. Security Council Resolution

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condemning North Korea’s nuclear test, Pyongyang stated publicly, “The process of uranium enrichment will be commenced” and “pursuant to the decision to build its own light-water reactor, enough success has been made in developing uranium enrichment technology to provide nuclear fuel to allow the experimental procedure.” Later in 2009, North Korea claimed it was conducting “experimental uranium enrichment,” and in March 2010 stated it would produce low-enriched uranium for its own light water nuclear power reactor in the “near future in the 2010s.” A recent study published by the Institute for Science and International Security (ISIS) concluded that North Korea has moved beyond laboratory-scale work and has the capability to build, at the very least, a pilot-scale gas centrifuge plant.194

On November 12, 2010, a group of Americans from Stanford University visiting the Yongbyon Nuclear Complex was shown a twenty-five-megawatt to thirty-megawatt electric experimental light-water reactor in the early stages of construction and a new facility that contained a modern, small industrial-scale uranium enrichment facility with 2,000 centrifuges that was recently completed and said to be producing low-enriched uranium destined for fuel for the new reactor. While the Americans saw no new evidence of continued plutonium production at Yongbyon, the uranium enrichment facilities could be readily converted to produce highly enriched uranium (or parallel undisclosed facilities could exist elsewhere) and the new light water reactor could, if completed, be run in a mode to produce plutonium potentially suitable for bombs.195

A 2009 Congressional Research Service (CRS) report stated North Korea is now estimated to have between thirty and fifty kilograms of

separated plutonium, enough for at least half a dozen nuclear weapons. North Korea’s 5MWe reactor has been shut down since July 2007, and its cooling tower was destroyed in June 2008. Observations by the visiting Americans from Stanford in November 2010 confirm that the 5 MWe reactor appears dormant or is in standby status with regular maintenance. The Americans also observed that the 50MWe reactor was being dismantled with large cranes, and the CRS report states that no construction has occurred at the 200MWe reactor since 2002 (which was years from completion when construction was halted). According to CRS, significant expansion in North Korea’s arsenal would be possible only if the two larger reactors were completed and operating, and would depend on progress in the uranium enrichment program\footnote{Beth Nikitin, “North Korea’s Nuclear Weapons: Technical Issues,” December 16, 2009, http://www.fas.org/sgp/crs/nuke/RL34256.pdf.}—assuming no covert heavy water reactor and reprocessing plant exists in the North. As of November 2010, it now appears that Pyongyang’s known plutonium production infrastructure is either frozen or being dismantled (though North Korea still retains in storage enough material to refuel the 5 MWe reactor once, and could restart the reactor over some period of time). More troubling is North Korea’s apparent progress in developing its uranium enrichment capabilities, and that a facility of equal or greater capacity than the one unveiled in November configured to produce highly enriched uranium exists elsewhere.

In 2007, the DNI reported to Congress that “North Korea has short- and medium-range missiles that could be fitted with nuclear weapons, but we do not know whether it has in fact done so.”\footnote{Ibid., p. 11.} In addition, DNI assessed in 2008 that the Taepo-Dong-2 missile has the potential capability to deliver a nuclear weapon-size payload to the United States, but that absent successful testing the likelihood of this is low.\footnote{Ibid.}
At the October 2010 DPRK military parade, North Korea unveiled a new missile—the BM 25/Musudan (a land-mobile and sea-based missile with an estimated range of 2,500–4,000 kilometers)—that if tested and deployed could target both Japan and Guam.199

3. Other possible elements of deterrence

Another element of North Korean deterrence is its chemical and biological weapons programs. The DPRK reportedly ranks among the world’s largest possessors of chemical weapons; according to defector accounts, DPRK’s missiles such as the Nodong and other ballistic missiles and artillery pieces are capable of delivering CW agents. North Korea is also suspected of maintaining an ongoing biological weapons program. Perhaps the most authoritative analysis was made in 2006 by South Korea’s Ministry of National Defense, which estimated that the DPRK possesses between 2,500 and 5,000 metric tons of biological agents including anthrax, smallpox, and cholera. Most official estimates appear to conclude that the DPRK possesses a range of pathogens that can be weaponized and the technical capabilities to do so rather than ready-to-use weapons. Moreover, in contrast to the DPRK’s considerable capabilities to deliver CW agents, it is much less clear whether comparable munitions are available to the DPRK to deliver BW agents.200

Finally, North Korea’s export of ballistic missiles and associated materials to several nations, and its assistance to Syria in the construction of a nuclear reactor, illustrate the reach of the North’s proliferation activities. While perhaps not currently related to North Korean perceptions of “deterrence,” these activities earn hard currency that aids the North’s ability to continue its nuclear program and illustrate future “deterrent” possibilities, including via transfers to terrorists.


4. **Implications for Nuclear Security Project (Vision and Steps) Agenda**

The continued existence of a North Korean nuclear weapons program and capability—and the failure of the international community to effectively end this program and bring the DPRK back into compliance with the NPT—undermines support for the vision and steps.

North Korea’s nuclear program is directly related to some NSP steps, such as CTBT, where North Korean signature and ratification are required for the test ban to enter into force, and a global FMCT, where North Korean participation would be desirable if not required (depending on what agreements if any are reached in the interim pertaining to the DPRK’s nuclear program).

In addition, the North’s continuing nuclear and missile programs provide the most immediate and compelling rationale for the U.S. missile defense program, which remains a factor in both Russian and Chinese deterrence calculations. Moreover, if unchecked, the North’s nuclear program may affect Japan’s and South Korea’s own deterrence calculations and provoke an arms race in the region. Here, the conclusion from the 1999 Perry report—that a DPRK nuclear capability might weaken deterrence as well as increase the damage if deterrence failed, and undermine the conditions for pursuing a relaxation of tensions, improved relations, and lasting peace—still holds.201

Finally, there are concerns relating to the possible transfer of nuclear material or weapons from North Korea to other nations or groups, including Iran, as well as concerns over the possible loss of nuclear material or weapons in the event of the collapse of the DPRK regime. Taken together, these problems also provide an easy reference for critics, one that can resonate with public officials and audiences.

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Today, North Korea’s willingness to verifiably dismantle its nuclear weapons program remains doubtful, given its value to regime survival in light of the increasing gap between North and South Korean (and U.S.) conventional capabilities and an apparent leadership transition. At a minimum, compared to a decade ago, the problem appears more complex following pursuit of uranium enrichment, additional plutonium production, and now two nuclear tests. CTBT ratification does not appear likely in the absence of a broader agreement pertaining to the DPRK’s nuclear program—though the CTBT’s value as a stand-alone measure is objectively less now that the DPRK has tested twice (and the regime now has the ability to test again at any time—with a track record of ignoring international commitments).

To what extent a resumption of six-party talks last convened in December 2008 could change this dynamic is also uncertain. Former President Jimmy Carter stated in September 2010 that during a recent trip to North Korea and China he received “clear, strong signals that Pyongyang wants to restart negotiations on a comprehensive peace treaty with the United States and South Korea and on the denuclearization of the Korean Peninsula.” He said that North Korean officials he met with referred to the six-party talks as being “sentenced to death but not yet executed.” Most recently, North Korea’s public unveiling of its light water reactor construction and uranium enrichment facility may be tied to a two-track strategy designed to restart nuclear negotiations with the United States and other members of the six-party talks. Whether this potential window for negotiations is real, or will remain open and for how long, is unclear, as is what aspects of the North’s nuclear program Pyongyang is willing to discuss.

5. Issues for Consideration

- How might the continuation or expansion of North Korea’s nuclear program affect deterrence as seen through the eyes of other Asian powers?
- To what extent are North Korea’s deterrence calculations dependent on, or sensitive to changes in, the North Korean leadership?
- What actions by the United States/South Korea/Japan might affect North Korea’s deterrence calculus?

E. Iran

1. Security Context

Over the course of the past decade, Iran has seen major changes in its security environment. The removal of Saddam Hussein from power in Iraq eliminated what had been both a strategic threat to the survival of the Iranian regime and the original impetus to restarting Iran’s current nuclear program. Tehran, however, now finds itself largely encircled by a combination of states—Turkey, Iraq, Kuwait, Saudi Arabia, Bahrain, Qatar, Oman, Pakistan, and Afghanistan—either allied with or friendly to the United States, some with significant American land, air and/or naval forces in place or the ability to support U.S. forces in a crisis. In addition, the United States maintains powerful naval and naval-air forces in and around the Persian Gulf and Gulf of Oman.

In the immediate aftermath of the U.S. invasion of Iraq in 2003, the Iranian regime may have viewed the United States as a strategic threat to its survival on par with Saddam Hussein’s Iraq, taking into account the rhetoric of “regime change” that was permeating the national security dialogue of the time. (This may have contributed to Iran’s willingness to enter into negotiations with France, Germany, and Great Britain and agree in October 2003 to cooperate with the IAEA, sign the NPT Additional Protocol, and temporarily suspend conversion and enrichment activities.) Today, while Tehran may see the United States
as less of a threat to its survival, it is undoubtedly true that Tehran still views Washington as a barrier to its ability to project Iranian power in the region, and still the most significant factor in Iran’s own political and military calculus.

Israel is also a factor in both Iran’s security context and its nuclear program. Iran’s pivotal role in the emergence of Hezbollah as a serious regional foe of Israel put Tehran on Israel’s borders by proxy. During the 2006 war between Israel and Hezbollah, an Israeli ship was nearly sunk by an Iranian-origin cruise missile and rockets supplied by Iran to Hezbollah inundated northern Israel. This more proximate—and deadly—dimension to the Iranian-Israeli conflict has heightened concerns in Israel as to the magnitude of the threat from Iran, and perhaps also underscored in Tehran the need for a deterrent to Israeli action.

Finally, Iran’s nuclear program has generated an international response in the form of United Nations Security Council resolutions and sanctions that affect Iran’s security context. Increasing political and diplomatic isolation, as well as pressure on targeted sectors of Iran’s military and economy, including banking, are a concern to Tehran.

2. Nuclear Component of Deterrence

The rationale for an Iranian nuclear weapons program may reflect a combination of factors. First would be self-defense, in the wake of the Iraq-Iran war and Iran’s continued isolation in the region. Second is status, given Iran’s self-image as a major power in the region and in comparison to other rising powers—and, in this context, Iran’s determination to prevent itself from being denied advanced technology and advanced weapons. The third factor is ambition (perhaps fueled or at least cloaked by an ideological dimension), given Tehran’s determination to extend its influence in the region. Also, from Tehran’s perspective an Iranian nuclear weapons capability could provide both greater

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freedom of action vis-à-vis Israel and insurance against an existential Israeli or American threat to the regime—with more security against an attack on its own territory, Iran would be freer to act elsewhere.

Iran’s interest in nuclear technology dates to the 1950s, when the Shah of Iran began receiving American assistance through the U.S. Atoms for Peace program. Although Iran became a party to the NPT in 1970 as a non-nuclear weapon state, the Shah of Iran (no enemy of Israel) may have had nuclear weapons ambitions that were subsequently limited by the 1979 Iranian Revolution, war with Iraq, and Khomeini’s reported opposition to nuclear technology.

In the 1990s Iran began pursuing an indigenous nuclear fuel cycle capability by developing a uranium mining infrastructure and experimenting with uranium conversion and enrichment. This program was publicly exposed in 2002 and 2003 by an Iranian opposition group, and then admitted to by the Iranian government.

According to the most recent report of the IAEA Director General, Iran has a total of 8,856 centrifuges installed at Natanz, with 3,772 enriching uranium (approximately the same number as the last IAEA report in May). Iran continues to operate older-generation centrifuges while continuing research on new models. Iran currently has a stockpile of 2,803 kg of Low-Enriched Uranium (LEU), enriched to a level below 5 percent U-235. Since February, Iran has been using a pilot enrichment facility (also at Natanz) to enrich uranium to roughly 20 percent and has accumulated a stockpile of 22 kg of 20 percent U-235.

The IAEA report again cited no breakthrough in resolving questions about reported work by Iranian scientists related to the design of a nuclear warhead. The agency said Iran has not engaged IAEA inspectors on this issue since August 2008 and expressed concern that “the passage of time and the possible deterioration in the availability of some relevant information increase the urgency of this matter.”

Iran was revealed to have a second uranium enrichment plant near Qum in September 2009, whose small size and security appear consistent with a strategy to keep open the option of building a nuclear
weapon. Iran contends it is not bound to provide the IAEA with information on Qum that goes beyond its Safeguards Agreement, severely restricting transparency. So far, no centrifuges have yet been installed at the site, though construction continues. Meanwhile, Iran announced in December 2009 that it plans to construct an additional ten enrichment plants in the country. While the IAEA has asked for clarification, Iran has rebuffed the agency’s request, saying it would provide “the required information in due time . . . according to the Safeguards Agreement.”

In the 2010 Annual Threat Assessment, the DNI stated, “Iran is keeping open the option to develop nuclear weapons . . . we do not know, however, if Iran will eventually decide to build nuclear weapons.” The Threat Assessment concludes: “Iran’s technical advancement, particularly in uranium enrichment, strengthens our 2007 NIE [National Intelligence Estimate] assessment that Iran has the scientific, technical and industrial capacity to eventually produce nuclear weapons, making the central issue its political will to do so. These advancements lead us to reaffirm our judgment from the 2007 NIE that Iran is technically capable of producing enough HEU for a weapon in the next few years, if it chooses to do so.”

3. **Other Possible Elements of Deterrence**

Iran is pursuing a number of policies and programs that are conceivably tied to its own concept of deterrence—in particular with respect to the United States and Israel.

Iran is developing, acquiring, and deploying a broad range of ballistic missiles—some of which may also be directly tied to its nuclear program. Iran today deploys a number of short-range ballistic missiles with ranges less than 1,000 kilometers. Iran’s medium-range Shahab-3 missile

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has a reported range between 1,000 and 1,500 kilometers, sufficient to reach potential targets throughout most of the Middle East. Longer versions of the Shahab-3 and a new solid-propellant medium-range missile could potentially reach targets throughout the Middle East, Turkey, and into southeastern Europe. The United States also believes Iran could test an ICBM in the last half of the decade, with assistance from foreign technology. Secretary of Defense Robert Gates, however, recently stated that intelligence officials believe the threat from Iran’s short- and medium-range ballistic missiles “is developing more rapidly than previously projected” while “the threat of potential Iranian intercontinental ballistic missile capabilities has been slower to develop than was estimated in 2006.”

Beyond its ballistic missile program—including a developing space launch capability with potential military implications—Iran has significant conventional and paramilitary forces, though still recovering from the eight-year war with Iraq and hampered by restricted access to technology and hardware. Iranian support for Hezbollah (which could potentially include WMD-related technology, beyond the missile technology it is now providing) and its support for Shiite groups in Iraq may also be viewed as a deterrent to Israeli or U.S. actions in the region. Asymmetric threats may also be viewed as a powerful deterrent—for example, possible terrorism in Europe or the United States or attacks on U.S. troops in Iraq and Afghanistan.

With respect to chemical weapons, while Iran is a party to the CWC, in 2007 the U.S. intelligence community stated: “Iran maintains the capability to produce CW agent in times of need and conducts research that may have offensive applications.” Whether or not Iran has a stockpile of poison gas, Iran has extensive weaponry that could be adapted to deliver CW agents, including artillery shells, mortar rounds, aerial bombs, and possibly chemical warheads for ballistic and cruise missiles.

Finally, it is impossible to state with any certainty whether or not Iran currently maintains or has ever pursued an offensive BW program. However, on the basis of available information, it seems likely that Iran has undertaken some BW-related work in the past and furthermore that its capacity to pursue such a program has increased over time.

4. IMPLICATIONS FOR NUCLEAR SECURITY PROJECT
(VISION AND STEPS) AGENDA

Iranian participation—or lack thereof—is a crucial variable with respect to a number of NSP steps.

Iran’s uranium enrichment program presents the most immediate and severe challenge to getting international control of the uranium enrichment process and ultimately halting the production of fissile material for weapons globally. Progress on both of these steps will be severely limited if the Iranian nuclear program continues on its present course and Iran succeeds in developing a nuclear weapons capability. Conversely, Iranian inclusion in an international fuel bank arrangement and participation in the negotiation and conclusion of a fissile material cutoff treaty—in the context of a halt to Iran’s indigenous enrichment program—would be a significant boost to the vision and steps agenda (though it is worth noting the possibility of a covert Iranian enrichment effort that could still produce fissile material for a nuclear weapon). Finally, like the United States and Israel, Iran has signed but not ratified the CTBT—and its ratification too is required to bring CTBT into force.

Today, Iran appears unlikely to move on CTBT in the absence of U.S. and perhaps also Israeli ratification—neither of which is imminent. More broadly, Iran’s willingness to curtail its uranium enrichment program—or participate in an international fuel bank or FMCT—appears highly doubtful.

Most recently, on June 9, 2010, the U.N. Security Council passed Resolution 1929 by a vote of twelve to two, with Turkey and Brazil voting against the measure and Lebanon abstaining. The resolution increases the sanctions imposed against Iran, targeting its banking sector.
and national shipping line, while expanding an arms embargo and a list of entities and individuals barred from certain types of foreign travel and overseas financial activities. The resolution also prohibits Iran from “[acquiring] an interest in any commercial activity in another State involving uranium mining, production or use of nuclear materials and technology . . . in particular uranium enrichment and reprocessing activities, all heavy-water activities or technology related to ballistic missiles capable of delivering nuclear weapons.” Since the passage of the resolution, the United States, European Union, Japan, and South Korea have all implemented measures imposing additional sanctions against Iran with the aim of curtailing Iran’s ability to use the international financial system to circumvent U.N. sanctions and fund its nuclear development.

Direct diplomatic efforts to resolve the nuclear standoff with Iran have been dormant for the last year, despite the attempt this spring by Turkey and Brazil to broker a compromise between Iran and the West on a deal to fuel a research reactor in Tehran in exchange for a portion of Iran’s stockpile of LEU. Catherine Ashton, the High Representative of the EU for Foreign Affairs and Security Policy, has been acting on behalf of the P5+1 (U.S., U.K., China, France, Russia, and Germany) to arrange a new round of discussions with Iran. It’s unclear when such talks will occur and whether they will focus on Iran’s broader nuclear program or be limited to implementing the fuel-swap deal that was originally agreed to in October 2009. Iranian President Mahmoud Ahmedinejad has said that Iran wants Turkey and Brazil to be included in the next set of talks, should they resume.

Whether increasing diplomatic and economic pressure from UNSC sanctions, a creative diplomatic proposal or a change in the composition of the Tehran regime can change Iran’s calculus is difficult to predict with confidence. The November 2007 NIE on Iran’s nuclear

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program did suggest that Iran may be more vulnerable to influence on the issue than was judged previously and that Tehran’s decisions are “guided by a cost-benefit approach rather than a rush to a weapon irrespective of the political, economic, and military costs.” The NIE concluded that “some combination of threats of intensified international scrutiny and pressures, along with opportunities for Iran to achieve its security, prestige, and goals for regional influence in other ways might—if perceived by Iran’s leaders as credible—prompt Tehran to extend the current halt to its nuclear weapons program.” (Note: as defined in the 2007 NIE, “by ‘nuclear weapons program’ we mean Iran’s nuclear weapon design and weaponization work and covert uranium conversion-related and uranium enrichment-related work; we do not mean Iran’s declared civil work related to uranium conversion and enrichment.”) These judgments were basically reaffirmed in the 2010 Annual Threat Assessment.

5. Issues for Consideration

- How would the acquisition of a nuclear weapons capability by Iran affect the deterrence equation in the Middle East (e.g., Turkey, Saudi Arabia, Egypt, and Israel), Europe, and the United States?
- Are there any actions that can be taken by the United Nations or any combination of states over the next five years that are likely to influence Iran’s “cost-benefit” approach and preclude Iran from developing a nuclear weapons capability?
- Are there some NSP steps (such as CTBT) that Iran might be induced to proceed with separate from the issue of Iran’s uranium enrichment program, and how valuable would this be?

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V. Conclusion

In the foreword to Theodore Sorensen’s book, *Decision-Making in the White House*, President John F. Kennedy is quoted as saying, “There will always be the dark and tangled stretches in the decision-making process—mysterious even to those who may be the most intimately involved.” The same can be said of deterrence seen through the eyes of other nations. No matter what the perspective—from outside or within a nation’s borders, or from outside or within a nation’s leadership—there are dark and tangled stretches in both the theory and practice of deterrence.

This is perhaps particularly true in states like North Korea or Iran, where our insights on the respective leadership groups are limited; or in new nuclear weapon states, such as India and Pakistan, whose experience with nuclear weapons is brief and still evolving. And while we appear to know more about at least nuclear deterrence with respect to states with a long nuclear pedigree—in part through official statements and reports made at the highest levels of government over many decades—there is a danger we assume too much.

Today, progress on even those NSP-related steps that do not require new concepts of deterrence, such as the New START agreement between the United States and Russia, has proven difficult. Even as the future of that agreement remains uncertain, what is certain is that further progress on other NSP-related steps—such as CTBT or FMCT, which some nations view as more directly related to their own deterrence, or deeper nuclear reductions in the United States and Russia—will require two things: a greater understanding and reshaping of the dark and tangled stretches of deterrence by leaders in many nations so that nuclear weapons become less relevant and a greater propensity for leadership in every nation to advance the vision and the steps.

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<th>Tab A: Vision and Steps Agenda from January 2007 WSJ Op-Ed</th>
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<tr>
<td>◇ Changing the cold war posture of deployed nuclear weapons to increase warning time and thereby reduce the danger of an accidental or unauthorized use of a nuclear weapon.</td>
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<td>◇ Continuing to reduce substantially the size of nuclear forces in all states that possess them.</td>
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<td>◇ Eliminating short-range nuclear weapons designed to be forward-deployed.</td>
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<td>◇ Initiating a bipartisan process with the Senate, including understandings to increase confidence and provide for periodic review, to achieve ratification of the Comprehensive Test Ban Treaty, taking advantage of recent technical advances and working to secure ratification by other key states.</td>
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<tr>
<td>◇ Providing the highest possible standards of security for all stocks of weapons, weapons-usable plutonium, and highly enriched uranium everywhere in the world.</td>
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<td>◇ Getting control of the uranium enrichment process, combined with the guarantee that uranium for nuclear power reactors could be obtained at a reasonable price, first from the Nuclear Suppliers Group and then from the International Atomic Energy Agency or other controlled international reserves. It will also be necessary to deal with proliferation issues presented by spent fuel from reactors producing electricity.</td>
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<tr>
<td>◇ Halting the production of fissile material for weapons globally; phasing out the use of highly enriched uranium in civil commerce and removing weapons-usable uranium from research facilities around the world and rendering the materials safe.</td>
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<td>◇ Redoubling our efforts to resolve regional confrontations and conflicts that give rise to new nuclear powers.</td>
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APPENDIX A

Conference Agenda

DETERRENCE: ITS PAST AND FUTURE

November 11–12, 2010
HOOVER INSTITUTION
Stanford University

DAY ONE

8:30 A.M.  Continental breakfast
9:00    Welcome
        John Raisian
9:15    Introduction
        George P. Shultz
9:30    How History and the Geopolitical Context
        Shape Deterrence
        George Quester, University of Maryland
        Patrick Morgan, University of California-Irvine
10:30   Practical Considerations related to Verification
        and Compliance
        Edward Ifft, Georgetown University
11:15 International Systems of Governance and Their Potential to Affect the Nature of Deterrence
(Presenters will join us by videoconference from Stanford in Berlin)
David Holloway, Stanford University, Center for International Security and Cooperation
Harald Mueller, Peace Research Institute, Frankfurt, Germany

12:45 P.M. Lunch

2:00 Redefining the Role of Deterrence
James E. Goodby, Hoover Institution
Michael Mazarr, National War College

3:30 Break

3:45 Extending Time for Decision Making
Christopher Ford, Hudson Institute

4:15 Concluding remarks
George P. Shultz

6:00 Reception

6:30 Discussion and Dinner
Henry Kissinger

DAY TWO

8:30 A.M. Continental breakfast

9:00 The Interaction between Arms Control and the Theory and Practice of Deterrence
John McLaughlin, Johns Hopkins University
Edward Ifft, Georgetown University
James Acton, Carnegie Endowment

10:30 Break

10:45 Nuclear Deterrence in a World without Nuclear Weapons
Sidney D. Drell, Hoover Institution
Raymond Jeanloz, University of California-Berkeley

12:30 P.M. Discussion and luncheon
Admiral Michael Mullen, chairman of the Joint Chiefs of Staff
2:00 Discussion with Admiral Mullen, continued
Annenberg Conference Room

2:30 Deterrence through the Eyes of Other Nations
Michael Gerson, Center for Naval Analyses
Steve Andreasen, Nuclear Threat Initiative

4:00 Break

4:15 Concluding discussion
George P. Shultz with Henry Kissinger, Bill Perry, Sam Nunn,
and Des Browne

5:00 Adjourn
APPENDIX B

Participants

DETERRENCE: ITS PAST AND FUTURE

November 11–12, 2010
HOOVER INSTITUTION
Stanford University

James Acton is an associate in the Nuclear Policy Program at the Carnegie Endowment for International Peace and a Stanton Nuclear Security Fellow.

Steven Andreasen is a consultant to the Nuclear Threat Initiative in Washington and teaches courses on national security policy and crisis management in foreign affairs at the Hubert H. Humphrey Institute of Public Affairs, University of Minnesota.

Jason Armagost (lieutenant colonel) has served as an officer, fighter pilot, and bomber pilot in the U.S. Air Force since May 1992.

James Baker (colonel, U.S. Air Force) is a special assistant to the chairman, Joint Chiefs of Staff, and director of the Chairman’s Action Group.

Richard C. Blum is chairman and CEO of Blum Capital Partners, L.P.

Des Browne is the convener of the Top Level Group of Parliamentarians for Multilateral Nuclear Disarmament and Non-Proliferation and a
leading force behind the European Leadership Network for the Multilateral Nuclear Disarmament and Non-Proliferation Initiative. He is the Former British Minister of Defense.

**Brenda Cartier** (lieutenant colonel) is a special operations navigator with more than four thousand flight hours in E-3 Airborne Warning and Control and AC-130U gunship aircraft.

**Elbridge Colby** is a research analyst with the Center for Naval Analysis.

**Ola Dahlman** has been the deputy director general of the Swedish Defense Research Institute (FOI) and director of the FOI Laboratory for Weapon Systems and of the Laboratory for Information Technology.

**Sidney D. Drell** is a senior fellow at the Hoover Institution and professor of theoretical physics emeritus at the SLAC National Accelerator Laboratory, Stanford University.

**Leif Eckholm** (lieutenant colonel) is a command pilot in the U.S. Air Force with more than 4,200 hours in the C-21, KC-10, T-1A, and T-37 aircraft.

**Lynn Eden** is senior research scholar and associate director for research at the Center for International Security and Cooperation, Freeman Spogli Institute for International Studies, Stanford University.

**John W. Eisenhauer** (lieutenant colonel) is an Army Senior Service College Fellow at the Center for International Security and Cooperation at Stanford University whose research focuses on U.S. Nuclear Policy and Non-proliferation.

**Christopher Ford** is a senior fellow and director of the Center for Technology and Global Security at the Hudson Institute in Washington, D.C. A former U.S. special representative for nuclear nonproliferation and principal deputy assistant secretary of state, he is a reserve intelligence officer in the U.S. Navy, an ordained chaplain in the Zen Peacemaker Order of Soto Zen Buddhism, and a contributing editor for *The New Atlantis* magazine.
Megan Garcia is a fellow in the President’s Office at the William and Flora Hewlett Foundation, where she manages the foundation’s Nuclear Security Initiative, a portfolio of grants aimed at increasing nuclear security.

Michael S. Gerson is a research analyst and project director at the Center for Naval Analyses.

James E. Goodby is a research fellow at the Hoover Institution and a nonresident senior fellow at the Brookings Institution.

Rose Gottemoeller is assistant secretary of state for the Bureau of Arms Control, Verification and Compliance.

Walter Hewlett is director of the Center for Computer Assisted Research in the Humanities and a consulting professor in the Department of Music at Stanford University. He is also chairman of the Hewlett Foundation Board.

Jim Hoagland is a contributing editor at the Washington Post.

David Holloway is the Raymond A. Spruance Professor in International History, professor of history and political science, and senior fellow at the Freeman Spogli Institute for International Studies, all at Stanford University.

Edward Ifft is an adjunct professor in the Security Studies Program of the School of Foreign Service at Georgetown University and continues to work part-time at the State Department.

Raymond Jeanloz is a professor of geophysics at the University of California-Berkeley.

Josef Joffe is publisher-editor of the German weekly Die Zeit.

Max M. Kampelman was appointed by President Reagan to serve as U.S. chairman in negotiation with the Soviet Union on nuclear arms reductions.

Joseph Martz has worked at Los Alamos National Laboratory for more than twenty-five years.

Jack Matlock is a former ambassador to the U.S.S.R. He is now retired from the Foreign Service in 1991 and has since held academic positions at Columbia, the Institute for Advanced Study, Princeton, Hamilton College, and Mount Holyoke College.

Michael Mazarr is associate dean and professor at the U.S. National War College.

Joseph (JP) McGee (colonel) is slated to command the Army’s 1st Brigade Combat Team of the 101st ABN Division in the summer of 2011.

John McLaughlin is the Distinguished Practitioner in Residence at the Johns Hopkins School of Advanced International Studies (SAIS).

Patrick Morgan is a professor of political science and holder of the Tierney Chair of Global Peace and Conflict Studies at the University of California-Irvine.

Harald Mueller is executive director at the Peace Research Institute Frankfurt.

Mike Mullen (admiral) is the seventeenth chairman of the Joint Chiefs of Staff and the principal military adviser to the president and secretary of defense.

Sam Nunn is cochairman and chief executive officer of the Nuclear Threat Initiative. He is the former Chair of the Senate Armed Services Committee.

Susan Oberndorf is president of the Oberndorf Foundation.
William Oberndorf is a founding partner of SPO Partners & Co. He currently serves as chairman of the board of Aggregates U.S.A. and Rosewood Hotels & Resorts.

George Perkovich is vice president for studies and director of the Nuclear Policy Program at the Carnegie Endowment for International Peace.

Richard Perle is a resident fellow, American Enterprise Institute for Public Policy Research, Washington D.C.

William Perry is the Michael and Barbara Berberian Professor Emeritus at Stanford University and a senior fellow at the Freeman Spogli Institute. He was the nineteenth secretary of defense for the United States, serving from February 1994 to January 1997.

William Potter is the Sam Nunn and Richard Lugar Professor of Nonproliferation Studies and director of the James Martin Center for Nonproliferation Studies at the Monterey Institute of International Studies.

George H. Quester is a professor emeritus of government and politics at the University of Maryland.

Minter Ralston (lieutenant colonel) has served tours of duty that include command at the platoon, company, and battalion levels for the U.S. Marine Corps. His tours in the supporting establishment include serving as an instructor at the School of Infantry and as a faculty adviser at the Expeditionary Warfare School.

Joan Rohlfing is president and chief operating officer of the Nuclear Threat Initiative.

Deborah Rosenblum is executive vice president of the Nuclear Threat Initiative.
Henry S. Rowen is a senior fellow at the Hoover Institution, co-director of the Stanford Program on Regions of Innovation and Entrepreneurship, and professor of public policy and management emeritus at the Graduate School of Business, Stanford University.

Scott D. Sagan is the Caroline S.G. Munro Professor of Political Science, co-director of the Center for International Security and Cooperation, and senior fellow at the Freeman Spogli Institute, all at Stanford University.

Jonathan Schell is the author of a number of books, including The Fate of the Earth (Knopf, 1982), which received the Los Angeles Times Book Prize.

Thomas Schelling is a professor at the Maryland School of Public Affairs. He was awarded the 2005 Nobel Memorial Prize in economics sciences.

Clayton Odie Sheffield (colonel) is currently serving as an Army Fellow at the Center for International Security and Cooperation at Stanford University.

Shata Shetty is a research associate at the Royal United Services Institute for Defence and Security Studies in London.

George P. Shultz is the Thomas W. and Susan B. Ford Distinguished Fellow at the Hoover Institution and was secretary of state from 1982 to 1989.

David Slayton (commander), a naval flight officer, has flown more than three hundred combat missions, accumulating more than 4,300 flight hours and 490 carrier-arrested landings in the EA-6B Prowler, S-3B Viking, and six other tactical aircraft.

Sharon Squassoni is a senior fellow and director of the Proliferation Prevention Program at the Center for Strategic & International Studies (CSIS) in Washington, D.C.
Stephen Stedman is the Freeman Spogli Senior Fellow at the Center for International Security and Cooperation and a professor at Stanford University.

Christopher Stubbs is a professor of physics and astronomy at Harvard University.

William E. Swing (the right reverend) is a retired bishop of the Episcopal Diocese of California.

Philip Taubman is a consulting professor at the Center for International Security and Cooperation (CISAC), where he is working on a book project about nuclear threats and the joint effort of Sidney D. Drell, Henry Kissinger, Sam Nunn, Bill Perry, and George P. Shultz to reduce nuclear dangers.

James P. Timbie is the senior advisor to the undersecretary of state for arms control and international security.

Sheila Vaidya is deputy program director for defense programs in the Global Security Principal Directorate at Lawrence Livermore National Labs (LLNL).

Tyler Wigg-Stevenson is the founding director of the Two Futures Project, a movement of American Christians for a world without nuclear weapons and an ordained Baptist minister.

Isabelle Williams is a senior program officer at the Nuclear Threat Initiative (NTI) in Washington, D.C.