US Nuclear Deterrence

An Opportunity for President Obama to Lead by Example

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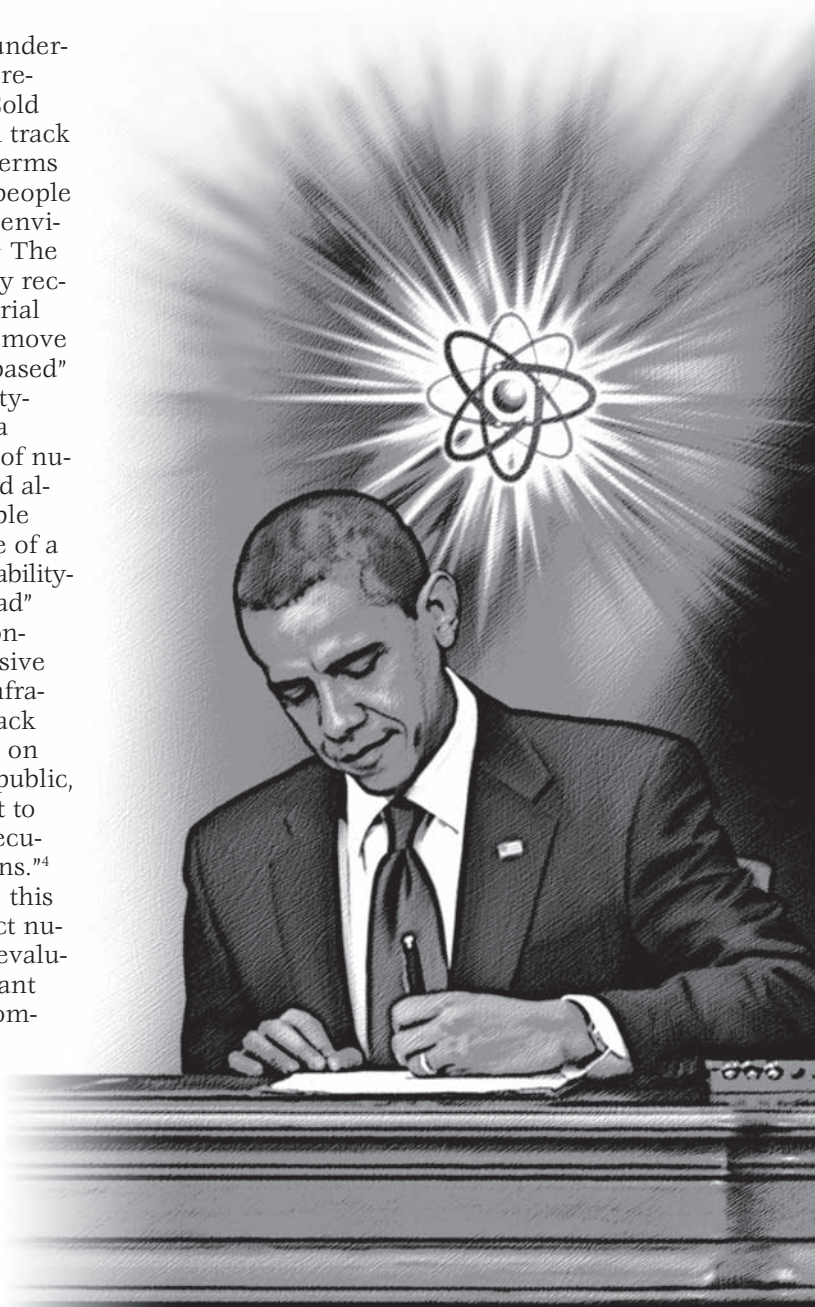

Although the United States has undertaken significant nuclear arms reductions since the end of the Cold War, as has Russia, and is currently on track to achieve the cuts agreed under the terms of the Moscow Treaty by 2012, many people argue that the contemporary security environment warrants further reductions.[1] The *Nuclear Posture Review* of 2002 formally recognized the termination of an adversarial relationship with Russia and set out a move away from a Cold War–styled "threat-based" approach, instead adopting a "capability-based" approach. This would provide a "credible deterrent at the lowest level of nuclear weapons consistent with U.S. and allied security," with the broadest possible range of options to respond to any one of a variety of security challenges.[2] The capability-based approach established a "new triad" composed of offensive nuclear and nonnuclear strike systems, active and passive defenses, and a "responsive nuclear infrastructure."[3] On 5 April 2009, Pres. Barack Obama gave a groundbreaking speech on nuclear weapons in Prague, Czech Republic, stating the United States' commitment to the visionary goal of "the peace and security of a world without nuclear weapons."[4] Working in the strategic environment, this article considers the direct and indirect nuclear threats to the United States and evaluates the relative merit of retaining extant US nuclear force levels, undergoing complete nuclear disarmament, or implementing unilateral denuclearization

to the level of minimum deterrence.[5] It concludes that the United States should denuclearize now to an objectively determined level required for true minimum deterrence, reject the first use of nuclear weapons, and unequivocally articulate its rationale for so doing.

Nuclear Threats in the Contemporary Global Environment

Direct threats to US security stem from proliferation, risks of accidents and unauthorized or inadvertent use, and nuclear terrorism. Roger Molander, of the RAND Corporation, asserts that "in the near future, a large number of countries are each going to develop a small number of nuclear weapons."[6] The Union of Concerned Scientists considers this the greatest long-term danger confronting both US and international security today.[7] Moreover, the more widely proliferated nuclear weapons become, the more theoretical opportunities may arise for theft of nuclear material. Conversely, a minority of public proponents argue that wider proliferation may lead to more stability and that the existence of nuclear weapons potentially makes it possible to approach a "defensive-deterrence ideal," reducing the probability of *any* warfare breaking out.[8] This minority cannot, however, escape the fact that the chances of an explosive accident or an unauthorized or inadvertent launch increase as the number of nuclear states increases.

The *National Security Strategy of the United States of America* (2002) declared that "the gravest danger our Nation faces lies at the crossroads of radicalism and technology."[9] Similarly, the national security strategy of 2006 is unequivocal in its assessment that, in the wake of 9/11, "there are few greater threats than a terrorist attack with WMD [weapons of mass destruction]."[10] Despite programs such as the Proliferation Security Initiative, hundreds of complete weapons and even more nonassembled critical weapon components are currently stored in conditions that leave them vulnerable to theft by determined criminals. This parlous state of nuclear security has not gone unnoticed by the criminal fraternity.[11] Hans Kristensen, of the Federation of American Scientists, however, considers the threat of nuclear terrorism "very hypothetical" and certainly not something that justifies an "operational nuclear weapon" for a response.[12]

It should be noted that none of the direct threats arise from the use of nuclear weapons by state actors. These actors, however, do present indirect threats to the United States through their potential to inhibit US influence and their contribution to regional instability.

Although China has long declared a "no-first-use" policy, its nuclear strategy is becoming increasingly differentiated.[13] At the strategic level, although minimum deterrence continues to govern China's strategy, with Russia's nuclear capability deteriorating during a period of conventional US dominance, Chinese policy makers may be turning towards new nuclear strength in order to prevent the United States from securing military supremacy in perpetuity.[14] The greater visible threat, however, is China's regional counterforce strategy, driven largely by developments in South Asia.[15] Here, it could employ a parallel, two-tier strategy, with short-range missiles "useful for political coercion, and, if necessary, for defeating Taiwanese military forces, while its long-range missiles induce restraint by the United States."[16]

North Korea is one of only two nations (with Iran) identified in the national security strategy of 2002 as posing a serious security challenge to the United States.[17] Apparently, North Korea has produced weapons-grade fissile material and continued its missile-development program with the launch of a Taepodong 2 on 5 April 2009. In a stance reminiscent of superpower attitudes during the Cold War, most analysts believe that the North Korean re-

gime views nuclear weapons as a means of retaining the status quo, preventing the collapse of its totalitarian regime, and keeping its enemies at bay.[18] More specifically, the objective of a North Korean nuclear capability might even be only to preclude US intervention in a regional conflict.[19]

As a de facto nuclear power, India offers a rationale for nuclear weapons driven by three factors.[20] First, several Indian leaders judge that "India is a great power and should have weapons that great powers have."[21] Second, India does not view the Nuclear-Weapon States' (NWS) positive security assurances as an adequate level of reassurance in lieu of the nuclear weapons that the Non-Nuclear-Weapon States (NNWS) have had to forgo under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).[22] Third, India perceives that China poses a major threat. Unfortunately, Indian policy generates regional conflict, driving Pakistan's nuclear strategy, whose sole declared reason for holding nuclear weapons is to deter any possible Indian aggression.[23]

Israel's official posture is one of calculated nuclear ambiguity. As the only extant presumed nuclear power in the region, Israel holds as declared "policy that it will not be the first to introduce nuclear weapons into the Middle East."[24] Meanwhile, Iran is pursuing programs that could enable it to develop nuclear weapons within several years. Its acquisition of nuclear weapons could prove extremely destabilizing within the Middle East, and "spillover" from a nuclear Iran would present a variety of regional threats, not the least of which is emboldened support for terrorism and Shia activism.[25]

Often classified as a "former" threat, Russia today poses no realistic threat of premeditated nuclear attack.[26] Nevertheless, of the five NWSs, Russia is the only one, apart from the United States, having a four-figure arsenal of nuclear weapons; moreover, the *Nuclear Posture Review* of 2002 describes Russia as a possible resurgent threat and peer competitor of the future.[27] The remaining two nuclear powers—the United Kingdom and France—pose little threat to global or US security. The rationale for both forces was well expressed in a speech delivered by French president Jacques Chirac in 2006: "In the face of the concerns of the present and the uncertainties of the future, nuclear deterrence remains the fundamental guarantee of our security. Wherever the pressure comes from, it also gives us the ability to keep our freedom to act, to control our policies, to ensure the durability of our democratic values."[28]

Retention of the US Nuclear Weapons Status Quo

Deputy Secretary of Defense Keith Payne justified the rationale for the numbers of warheads specified in the Moscow Treaty only in the terms used in the 2002 *Nuclear Posture Review*: assurance, dissuasion, deterrence, and hedging.[29] When interviewed in 2002, John Bolton, undersecretary of state for arms control and international security, explained the rationale simply as "Uncertainty. Uncertainty about the world. Uncertainty about the geostrategic circumstances that we might face due to threats that we can't foresee."[30] With the exception of dissuasion, all of these concepts date back to the Cold War. Nevertheless, they are used here to evaluate the benefits, costs, and risks of retaining the US nuclear weapons status quo in the modern security environment.

In a joint submission to Congress in 2007, Secretary of Defense Robert Gates, Secretary of Energy Samuel Bodman, and Secretary of State Condoleezza Rice reasserted the United States' continuing intention to "assure our allies that the U.S. nuclear arsenal continues to serve as the ultimate guarantor of their security, thus obviating any need for them to develop nuclear weapons of their own."[31] Furthermore, they stated that the warhead levels mandated by the Strategic Offensive Reductions Treaty (SORT) were sufficient and necessary to "demonstrate to allies and adversar-

ies alike that the United States has the necessary means, and the political will, to respond decisively against aggression and the use of weapons of mass destruction."[32] This is an important consideration in limiting proliferation among allies since nations such as Japan, South Korea, and Taiwan in particular are concerned states that could pursue their own nuclear programs if they felt that the American umbrella was in any way uncertain.[33]

Nuclear weapons are uniquely effective for deterrence because they are enormously destructive and can be delivered in swift retaliation. Indeed, nuclear deterrence can even prove effective against an irrational adversary when nuclear weapons threaten his very existence.[34] Nevertheless, it is important to keep the nuclear threshold high to maintain credibility, and recent administrations have considered a degree of strategic ambiguity also useful in extending the effectiveness of nuclear deterrence.

Considering Russia a potential contingency when developing the 2002 *Nuclear Posture Review*, the United States scaled its responsive-force arsenal for any possible future change in Russian policy direction or deterioration in bilateral relations.[35] This is wise since following a prudent and conservative path for future nuclear forces has merit, given the rapidity with which the geopolitical situation can change.[36] The maintenance of a fallback posture sufficient to deter a resurgent Russia also has the automatic benefit of avoiding uncertain national and regional threats such as an ascendant China.[37]

The costs and risks of maintaining current force levels include lack of transparency of current nuclear arms-control treaties; erosion of nuclear credibility; risks of proliferation accruing from retention of the current arsenal; risk of inadvertent or unauthorized use; and budgetary issues. An unusual aspect of the Moscow Treaty is the fact that, upon US insistence, it includes no verification measures. Neither does it require the destruction of warheads. Instead, the treaty allows their retention so long as they are not operationally deployed. Despite the current relatively cordial relations between Russia and the United States, the uncertainty which this generates undoubtedly influences strategic planning assumptions and may itself be used as justification for the stockpiled retention of newly nonoperational warheads in a spiraling cycle of uncertainty and mistrust.[38]

The Defense Science Board Task Force has consistently questioned the continuing credibility of the US nuclear deterrent to effectively threaten and destroy a range of critical targets.[39] Deterrent value, in simplistic terms, is a function of both capability and will.[40] The capability provided through the 2002 *Nuclear Posture Review* was considered earlier. Here, the will is in question. Writing in 1994, Paul Nitze asserted that US decision makers would likely prove unwilling to use nuclear weapons in retaliation for aggression.[41] Former secretary of defense Robert McNamara went further, contending that use of nuclear weapons against a nonnuclear state would be both "militarily unnecessary, morally repugnant, and politically indefensible."[42] These historical, military, moral, and political considerations combine to "self-deter" any nation, including the United States, from the employment of nuclear weapons, accordingly undermining the credibility of their theoretical employment.

McNamara judges that the United States' retention of its nuclear arsenal as a mainstay of military power sends the message to the NNWSs that America, "with the strongest conventional military force in the world, require[s] nuclear weapons," thus undermining nonproliferation efforts.[43] Moreover, current US nuclear policy insinuates the legitimacy of nuclear weapons and is in fact considered "the strongest imaginable rationale for other countries to acquire nuclear weapons."[44] Indeed, the United States' retention of nuclear weapons at the present substantial, forward-deployed levels ensures that Russia will do the same and may result in a Russian security dilemma

entailing dangers of erroneous, accidental, or unauthorized use that can no longer be justified by any plausible need for this many weapons. Yet, nobody is forthcoming on what threats justify the maintenance of this posture, with the associated acceptance of this risk.[45]

Once nuclear employment loses credibility, it follows that paying the price to retain nuclear capability is nugatory and that a nation would do better to abandon it, especially when that price is high. Referring to the Stockpile Stewardship Program, the Secretary of Energy's Advisory Board concluded in 1995 that "current business-as-usual is not 'financially sustainable.' "[46] Meanwhile, in terms of financial cost as well as technical feasibility, even the 2002 *Nuclear Posture Review* accepts that refurbishing existing warheads over the next two decades will present "a major challenge."[47]

In sum, the benefits of retaining the US nuclear-weapons status quo (assuring allies, dissuading and deterring adversaries, and hedging against uncertainty) exist in tension with the opposing risks of proliferation, inadvertent or unauthorized use, credibility erosion, and the verification opaqueness inherent in the Moscow Treaty. Moreover, whatever the net benefit or cost of these, the financial cost of maintaining the status quo arsenal is significant, while its modernization remains unfunded.

Total US Denuclearization

The *Report of the Defense Science Board Task Force on Nuclear Capabilities* of 2006 concluded that in the post–Cold War era, no viable national consensus exists on the need for and role of nuclear weapons in the security of the United States.[48] However, President Obama has reiterated that the United States will not disarm unilaterally.[49] Accordingly, total denuclearization is considered in an omnilateral context, and, according to Frank Miller, Pres. George W. Bush's senior director for defense policy and arms control at the National Security Council, "the ultimate abolition of nuclear weapons can be attained responsibly only in world conditions far removed from those in which we now live."[50] In postulating this far-removed world, however, one discovers that the price of realizing such a denuclearized environment entails significant risk and would require considerable international confidence.

In a stable, denuclearized world, all of the direct-threat categories of proliferation, accidental and unauthorized or inadvertent use, and terrorism, as well as indirect threats arising from restraint on US influence and regional nuclear instability, would be eliminated. However, the de facto great-power status that nuclear weapons capability currently confers upon states would be removed, and the elimination of nuclear weapons would leave the United States, with its currently immense economic and military superiority, as the only indisputable post–Cold War superpower. For this very reason, it is unlikely that either Russia or China would consider nuclear disarmament an acceptable alternative to today's uneasy nuclear balance of power.[51]

Gen Lee Butler, the last commander of US Strategic Air Command, posits that "a world free of the *threat* of nuclear weapons is necessarily a world *devoid* of nuclear weapons" (emphasis in original).[52] In essence, he asserts that the elimination of nuclear weapons themselves represents the only means of eradicating proliferation. But can the nuclear genie be put back in the bottle? Perhaps so, for "uninvention" may prove effectively possible through the natural wastage of human practical knowledge, especially were a formal ban on testing, such as the Comprehensive Test Ban Treaty, to enter into force.[53]

In 1996 the Canberra Commission on the Elimination of Nuclear Weapons concluded that "the proposition that nuclear weapons can be retained in perpetuity and never used—accidentally or by decision—defies credibility. The only complete defence is the elimination of nuclear weapons and assurance that they will never be produced

again."[54] Recognizing that the United States currently enjoys continuing conventional dominance, one may conclude that so long as nuclear weapons continue to exist, they will be used or threatened against the United States to gain an asymmetric advantage.[55] Mikhail Gorbachev concurred in 2005, observing that "ultimately, the only way to avert [the threat of terrorism with WMDs] is to destroy the stockpiles of nuclear . . . weapons."[56]

Although Ambassador Ronald Lehman asserts that a nuclear-free world "will undoubtedly spend significant resources insuring that it remains denuclearized," the price of doing so will be less than for retaining or modernizing an aging nuclear capability.[57] Moreover, although the costs of retaining nuclear arsenals are borne only by those nations that hold them, all nations could expect to share the expense of maintaining a nuclear-free world, albeit unevenly, for the common good.

Christopher Ford, US special representative for nuclear nonproliferation, identified six criteria concerning the necessary global security environment that must be achieved and maintained in order to free the world of nuclear weapons.[58] First, there must be greater trust and an easing of tensions between nations to enable them to transcend competitive military dynamics. Critics argue that such an environment of international transparency and trust is too far removed from today's security situation to be attainable. They may be correct. Yet, as General Butler said, "Elimination is the only defensible goal, and that goal matters enormously." He is adamant that a clear and unequivocal commitment is essential to achieving this goal.[59]

Second, all states must have robust faith in enduring adherence to the nonproliferation goals of the NPT. A proliferation paradox becomes particularly important as the levels of nuclear weapons reduce towards zero: for regional powers, adversaries or otherwise, the less dependent the United States becomes on nuclear weapons, the more attractive their acquisition becomes.[60] This "clandestine catch" is the fundamental problem facing proponents of total denuclearization.[61] Furthermore, a nonnuclear world might result in only a *latent* instability, such that a rush to rearm would occur should disagreement regarding a vital interest one day reemerge, presenting its own novel set of unpredictable security risks.[62]

Third, there must be equal confidence that illicit proliferation by both state and nonstate actors has been irreversibly eliminated. This would require putting extensive safeguards in place and strictly enforcing them. Such a regime is incompatible with the current nonverifiable arms reductions and disdain for intrusive inspection regimes. Yet, it is verification that engenders confidence and predictability.[63] Moreover, one of the greatest long-term proliferation challenges today is that dual-use nuclear technology complicates the positive identification of facilities having military purposes.[64]

Fourth, considering security through only nuclear and conventional lenses is incomplete, and the pursuit of *all* types of WMDs must be verifiably halted across the globe. The 2006 *Report of the Defense Science Board Task Force on Nuclear Capabilities* contends that the idea that a nuclear-free world is safer for the United States because it would dominate a conventional-arms-only world inadequately addresses the variety of WMD threats confronting the United States.[65] The task force views US nuclear capability as a required deterrence against chemical and biological threats already outlawed by international convention and forsworn by the United States.[66]

Fifth, deterrent mechanisms for the consequent nonnuclear environment would need to be fully understood in order to prevent the world order from collapse. Arguably, the nuclear threat has successfully kept the United States and Russia from going to war with each other since 1945, and "one should be extremely cautious in making radical changes to a strategic situation that has served the world successfully for decades."[67]

Finally, provisions would need to be in place assuring that reversion to nuclear weapons, either through "breakout" or clandestine development, would be met with a swift, effective, and robust nonnuclear response. However, proponents agree that the necessary mechanism already exists within the NWSs' positive security assurance, describing the idea that a small state might be able to develop and employ nuclear weapons as "just nonsense" since the major powers have the capability to crush such a player out of existence conventionally.[68]

Overall, should nuclear weapons be globally eliminated, the three prime contemporary nuclear threats to the United States would be eliminated with them, and that nation would emerge as the undisputed sole world power. However, the prerequisite for global denuclearization is the surmounting of associated costs and risks of international confidence, attainment of which at present remains illusory.

US Denuclearization to the Level of Minimum Deterrence

Cold War nuclear philosophy centered on the assured elimination of Soviet nuclear forces and infrastructure. The modern threat environment is entirely different. A fundamental difference exists between the capabilities required for war fighting and those for war deterring.[69] The contemporary role of US nuclear weapons is to deter aggression, with the potential to apply pain to any aggressor *only until that aggression is terminated*.[70] A US policy shift already appears to have occurred, and "the U.S. . . . strategic dialogue no longer focuses on the question of *how many weapons are enough?* But . . . has shifted to . . . the flip side of the question, *how few are enough?*" (emphasis in original).[71] Moreover, Harold Brown, secretary of defense from 1977 to 1981, argued that purely deterrent forces, and their size, "can perhaps be made substantially, though not completely, insensitive to changes in the posture of an opponent."[72]

Several nuclear strategists suggest that the current security situation warrants a significant, unilateral reduction in the number of US nuclear warheads. Some of them propose that a figure in the hundreds may be achievable.[73] Given the uncertainty of international reaction to unilateral US nuclear arms reductions, initial decreases should be reversible, enabling the United States to hedge against uncertainty. Moreover, despite the feasibility of unilateral US reductions to approximately 1,000 warheads, decreases below that level would need to proceed in consultation with all of the other nuclear powers.[74]

A minimum-deterrence posture generates a more realistic sense of proportional-response capability than that of post-SORT arsenals. Moreover, because minimum-deterrence force levels lend credence to the concept that nuclear weapons are genuinely being held only as the "instrument of last resort," a minimum-deterrence posture enhances their credibility, especially if lower-yield weapons are employed.

Although Kenneth Waltz might disagree, John Deutch asserts that any degree of denuclearization has a beneficial effect on containing proliferation.[75] The Union of Concerned Scientists argues that claiming the right to use nuclear weapons preemptively in certain circumstances removes the incentive for nations to remain nonnuclear. Given the awesome and unrivalled superiority of US conventional forces, as expressed as far back as 1993, "there is no visible [conventional] case where the United States could be forced to choose between defeat and the first use of nuclear weapons."[76] In the absence of any conceivable requirement for the first use of nuclear weapons, the United States should adopt a declared no-first-use policy.

In addition, the combination of an unambiguous posture of minimum deterrence and a declared no-first-use policy would enable the United States to further reduce its nuclear-alert status. This would significantly decrease the possibility of accidental

or inadvertent launch yet maintain the desired level of deterrence.[77]

The cost of maintaining a nuclear arsenal is significant. Opportunities to reduce nuclear expenditure through denuclearization to minimum-deterrence levels could accrue from each of the following: reducing the volume of the nuclear warhead arsenal; reducing the diversity of nuclear warheads; retracting to a single delivery option; and dealerting personnel and delivery systems.

Unilateral reductions in the number of nuclear warheads towards a position of minimum deterrence, coupled with retraction to a single delivery option, would gain the attention of the NNWSs and NWSs alike, building international confidence along the road to total denuclearization. Moreover, reducing the role of nuclear weapons in international affairs would further bolster this confidence while significantly enhancing the United States' standing in the international community.[78]

The nuclear postures of both the United States and Russia affect the nuclear strategies of all other states indirectly through a "loose coupling."[79] In addition to the direct benefits of gaining the attention of the NNWSs and building international confidence, unilateral disarmament would have the second- and lower-order effects of preparing the ground for the safe management of the proliferation paradox as nuclear weapons later reduce towards zero.

A reduction in US forces to minimum-deterrence levels would nevertheless require the United States to reconsider and potentially retract its global positive-security assurance since it may not be supportable with only a truly minimum-deterrent force. The United States can likely reduce its arsenal to some degree without triggering either first-order or other cascading proliferation effects, but it is not clear what that degree is; furthermore, if the NNWSs were confronted with a choice between significant US denuclearization or retention of US security assurances, their reaction remains unknown.

Of all the costs of adopting a minimum-deterrence posture, a potential reduction in US coercive power might be the most significant. Even a perceived reduction in coercive power available to bring to bear on Iran compared to that employed in the United States' unsuccessful nonproliferation campaign against North Korea might prove unpalatable for America. Any deterrence at minimum levels in the post–Cold War era remains uncertain because there is little historical precedent for it. Intangible *goals of honor*, related to values not held by Western cultures but prevalent in the origins of war across centuries of conflict, may become ever more tangible in an increasingly diverse world.[80]

Certainly, the NNWSs have a valid argument that, to be effective, weapons reductions should be both irreversible and verifiable. Reductions under SORT, in contrast, are reversible. Nevertheless, by disarming transparently (if initial disarmament steps were well received by the international forum), reductions could theoretically then be made verifiably irreversible. However, given the very nature of international uncertainty, the practical difficulty of predicting future security requirements with the level of confidence required for making reductions irreversible should not be underestimated.[81]

The new triad expounded in the 2002 *Nuclear Posture Review* no longer specifies diverse delivery options. With their unparalleled survivability and the capacity to accommodate an operational force of up to 1,000 warheads, the extant US fleet ballistic missile submarines could be fielded as the sole arm of US nuclear deterrence.[82] However, as the variety of warhead designs and delivery options diminishes, the capability impact of a latent failure in any given system rises.[83] Theoretically, these concerns could be mitigated by retention of a small number of each of a wide selection of weapons systems. However, the infrastructure and maintenance costs per warhead would make the expense of such a policy prohibitive.

On balance, despite the significant risk that adopting a posture of minimum deterrence with a no-first-use policy may not yield all of the desired benefits, it at least has the potential to constitute what General Butler describes as a waypoint along President Obama's desired path towards total elimination.[84] Moreover, initially reversible reductions can contain the cost of failure without incurring an enduring level of risk to US security beyond that which prevails today.

Conclusion

This article's analysis reveals three underpinning US strategic objectives: to reduce the global volume of nuclear material in the world, to eliminate proliferation, and to improve regional stability. Maintenance of the status quo is contrary to all three. Conversely, provided that nuclear arsenals do not decrease to such a level as to trigger an unstable nuclear arms race, a reduction in the US arsenal would contribute directly to the first of these objectives and, potentially, indirectly to the other two. However, although denuclearization to an intermediate level would retain credibility and incur minimal risk to homeland security, it might result in increased proliferation in the regions of greatest US concern. Such a possibility calls for fostering increased international confidence to manage and contain this risk. Moreover, the intermediate force levels required must be objectively determined by assessing post–Cold War requirements for deterrence and must not be skewed by fallacious relative evaluations benchmarked against obsolete Cold War force levels for war fighting.

Such proposed arsenal reductions are based on the assumption that the United States will not intervene in a regional conflict with nuclear weapons. Adopting that assumption as declared policy would remove any ambiguity in US intent and would have four direct benefits. First, it would underpin a stance of minimum deterrence. Second, it would enhance the United States' negative security assurance, contributing to the second objective through the containment of proliferation. Third, it would positively contribute to enhancing regional stability, the strategic objective most difficult to realize directly and thus far unaddressed. Fourth, it would be an enabling step towards total global denuclearization, contributing to the international confidence that must necessarily accompany any disarmament.

The greatest single risk of taking this course of action is that withdrawing the explicit US positive security assurance as the quid pro quo of denuclearization might result in proliferation both in the developed world and in regions of "immediate concern." For their part, those states that shelter under the current US nuclear umbrella must realize that denuclearization of the NWSs is incompatible with the retention of nuclear assurances for allies. This fact is foremost among the implications of nuclear disarmament and would need to be the subject of informed, open, and educated debate to achieve international consensus and provide the implicit reassurance necessary to avoid precipitating international proliferation or regional instability.

Thus, one concludes that the United States should take three concurrent actions: reduce its nuclear arsenal to the objectively determined level required for minimum deterrence; make an associated, unequivocal declaration against the first use of nuclear weapons; and articulate clearly the rationale underpinning these moves. Although these actions would be exemplary of the United States in its role as a responsible great power, the nation would be stepping into uncharted territory and should manage the associated risks to US security by temporarily trading transparency for reversibility. These three steps may represent a bold move, but if the United States wishes to retain its premiership as the world's leader, then it should not shy away from such an opportunity. ✪

Notes

1. The Moscow Treaty is interchangeably known as the Strategic Offensive Reductions Treaty (SORT). The treaty calls for reductions to between 1,700 and 2,200 operationally deployed strategic warheads by the end of 2012. "Strategic Offensive Reductions Treaty and Joint Statement," *Arms Control Today* 32, no. 5 (June 2002), http://www.armscontrol.org/act/2002_06/docjune02.asp (accessed 9 April 2009). However, it does not require the destruction or disassembly of these warheads—only that they be redesignated "nonoperational," thereby permitting their retention within national stockpiles. Amy F. Woolf, *U.S. Nuclear Weapons: Changes in Policy and Force Structure*, CRS Report for Congress RL31623 (Washington, DC: Congressional Research Service, 12 January 2007), 25–26, http://www.fcnl.org/pdfs/nuclear/CRS_US_Nuclear_Weapons-Changes_in_Policy_and_Force_Structure.pdf (accessed 9 April 2009).

2. "Nuclear Posture Review [Excerpts]," *GlobalSecurity.org*, http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm (accessed 8 March 2009); and amplifying comments made by J. D. Crouch, assistant secretary of defense for international security policy, in Philipp C. Bleek, "Nuclear Posture Review Released, Stresses Flexible Force Planning," *Arms Control Today* 32, no. 1 (January/February 2002): 28–29, http://www.armscontrol.org/act/2002_01-02/nprjanfeb02 (accessed 10 July 2009).

3. "Nuclear Posture Review [Excerpts]."

4. "Remarks by President Barack Obama, Hradcany Square, Prague, Czech Republic," *White House*, http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered/ (accessed 10 July 2009).

5. Although this article and its conclusions relate primarily to the strategic environment, the threat posed by tactical nuclear weapons would require a separate assessment. Both should be considered in conjunction prior to the formulation of any implementation proposals.

6. Roger Molander, RAND Corporation, interview by the author, 2 April 2008.

7. Union of Concerned Scientists, *Toward True Security: Ten Steps the Next President Should Take to Transform U.S. Nuclear Weapons Policy* (Cambridge, MA: Union of Concerned Scientists, February 2008), 2, http://www.ucsusa.org/assets/documents/nwgs/toward-true-security.pdf (accessed 12 August 2009).

8. Kenneth N. Waltz, *The Spread of Nuclear Weapons: More May Be Better*, Adelphi Paper no. 171 (London: International Institute for Strategic Studies, 1981), 7; and Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed; with New Sections on India and Pakistan, Terrorism, and Missile Defense*, 2nd ed. (New York: Norton, 2003), 15.

9. *The National Security Strategy of the United States of America* (Washington, DC: White House, September 2002), [second page of introduction by President Bush], http://merln.ndu.edu/whitepapers/USnss2002.pdf (accessed 10 July 2009).

10. *The National Security Strategy of the United States of America* (Washington, DC: White House, March 2006), 18, http://www.strategicstudiesinstitute.army.mil/pdffiles/nss.pdf (accessed 10 July 2009).

11. Graham Allison, "How to Stop Nuclear Terror," *Foreign Affairs* 83, no. 1 (January/February 2004): 66. Allison's suggested criminal-apprehension rate is borne out by numerous newspaper reports of attempted theft and smuggling from East European nations such as Slovakia, Hungary, Russia, and Serbia. President Obama, meanwhile, has articulated his intent to institutionalize the Proliferation Security Initiative. "Homeland Security and Counterterrorism," *White House*, http://www.whitehouse.gov/agenda/homeland_security/#prevent-nuclear-terrorism (accessed 8 April 2009).

12. Hans Kristensen, Federation of American Scientists, interview by the author, 1 April 2008.

13. Robert A. Manning, Ronald Montaperto, and Brad Roberts, *China, Nuclear Weapons, and Arms Control: A Preliminary Assessment* (New York: Council on Foreign Relations, 2000), 3, 31, http://www.cfr.org/content/publications/attachments/china.pdf (accessed 12 August 2009).

14. Ibid., 5; and Jing-dong Yuan, "Effective, Reliable, and Credible: China's Nuclear Modernization," *Nonproliferation Review* 14, no. 2 (July 2007): 279.

15. Manning, Montaperto, and Roberts, *China, Nuclear Weapons, and Arms Control*, 3–4.

16. Ibid., 3.

17. *National Security Strategy* (2002), 13–14.

18. Mark Fitzpatrick, "Iran and North Korea: The Proliferation Nexus," *Survival* 48, no. 1 (Spring 2006): 69, http://www.informaworld.com/smpp/ftinterface~content=a741397430~fulltext=713240930 (accessed 14 July 2009).

19. Stephen J. Cimbala, "Nuclear Weapons in the Twenty-first Century: From Simplicity to Complexity," *Defense and Security Analysis* 21, no. 3 (September 2005): 270, http://www.informaworld.com/smpp/ftinterface~content=a746295131~fulltext=713240930 (accessed 14 July 2009).

20. Ambassador Ronald F. Lehman II, *Deterrence, Denuclearization, and Proliferation: Alternative Visions of the Next Fifty Years* (Livermore, CA: Lawrence

Livermore National Laboratory, 1994), 15, http://www.osti.gov/bridge/servlets/purl/10151254-4yGrcw/native/10151254.pdf (accessed 12 August 2009).

21. Ibid.

22. The NPT acknowledges only the United States, Russia, China, the United Kingdom, and France as NWSs, all other states being de facto NNWSs for the purposes and duration of the treaty, which has since been extended indefinitely. United Nations, "The Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," 1968, Article IX, http://www.un.org/events/npt2005/npttreaty.html (accessed 10 April 2009). The NWSs' positive security assurance extends a nuclear-deterrence commitment to aid any NNWS if such were threatened or attacked with nuclear weapons. United Nations, "Resolution 255 (1968) of 19 June 1968," http://daccessdds.un.org/doc/RESOLUTION/GEN/NR0/248/36/IMG/NR024836.pdf?OpenElement (accessed 27 January 2008). Although the applicability of this assurance was tightened in 1995 to exclude states judged not fully compliant with their own NPT obligations, this positive assurance has remained otherwise significantly unchanged for 40 years. United Nations, "Resolution 984 (1995)," http://daccessdds.un.org/doc/UNDOC/GEN/N95/106/06/PDF/N9510606.pdf?OpenElement (accessed 27 January 2008).

23. Rizwan Zeb, "David Versus Goliath? Pakistan's Nuclear Doctrine: Motivations, Principles and Future," *Defense and Security Analysis* 22, no. 4 (December 2006): 389.

24. Lehman, *Deterrence, Denuclearization, and Proliferation*, 13.

25. Dalia Dassa Kaye and Frederic M. Wehrey, "A Nuclear Iran: The Reactions of Neighbours," *Survival* 49, no. 2 (Summer 2007): 111, http://www.informaworld.com/smpp/ftinterface~content=a779310491~fulltext=713240930 (accessed 14 July 2009).

26. Sidney D. Drell and James E. Goodby, *What Are Nuclear Weapons For? Recommendations for Restructuring U.S. Strategic Nuclear Forces* (Washington, DC: Arms Control Association, October 2007), 10, http://www.armscontrol.org/pdf/20071104_Drell_Goodby_07_new.pdf (accessed 10 April 2009).

27. "Nuclear Posture Review [Excerpts]."

28. Pres. Jacques Chirac (speech, during his visit to the Strategic and Maritime Forces at Landivisiau / L'lle Longue / Brest [Finistère], France, 19 January 2006), http://www.globalsecurity.org/wmd/library/news/france/france-060119-elysee01.htm (accessed 14 July 2009).

29. Hans M. Kristensen, "The Role of U.S. Nuclear Weapons: New Doctrine Falls Short of Bush Pledge," *Arms Control Today* 35, no. 7 (September 2005): 14, http://www.armscontrol.org/act/2005_09/Kristensen (accessed 14 July 2009). Keith Payne cochaired the deterrence-concepts advisory group that drafted the 2002 *Nuclear Posture Review* and served as deputy secretary of defense from 2002 to 2003.

30. J. Peter Scoblic and Wade Boese, "Expounding Bush's Approach to U.S Nuclear Security: An Interview with John R. Bolton," *Arms Control Today* 32, no. 2 (March 2002): 5, http://www.armscontrol.org/act/2002_03/boltonmarch02 (accessed 14 July 2009).

31. "National Security and Nuclear Weapons: Maintaining Deterrence in the 21st Century: A Statement by the Secretary of Energy, Secretary of Defense and the Secretary of State, July 20, 2007," National Nuclear Security Administration, http://www.nnsa.energy.gov/news/1238.htm (accessed 13 July 2009).

32. Ibid.

33. Keith B. Payne, "The Nuclear Posture Review: Setting the Record Straight," *Washington Quarterly* 28, no. 3 (Summer 2005): 146, http://www.nipp.org/Publication/Downloads/Publication%20Archive%20PDF/In%20print,%20WQ.pdf (accessed 13 July 2009).

34. Robert G. Spulak Jr., "The Case in Favor of US Nuclear Weapons," *Parameters* 27, no. 1 (Spring 1997): 106–18, http://www.carlisle.army.mil/usawc/Parameters/97spring/spulak.htm (accessed 13 July 2009).

35. Woolf, *U.S. Nuclear Weapons*, 25.

36. Stephen M. Younger, *Nuclear Weapons in the Twenty-first Century* (Los Alamos, NM: Los Alamos National Laboratory, 27 June 2000), 13, http://www.fcnl.org/issues/arm/sup/nukwpns21stcent.pdf (accessed 17 January 2008).

37. I. C. Oelrich, *Sizing Post–Cold War Nuclear Forces*, Institute for Defense Analyses Paper P-3650 (Alexandria, VA: Institute for Defense Analyses, October 2001), 42, http://www.fas.org/programs/ssp/nukes/doctrine/szngnuclearforces.pdf (accessed 13 July 2009).

38. James Doyle, "Strategy for a New Nuclear Age," *Nonproliferation Review* 13, no. 1 (March 2006): 100.

39. Office of the Under Secretary of Defense for Acquisition and Technology, *Report of the Defense Science Board Task Force on Nuclear Deterrence* (Washington, DC: Office of the Under Secretary of Defense for Acquisition and Technology, October 1998); and Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Report of the Defense Science Board Task Force on Nuclear Capabilities: Report Summary* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, December 2006), 5.

40. This relationship has been variously described. Oelrich considers it a model of deterrence

as a product of "consequences times likelihood." See Oelrich, *Sizing Post–Cold War Nuclear Forces*, 27.

41. Paul H. Nitze, "Is It Time to Junk our Nukes? The New World Disorder Makes Them Obsolete," *Washington Post*, 16 January 1994; see also Dennis M. Gormley, "Silent Retreat: The Future of U.S. Nuclear Weapons," *Nonproliferation Review* 14, no. 2 (July 2007): 185.

42. Robert S. McNamara, "Apocalypse Soon," *Foreign Policy*, no. 148 (May/June 2005): 32.

43. Ibid., 34.

44. Kurt Gottfried, "President Bush's Nuclear Weapons Policy: Illogical, Ineffective and Dangerous," Union of Concerned Scientists, 22 January 2003, http://www.ucsusa.org/nuclear_weapons_and_global_security/nuclear_weapons/policy_issues/president-bushs-nuclear.html (accessed 17 January 2008); see also "New Nuclear Policies, New Weapons, New Dangers," Strategic Arms Control Policy Fact Sheet, Arms Control Association, April 2003, http://www.armscontrol.org/factsheets/newnuclearweaponsissuebrief.asp (accessed 17 January 2008).

45. Miles A. Pomper, "Is There a Role for Nuclear Weapons Today?" *Arms Control Today* 35, no. 6 (July/August 2005): 8, http://www.armscontrol.org/act/2005_07-08/views; and Ivan Oelrich, Federation of American Scientists, interview by the author, 1 April 2008. John Pike suggests, however, that it was precisely the absence of high-alert-status procedural familiarity that enabled the Minot-to-Barksdale nuclear-transfer incident to occur in August 2007. Pike, *GlobalSecurity.org*, interview by the author, 31 March 2008.

46. A. Fitzpatrick and I. Oelrich, *The Stockpile Stewardship Program: Fifteen Years On* (Washington, DC: Federation of American Scientists, April 2007), 58–60, http://www.fas.org/2007/nuke/Stockpile_Stewardship_Paper.pdf (accessed 13 July 2009).

47. "Nuclear Posture Review [Excerpts]."

48. Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Report of the Defense Science Board Task Force on Nuclear Capabilities*, 2.

49. "Homeland Security and Counterterrorism."

50. Pomper, "Is There a Role?" 10.

51. Gormley, "Silent Retreat," 200.

52. Gen Lee Butler (address, National Press Club, Washington, DC, 4 December 1996), http://www.wagingpeace.org/articles/1996/12/04_butler_abolition-speech.htm (accessed 13 July 2009).

53. Donald MacKenzie and Graham Spinardi, "Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons," *American Journal of Sociology* 101, no. 1 (July 1995): 44. President Clinton was the first national leader to sign the Comprehensive Test Ban Treaty (CTBT), doing so in 1996, but the US Senate refused to ratify it. US ratification, along with that of 43 other nations, is required for the CTBT to enter into force. "Comprehensive Nuclear Test Ban Treaty Signatories/Ratifiers," Fact Sheet, Bureau of Arms Control, US Department of State, 15 November 2000, http://www.state.gov/www/global/arms/factsheets/wmd/nuclear/ctbt/ctbtsigs.html (accessed 11 April 2009).

54. *Report of the Canberra Commission on the Elimination of Nuclear Weapons* (Washington, DC: Government of Australia, Public Affairs Office, Embassy of Australia, 14 August 1996), "Executive Summary," 1, http://stinet.dtic.mil/cgi-bin/GetTRDoc?AD=ADA338651&Location=U2&doc=GetTRDoc.pdf (accessed 30 November 2007).

55. Roger W. Barnett, *Asymmetrical Warfare: Today's Challenge to U.S. Military Power*, 1st ed. (Washington, DC: Brassey's, 2003), 102–10.

56. Pomper, "Is There a Role?" 7.

57. Lehman, *Deterrence, Denuclearization, and Proliferation*, 18.

58. Ford presented these criteria in a speech to the "Preparing for 2010: Getting the Process Right" workshop at Annecy, France, on 17 March 2007. See US Department of State, "Achieving and Sustaining Nuclear Weapons Elimination," Working Paper Submitted by the United States of America, 3 May 2007, http://www.state.gov/documents/organization/123255.pdf (accessed 1 February 2008).

59. George Lee Butler, "The General's Bombshell: What Happened When I Called for Phasing Out the U.S. Nuclear Arsenal," *Washington Post*, 12 January 1997, http://www.fas.org/news/usa/1997/01/msg00014a.htm (accessed 14 July 2009).

60. Keith B. Payne, "The Truth about Nuclear Disarmament" (Washington, DC: National Institute for Public Policy, 1996), http://www.nipp.org/National%20Institute%20Press/Archives/Publication%20Archive%20PDF/op%20ed%2012_96.pdf (accessed 8 April 2009).

61. Barry Schneider, director, US Air Force Counterproliferation Center, interview by the author, 16 January 2008. Mr. Schneider coined this phrase.

62. Michael Quinlan, "Abolishing Nuclear Armouries: Policy or Pipedream?" *Survival* 49, no. 4 (Winter 2007/2008): 12, http://www.informaworld.com/smpp/ftinterface~content=a783988403~fulltext=713240930 (accessed 14 July 2009).

63. Daryl Kimball, Federation of American Scientists, interview by the author, 1 April 2008.

64. Ibid.

65. Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Report of the Defense Science Board Task Force on Nuclear Capabilities*, 2–3.

66. Hans Kristensen interestingly observes that the change in role of US nuclear weapons from *nuclear* deterrence to *WMD* deterrence occurred unannounced, almost overnight, and without consultation, consequent to the end of the Cold War. Kristensen, interview.

67. Quinlan, "Abolishing Nuclear Armouries: Policy or Pipedream?" 11; and Edward Ifft, "Deterrence, Blackmail, Friendly Persuasion," *Defense and Security Analysis* 23, no. 3 (September 2007): 251, http://www.informaworld.com/smpp/section?content=a782126382&fulltext=713240928 (accessed 14 July 2009).

68. Oelrich, interview.

69. Ibid.; and Kristensen, interview.

70. Oelrich, *Sizing Post–Cold War Nuclear Forces*, 1.

71. C. Paul Robinson, "A White Paper: Pursuing a New Nuclear Weapons Policy for the 21st Century" (Albuquerque, NM: Sandia National Laboratories, 22 March 2001), http://sandia.gov/media/whitepaper/2001-04-Robinson.htm (accessed 31 January 2008).

72. Kenneth N. Waltz, "Nuclear Myths and Political Realities," *American Political Science Review* 84, no. 3 (September 1990): 740.

73. Daryl Kimball estimates the requirement for strategic nuclear weapons "in the low hundreds, from a military point of view." Kimball, interview. Similarly, James Doyle suggests, although without significant justification, a figure of "perhaps 200–400 survivable nuclear warheads of various characteristics." Doyle, "Strategy for a New Nuclear Age," 96.

74. Kimball, interview; and Molander, interview. Moreover, this view is also articulated in Union of Concerned Scientists, *Toward True Security*, 18.

75. John Deutch, "A Nuclear Posture for Today," *Foreign Affairs* 84, no. 1 (January/February 2005): 49.

76. McGeorge Bundy, William J. Crowe Jr., and Sidney Drell, "Reducing Nuclear Danger," *Foreign Affairs* 72, no. 2 (Spring 1993): 143.

77. "Parsing the Nuclear Posture Review," *Arms Control Today* 32, no. 2 (March 2002): 20, http://www.armscontrol.org/act/2002_03/panelmarch02 (accessed 14 July 2009).

78. Woolf, *U.S. Nuclear Weapons*, 43.

79. Doyle, "Strategy for a New Nuclear Age," 102.

80. Payne, "Nuclear Posture Review," 139–40.

81. National Institute for Public Policy, *Rationale and Requirements for U.S. Nuclear Forces and Arms Control*, vol. 1, *Executive Report* (Fairfax, VA: National Institute for Public Policy, January 2001), 10–13, http://www.nipp.org/National%20Institute%20Press/Archives/Publication%20Archive%20PDF/volume%201%20complete.pdf (accessed 12 August 2009).

82. Gormley, "Silent Retreat," 200.

83. Younger, *Nuclear Weapons in the Twenty-first Century*, 13–14.

84. Butler, "General's Bombshell."

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