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An Interview with Gen John E. Hyten Commander, USSTRATCOM

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Keith B. Payne, John S. Foster Jr., Gary L. Geipel

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FEATURE ARTICLE

Best Options for the Nuclear Posture Review

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Policy Forums

<i>An Interview with Gen John E. Hyten Commander, USSTRATCOM</i>	3
<i>A Nuclear Review for a New Age</i>	10
Keith B. Payne, John S. Foster Jr., and Gary L. Geipel	
<i>The Long-Range Standoff Weapon and the 2017 Nuclear Posture Review</i>	34
Adam B. Lowther	
<i>Missile Defense and the Nuclear Posture Review</i>	48
Thomas Karako	
<i>Nuclear Modernization: Best Bang for Our Bucks</i>	65
Michaela Dodge	

Feature Article

<i>Best Options for the Nuclear Posture Review</i>	73
Anna Péczeli	

Perspectives

<i>Nuclear Arms Control: A Nuclear Posture Review Opportunity ...</i>	95
Stephen J. Cimbala	
<i>Nuclear Weapons and Political Behavior</i>	115
James Wood Forsyth Jr.	

Book Reviews

- Nuclear Weapons and Coercive Diplomacy* 129
By: Todd S. Sechser and Matthew Fuhrmann
Reviewed by: Joe Petrucelli
- Arms and Influence: U.S. Technology Innovations and the Evolution of International Security Norms* 131
By: Jeffrey S. Lantis
Reviewed by: Lt Col Mark T. Peters, USAF
- Against the Tide* 133
By: Rear Adm Dave Oliver, USN, Retired
Reviewed by: Maj Walter J. Darnell III, USAF
- Intercept 1961: The Birth of Soviet Missile Defense* 134
By: Mike Gruntman
Reviewed by: Lt Col Jasin Cooley, USAF
- Strategy & Defence Planning: Meeting the Challenge of Uncertainty* 136
By: Colin Gray
Reviewed by: Lt Col Mark T. Peters, USAF
- US Foreign Policy and Defense Strategy: The Evolution of an Incidental Superpower* 138
By: Derek S. Reveron, Nikolas K. Gvosdev, and Mackubin Thomas Owens
Reviewed by: LTC Kurt P. VanderSteen, USA, Retired

An Interview with Gen John E. Hyten

Commander, USSTRATCOM

Conducted 27 July 2017

General John E. Hyten is Commander of US Strategic Command (USSTRATCOM), one of nine Unified Commands under the Department of Defense. USSTRATCOM is responsible for global command and control of US strategic forces to meet decisive national security objectives, providing a broad range of strategic capabilities and options for the President and Secretary of Defense.

SSQ: What do you see as the top three challenges for USSTRATCOM?

General Hyten: Challenge number one is, are we ready to execute our mission right now? So readiness must remain the first challenge. But, being “ready” means more than the nuclear business. It means being ready with a decisive nuclear response, it means being ready in space, ready in cyber, ready in global strike, and ready in missile defense. All of the elements—are we ready tonight if the worst day in our country’s history starts.

The second priority is the need to be ready tomorrow. That means modernizing our forces. I talked about the nuclear modernization piece during the USSTRATCOM Deterrence Symposium, but we have a very similar challenge with space modernization. Our current space infrastructure is not built for the contested space environment that exists today, so we have to modernize our space capabilities. Similarly, cyberspace abilities need to be modernized because cyber is still being created and is evolving rapidly. Finally, our missile defense capabilities must be improved. So my second priority is to make sure the commander who comes after me is as ready as we are now.

USSTRATCOM’s third priority is to make sure we always take care of our people. About a decade ago, the ICBM business was almost broken. The morale was low and we lost focus on the most important element of our business, and that’s the nuclear enterprise. And that’s when we started having problems. But, if you go out into the field now you will find a force that is unbelievably motivated and ready. Sometimes I think caring for people is really priority one, because without people we don’t

have anything. When the entire security of the nation is at risk, being ready has to be job one. Because if for some reason that readiness goes away, then all of us have a problem.

SSQ: When you look at the breadth of the USSTRATCOM mission, what threats concern you most?

General Hyten: I've talked about the threat that concerns me most: can we go fast enough? Somewhere we lost the ability to rapidly adapt and stay ahead of our adversaries. It's an indictment of every one of us, because we're all part of the buying process. It's a threat of ourselves. That's where my head goes first. People always expect me to talk about an adversary, but that's my biggest concern, because we are ready today for any adversary we would face. I have ready forces on alert right now that can handle any threat that comes against the United States. And I have no doubt that over the next three years we're going to work and we'll stay ready. But, can we go fast enough to make sure it stays that way in the future?

When I look at our adversaries, the biggest concern has to be Russia because it is still the only existential threat to the United States. And then below that, it depends on the specific question, because China, North Korea, Iran, and violent extremism all become great concerns depending on what part of our enterprise you consider. North Korea jumps out right now because they're the most uncertain. China jumps out for what they're doing in space. Iran jumps out for what they're doing with missiles, and violent extremism for the fight that is around the world today, in scattered places. So all of them, depending on the specific question or issue. But, it starts with, we have to go fast enough and we've got to make sure we always take care of Russia.

SSQ: When you compare those threats to capabilities, are you satisfied with the current state of the nuclear force?

General Hyten: The current state of the nuclear force is just fine. It's ready. It's on alert. It's ready to perform. The Airmen in the missile fields, the Sailors in the submarine force, the Airmen that operate the bombers and the tankers—they are all ready, right now. The equipment they have is ready right now and they can do the job right now. The equipment they have is ready right now, but the equipment is quite old. This goes back to my priorities. First priority is, can we do it today? And we always have to be, so whoever the commander is, from now for the next 20

years, that's going to be the top priority. I have a job to make sure that I advocate for resources and capabilities to make sure the commander 20 years from now is as ready as we are today. And unless we modernize our forces, that commander will have a problem. That can't be allowed to happen.

SSQ: The Nuclear Posture Review (NPR) and the Ballistic Missile Defense Review (BMDR) are both in progress right now. What are your expectations for those reviews?

General Hyten: While both are under way, I would say the Nuclear Posture Review is probably a little ahead of the Ballistic Missile Defense Review, but they're both in good shape. US Strategic Command is involved in both of those efforts and we understand where they are. I don't want to share where I think the reviews are going to go because those are the policy of the administration. The president of the United States has the final vote, and he hasn't voted yet.

So we're putting together all the work that needs to be done, both on the nuclear side as well as the ballistic missile defense side. Our recommendations will be presented to the administration and ultimately to the president for a decision. I don't want to assume where either one of those reviews will end up. I'm pretty confident that we will end up with a very strong approach to nuclear deterrence, which will include modernization of our forces.

SSQ: Would you characterize the NPR or BMDR changes as evolutionary or revolutionary?

General Hyten: I would say evolutionary. I don't think when it comes to our nuclear deterrent, there's a revolutionary change about to happen. It won't include space and cyber, but coming out of the Nuclear Posture Review we will broaden our discussion of what strategic deterrence really is in the twenty-first century. The nuclear enterprise is the backbone of strategic deterrence and where deterrence starts. But now we need to build on that and create a multi-domain deterrence structure that delivers integrated effects. Integrated effects means we'll bring all the capabilities of US Strategic Command against any adversary, anywhere in the world, in any domain, at any time.

SSQ: The Russians have effectively violated the Intermediate-Range Nuclear Forces (INF) Treaty. What should the United States do now?

General Hyten: Since Russia violated the INF Treaty, I believe it is in our nation's best interests to somehow work to bring them back into compliance. That includes a range of options, with our partners and allies, and all the instruments of US government power. I give my recommendations to my leadership, who is the secretary of defense. The secretary of defense, the secretary of state will give their recommendations to the president. The president has the opportunity to make a number of decisions based on our recommendations and he will.

But my desire, and I think the desire of our country right now, is to bring the Russians back into compliance with the INF Treaty because it provides a certain amount of stability we need in the intermediate-range nuclear force regime. It's the same with the New START Treaty. I support the New START Treaty, particularly the force levels in the New START Treaty because that allows me a clear idea of what it takes to deter Russia. My first job is to provide strategic deterrence. If I know specifically what the Russian capabilities are, and it's verifiable under a treaty, then I know the force I have to have prepared and ready to provide that deterrence. If that goes a different direction, then it becomes a much more difficult problem for US Strategic Command and all our forces.

Our job as a nation—not just my job, but our job—is to bring them back into compliance. I'll give my military recommendations and the State Department will give their recommendations and the president will decide the way forward. That will also be part of the Nuclear Posture Review.

SSQ: Very recently you ordered some changes to the organization of USSTRATCOM. Can you share some of the details and explain why you made those changes?

General Hyten: We are making these changes to arrive at a simpler structure. When I took command in November 2016, I sat down with all my commanders—18 of them. And I had four-stars, Navy admirals on my left, Air Force generals on my right; and all my task force and functional component commanders around the table. The agenda had all my component and task force commanders talking to me, but not the four-stars. I realized that all the component commanders and task force commanders worked for those four-stars. So I asked myself, why aren't they the components, and I'll just ask them and they can reach out to the guys that already work for them and fix the problem?

We started working through this restructure, and it became part of a larger effort to make sure everybody that works in this command

understands it's a war-fighting command with a normal structure. And that means we should have a war-fighting construct. A war-fighting construct means we'll have an air component, a maritime component, a space component, and right now, a missile defense component, pending the outcome of the BMDR. But it's just a war-fighting structure. Everybody who comes into this command comes from a background accustomed to having an air component, a maritime component, a land component—it is a familiar structure.

The only part that is a little different is the space component, since space is part of the command. We need somebody focused on space, and I have a four-star in Colorado Springs in the job I used to be in, that wasn't the component. He's the one who knows more about space than anybody and all the space professionals for the most part work for him.

So we're just structuring to focus on war fighting when we come in every morning. It is simpler. I understand why the old structure may have made sense 15 years ago. But to me, the way the world has changed and the threats out there right now require us to focus on war fighting.

SSQ: When you thought about making these organizational changes, were there some missions that needed to be moved into USSTRATCOM or maybe separated from USSTRATCOM?

General Hyten: The only issue that was really on the table was the nuclear targeting piece that was in the Joint Functional Component Command for Global Strike. When it comes to execution of the nuclear mission, that is executed by the president through the commander of STRATCOM and not through a component. So that targeting function needs to be in STRATCOM. I haven't made the final decision there yet, but the one thing I can tell you is it's going to come back inside the STRATCOM staff. And again, it's just going to be normalized.

SSQ: We don't hear much of anything on civil defense anymore. Should the United States focus more on it?

General Hyten: The Russians did a civil defense drill last year as part of their big exercise with 40 million Russian citizens. Not many people heard about that but you can't keep something like that secret. Forty million people were involved, responding to a simulated attack. The attack has to be from the United States.

This is a complicated question but an important one for our citizens. A big part of me, the American citizen part of me, loves living in a

country where people don't worry about that stuff. But there has to be a balance where the people understand they don't worry about nuclear attack because they support the readiness of the capabilities that allow them not to. That's the balance we have to find as we go forward.

So I don't want to scare people. I don't want to go back to the place where we're under imminent threat of complete destruction. I want my kids and your kids to be able to live a life where they don't worry about that stuff in the future. But I also want citizens to be aware that we have to have these capabilities and they have to be ready all the time. For our part, we need to educate the public that a large number of Americans and our allies spend their entire lives creating the environment where others can be free from that type of worry. So that's the balance I would like to get back to. We're not going to build giant, million-person civil defense shelters. The public needs to understand that they're safe and secure because we are ready for the worst day if it comes.

SSQ: If you could change three things within the DOD that affect USSTRATCOM, what would you change?

General Hyten: I would change the buying process we have. Note I said buying process, not acquisition process. One of my big pet peeves is when people hear my speech on modernization challenges they say I'm slamming the acquisition community. I'm not. It's the buying process that we have across the board. It's from budget to requirements to acquisition to test—every part of the process. Why I tell the story of the Minuteman I program is because the one thing Gen Bernard Schriever had that we do not have today is all the authority and responsibility to execute a program and a budget on the first of the year. When you have those two pieces, you have the ability to go fast. And oh, by the way, if you fail there is no doubt who's accountable. If you succeed, there's no doubt who's accountable. I would like to reestablish accountability back in the program, which would lessen a number of the bureaucratic layers we have built—not just in the Pentagon, but across our service structure, our buying structure, our contracting structure, everything. I'd like to put those authorities back in the right place.

People think I'm trying to eliminate the Defense Acquisition Executive but that is not the case. I want that oversight. I want the authorities out there in the field, but everybody has a boss. I'm not trying to eliminate bosses, but I would really like to get authority and responsibility back to the field. That's probably the biggest change I would make.

Next, I would have a budget on the first of the year every year. That would be enormously beneficial. And I'll just keep it at those two.

SSQ: Twenty years from now, do you envision the command being different than it is today? And if so, how?

General Hyten: Twenty years from now. Well, Cyber will have stood up as a unified command. I expect to have a very interesting command relationship with US Cyber Command because we're going to have to integrate the information component of our nation, and that's going to require a very tight partnership between Cyber Command and Strategic Command.

I also see 20 years from now a Space Command that's probably either under as a sub-unified command or a separate command. And we're going to have to figure out how to integrate those pieces together.

So I see some changes happening. It will be interesting 40 years from now to see whether all that stuff comes back together. But, in the near future the cyber and space elements—because of their importance—standing up and being focused on. Then the job of Strategic Command will be to integrate all that together to provide a strategic deterrent for the nation across all the capabilities that we have. But the mission will remain the same, with more modern capabilities, and I still see the priorities being the same.

SSQ: General Hyten, on behalf of the *Strategic Studies Quarterly* team and the entire SSQ audience, thank you for your time and for sharing your thoughts and ideas. We wish you all the best as commander of USSTRATCOM. **SSQ**

A Nuclear Review for a New Age

The 2010 Nuclear Posture Review (NPR) explicitly elevated nonproliferation “for the first time” to the highest priority of US nuclear policy, among other priorities, including deterrence and assurance.¹ It also identified a reduction in the roles and number of nuclear weapons as a means to promote its priority nonproliferation goal. Senior Department of Defense (DOD) officials identified “preventing nuclear proliferation and nuclear terrorism” and “reducing the role of nuclear weapons in US strategy” as the top US strategic objectives, and stated explicitly that the DOD assessed “deterrence requirements against these metrics.”² Proponents of using further US nuclear reductions and limitations to promote nonproliferation argue that US nuclear-force reductions contribute to decisions of other countries to forego nuclear weapons or to more seriously pursue nonproliferation. There is, however, little to no evidence supporting this widely claimed linkage. Instead, considerable evidence exists indicating that credible US nuclear capabilities contribute to the assurance of allies and thus to the goal of nonproliferation.

Today there is a consensus in Washington regarding the deteriorating security environment since 2010, and senior DOD officials accordingly have identified US nuclear deterrence as the department’s “highest priority mission.”³ US nuclear weapons and delivery systems have aged while potential adversaries have increased and modernized their arsenals. The attitudes and perceived options of US allies in many cases are different as well. Taken together, these and other changes highlight the high priority of the new NPR and the need for well-informed discussions leading to new guidance.

The 2017 NPR should explicitly reestablish deterrence, assurance, and damage limitation as the priority goals for US nuclear policy. Nonproliferation remains important, but the emphasis on it as the priority

This article is drawn from Keith B. Payne and John S. Foster Jr., *A New Nuclear Review for a New Age* (Fairfax, VA: National Institute Press, 2017). In addition to the authors of this article, participants in this study include Dr. Kathleen Bailey; Gen Kevin Chilton, USAF, retired; Mr. Elbridge Colby; Mr. Matthew Costlow; Dr. J. D. Crouch II; Ms. Michaela Dodge; Amb. Eric Edelman; Mr. Fritz Ermarth; Dr. Colin S. Gray; Mr. Kurt Guthe; Dr. John Harvey; Ms. Rebeccah Heinrichs; Amb. Robert Joseph; Dr. Thomas Karako; Gen C. Robert Kehler, USAF, retired; Dr. Susan Koch; Dr. Matthew Kroenig; Sen. Jon Kyl; Dr. Steven Lambakis; ADM Richard Mies, USN, retired; Hon. Franklin C. Miller; Sen. Charles Robb; Dr. Bradley Roberts; Mr. Guy Roberts; Mr. Thomas Scheber; Dr. Mark Schneider; Dr. William Schneider; and Gen Larry Welch, USAF, retired.

goal “atop” US nuclear policy, and the corresponding prioritization accorded to the continuing reduction of US nuclear forces, should not be sustained. The realities of the contemporary threat environment and the corresponding prioritization of credible deterrence, assurance, and damage limitation are key factors to consider in the new NPR mandated by the Trump administration.⁴ This alone is no small difference from the dominant post–Cold War nuclear policy narrative, which has sought largely to limit and reduce US nuclear capabilities on a continuing and progressive basis. This article briefly examines the nuclear challenges facing US deterrence strategy. It then analyzes US nuclear policy and purpose including adaptability, declaratory policy, modernization, missile defense, arms control, capacity, and affordability while offering recommendations. Regional security issues in NATO and Asia also are discussed along with implications and recommendations.

Nuclear Challenges

The world looks very different—and much more threatening—today than it did at the time of the last NPR in 2010. Therefore, a new review of US nuclear policy and requirements must begin with a realistic assessment of the security environment and the challenges it poses. The four countries whose leadership and doctrine continue to be of greatest importance to US nuclear policy are the Russian Federation, the People’s Republic of China (PRC), the Democratic People’s Republic of Korea (DPRK), and the Islamic Republic of Iran. In addition, the potential terrorist-style actions of belligerent non-state actors continue to be of major concern. Each is considered in turn.

Russia

Russian leaders now appear to consider their country’s nuclear capability as an enabler of expansionist regional actions. Developments in Russian doctrine elevate the potential role of nuclear weapons. Most ominously, public reports indicate that Russia has developed an “escalate-to-win” approach that includes threats of nuclear first use and apparent planning for nuclear first use in regional conflicts to demonstrate the extreme risks of Western resistance to Russian geopolitical gains.

Russia has put highest priority on modernizing strategic and nonstrategic nuclear capabilities for the past decade—announcing more than 20 programs to develop and deploy new strategic nuclear systems or modernize

Soviet legacy systems. These include multiple systems for every leg of the Russian nuclear triad as well as two possible systems extending beyond the triad: a hypersonic glide vehicle and a nuclear-armed and powered undersea delivery vehicle. These Russian developments pose unprecedented challenges to Western deterrence and assurance goals.

Putin and his small inner circle—poised to continue controlling Russian defense and foreign policy for years to come—are inherently anti-Western and have named the United States and the North Atlantic Treaty Organization (NATO) as priority threats. Potential flashpoints between Russia and NATO span Eastern Europe and certainly include the Baltic States as well as the Middle East.

China

Under the leadership of President Xi Jinping, China has redoubled its efforts to achieve hegemony in Asia and, correspondingly, continued its military buildup, including nuclear weapons. The precise size and nature of China's nuclear arsenal—like its nuclear doctrine—remain opaque. China certainly controls at least several hundred nuclear weapons, both strategic and theater missiles, and is committed to nuclear modernization, including a new ballistic-missile submarine and a new generation of strategic bombers.

Official Chinese declaratory policy includes a no-first-use nuclear policy emphasizing the ability to survive a nuclear attack and respond with unacceptable damage on an enemy. However, there are considerable doubts about the reality of this expressed Chinese commitment to no first use; many analysts tend to believe that China's actual policies are more flexible.

North Korea

Post-Cold War hopes that the DPRK would collapse peacefully or slowly reform have not been realized. North Korea openly defies UN resolutions and international sanctions with provocative military behavior and threatening rhetoric, including nuclear threats. North Korea's continued development of nuclear weapons and long-range ballistic missiles—linked to its overarching goals of regime preservation and unifying the Korean peninsula under its control—place the regime in fundamental opposition to US and allied interests in the Pacific.

Under the solidified leadership of Kim Jong Un, North Korea's nuclear forces appear to be increasing both in quantity and quality. The DPRK has tested a nuclear device five times in recent years and, while open estimates vary, the country may have enough fissile material to produce 50–100 weapons by 2020. It also remains committed to developing long-range missiles capable of reaching US territory.

Officially, North Korea claims that its nuclear capability is meant for defensive or retaliatory purposes, but its explicit nuclear threats appear to reflect hostile intent, and little is known with certainty about how the DPRK's leaders might employ nuclear weapons. Certainly the regime continues to leverage its nuclear program for coercive diplomacy and to bolster its international standing.

Iran

Despite the Joint Comprehensive Plan of Action (JCPOA), Iran retains the potential to become a nuclear power in relatively short order. The JCPOA does not limit potential nuclear delivery vehicles such as missiles, and Iran reportedly continues to invest heavily in their development. Its recent satellite launches suggest that long-range missile development remains part of these efforts as well. Technology sharing between North Korea and Iran also is of great concern.

Nonstate actors

Open-source reports indicate terrorist groups so far have been unsuccessful in obtaining a nuclear weapon or the materials needed to assemble one. Should this change, however, the threat to the United States and its allies could be immense and immediate—and so this possibility must remain a high priority in US nuclear thinking.

Previous nuclear reviews anticipated a more benign nuclear threat environment in which nuclear weapons and nuclear deterrence were expected to play ever-diminishing roles. Today however, this expectation should not serve as a planning assumption for the new NPR. The four countries noted above pose a wide spectrum of threats, especially nuclear, to the United States and allies. Perhaps equally significant, however, are the great uncertainties pertaining to the scope of threats that will develop in coming decades. The United States must acknowledge and prepare for potentially divergent and wide-ranging threats in the

highly dynamic threat environment that has now followed the immediate post–Cold War period.

Nuclear Policy and Purpose

The general purposes of US nuclear capabilities—and therefore the goals of nuclear policies—have been remarkably consistent over time and certainly since the first NPR in 1994. Of particular importance are deterrence of enemies, assurance of allies, and defense or damage limitation in the event of war. It is important to understand the ongoing salience of each of these purposes.

Deterrence

Defined by the DOD as “the prevention of action by the existence of a credible threat of unacceptable counteraction and/or belief that the cost of action outweighs the perceived benefits,” deterrence has been a central purpose of US nuclear policy and capabilities. Going back to the 1948–49 Berlin crises and the 1962 Cuban Missile Crisis, considerable evidence exists that nuclear deterrence helps uniquely to prevent war or the escalation of conflict between countries. And even with regard to nonstate actors, deterrence can help to dissuade adversary countries from providing technical or material assistance to dangerous groups.

In a highly dynamic threat environment, to the extent possible, US deterrence policies must also be highly adaptable: capable of being “tailored” to the various requirements posed by a shifting spectrum of opponents and contingencies. Such adaptability, in turn, rests on the availability of a flexible nuclear-force posture that provides US presidents with a range of deterrent options that not only deter but also could help limit damage to civilian populations and society in the event deterrence fails.

Assurance

While the primary audiences for US deterrence messages are adversaries, nuclear assurance addresses itself to allies and partners by creating or reinforcing confidence among them regarding the US ability and will to help preserve their security against external threats. The United States extends nuclear assurance commitments to more than 30 countries, particularly in Europe and Northeast Asia. It provides confidence to allies

that their security does not require their development of independent nuclear arsenals. Thus, assurance contributes to nonproliferation—preventing the adoption of nuclear weapons by additional countries or a numerical increase in the number of nuclear weapons—which remains a vital goal.

As with deterrence, assurance depends not only on the credibility of the US commitment but also on the flexibility of available options. While some allies may have doubts that the United States would risk all-out strategic nuclear war involving the American homeland to defend their territory, sub-strategic US nuclear and nonnuclear capabilities deployed in their vicinity can help provide important assurance effect.

Damage Limitation

In the event that deterrence fails, damage limitation continues to be a US policy priority reinforced by nuclear capabilities. And, as a practical matter, in the event deterrence fails, damage limitation will likely be the highest US priority. Numerous public policy documents in the past have identified damage limitation as a priority US goal. The Obama administration's 2013 *Report on Nuclear Employment Strategy of the United States* implicitly identifies it as such.

A potential means of limiting damage is so-called intra-war deterrence, in which the priority goal during an ongoing conflict is to reestablish deterrence and thereby minimize escalation and damage to US and allied military, political, and societal assets. While reestablishing deterrence following initial conflict can never be considered a certain outcome, it is most likely to be achieved if the United States has a range of limited nuclear and nonnuclear options at its disposal that can provide a response scaled to any level of attack. Active defenses, such as ballistic missile and air defenses, also contribute directly to the goal of damage limitation.

Declaratory Policy

The primary purposes of declaratory policy are to signal US deterrence goals and expectations with regard to nuclear forces and to help thereby deter foes and assure allies. Such statements form an essential component of US deterrence and assurance strategies, and their content and evolution should be considered as such in the forthcoming NPR. Current US declaratory policy stems from the Obama adminis-

tration's response to a 2009 review undertaken by the bipartisan Strategic Posture Commission (the Perry-Schlesinger Commission). At that time, the United States reasserted traditional positive security guarantees: the commitment to come to the aid of allies under attack. It also reasserted traditional negative guarantees, with a modification, promising not to employ nuclear weapons against countries that are parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) "and in good standing with their nuclear nonproliferation obligations." The United States rejected declarations of "no first use" (the promise that the United States would employ nuclear weapons only in response to a nuclear attack) and "sole purpose" (the statement that the sole purpose of US nuclear capabilities is to deter nuclear attack). Instead of no-first-use or sole-purpose declarations, the United States retained its traditional approaches of calculated ambiguity surrounding the employment of nuclear weapons and the application of nuclear deterrence to a spectrum of severe threats to the United States and allies.

Rejecting no-first-use and sole-purpose declaratory policies remains prudent. A no-first-use declaration would unsettle US allies and weaken deterrence by making conventional attack on an ally appear less risky. Correspondingly, it also would likely contribute to further nuclear proliferation incentives by undermining US assurance goals. A sole-purpose declaration would be extremely imprudent as long as significant biological, chemical, and large-scale conventional threats continue to exist as possible contingencies to be prevented via nuclear deterrence. Retaining current US policies regarding nuclear-alert status and the option for "launch under attack" should also be retained.

The United States, however, should consider greater clarity and specificity regarding its declaratory nuclear policy in some cases. In the face of Russia's escalate-to-win concept and China's increasing military power and expansionism, more specific deterrent threats may be needed to strengthen deterrence and assurance. This would involve the United States and allies more clearly articulating a consensus on nuclear deterrence policy and options to prevent various possible levels of escalation. Calculated ambiguity may remain, but deterrence at lower levels of possible escalation could be served by a variety of measures, including public signaling of NATO and allied cohesion and nuclear exercises.

The United States must clarify once again that it will maintain the capabilities needed to design, develop, produce, certify, and, as necessary,

deploy nuclear weapons in support of national deterrence and assurance goals. US intentions in this regard appear to have become uncertain in recent decades, unsettling some allies and leading adversaries to conclude that this is an advantageous area in which to challenge the United States.

Declaratory policy remains a vital component of nuclear deterrence and assurance goals. It should contribute to, not limit, US adaptability. Current US declaratory policy is appropriate to today's security environment and does not require significant overhaul.

Adaptability as Policy and Purpose

The current security environment, the purposes of US nuclear capabilities in response to that environment, and the reality of lengthy acquisition cycles for new weapons systems combine to make adaptability an essential metric for US planning and nuclear capabilities supporting deterrence, assurance, and damage limitation. It encompasses flexibility to adjust to different adversaries, contingencies, and employment plans, as well as resilience, which allows national leaders to adjust the force posture in response to adverse military, political, or technological changes. In practice, several nuclear-force posture attributes reinforce flexibility and resilience. These include survivability (the ability of nuclear forces to withstand or escape attack), suitable range, ability to forward deploy (closer to adversaries and allies alike), prompt response capability, variable payloads (e.g., the ability of ballistic missiles and bombers to carry different types and numbers of weapons), assorted weapon yields, and high delivery accuracy.

In addition, several other factors enhance the resilience of the US nuclear force posture. For example, the existing force structure's diversity and readiness are a key factor, including its "triad" of land-based, sea-based, and airborne delivery systems. The ability to adjust the size and alert levels of the deployed force—by bringing weapons out of stockpile if necessary, for example—is important as well. And, the potential to modify existing capabilities through straightforward hardware changes also can enhance adaptability.

In summary, adaptability in general should be made a guiding metric for the evaluation of US nuclear policy, planning, and force structure; its preservation and enhancement in these elements should be a primary theme in the 2017 NPR.

Adaptability and Nuclear Modernization

The United States is in the initial stage of a planned nuclear-force modernization program. The program will encompass all elements of the force, require a budget of hundreds of billions of dollars over the next quarter century, and affect US capabilities for deterrence, assurance, and damage limitation for decades. Here we briefly outline key components of present and planned US nuclear forces as discussed publicly and evaluate the changes expected from the modernization program against the metrics of adaptability described above. We also consider aspects of technology development and the nuclear-weapons infrastructure that are in need of modernization. The potential effects of key force changes are summarized with reference to the adaptability criteria.

Survivability. Force survivability is a matter both of escaping or withstanding attack (pre-launch survivability) and penetrating defenses that could impede an effective response (post-launch survivability). The force-modernization program, as reported publicly, will not change the survivability level of US ballistic missile submarines (SSBN) in port. Nor will it change the survivability of bombers and dual-capable aircraft (DCA) at air bases, or intercontinental ballistic missiles (ICBM) in silos. The *Columbia*-class SSBN, however, is designed for greater at-sea survivability than its *Ohio*-class predecessor. The B-21 bomber, long-range standoff missile (LRSO), and F-35A DCA are all designed for greater post-launch survivability against advanced air defenses than their existing counterparts. And the planned ground-based strategic deterrent missiles are expected to be more survivable after launch than the existing Minuteman III.

Suitable range. Current submarine-launched ballistic missiles (SLBM), ICBMs, and bombers have intercontinental ranges and—while the ranges of next-generation systems have not been revealed publicly—it is reasonable to expect that their ranges will be similarly intercontinental. In the same way, the LRSO may be expected to have an intermediate range comparable to the current air-launched cruise missile (ALCM-B) and retired Advanced Cruise Missile. DCA typically have shorter ranges than bombers (and open-source estimates suggest the F-35A will be no exception) but can be forward deployed and refueled in flight to extend range.

Ability to forward deploy. Bombers and SSBNs are the forward-deployable legs of the US nuclear triad, and DCA can assume forward-

deployment duties as well. Historically, both bombers and submarines have been sent abroad on visible “presence” missions to deter foes and assure friends. Other than possible concerns about their security in foreign locations or the revelation of their design elements, nothing would argue against the use of next-generation systems in similar ways. And, of course, the F-35A strike fighter should be entirely capable of assuming its predecessors’ forward-deployment roles.

Prompt response capability. Prompt response involves the ability to reach targets from long range in minutes rather than hours. As reported publicly, this capability certainly will be sustained in next-generation ICBM and SLBM systems expected under the modernization program.

Variable payloads. Today, SLBMs and ICBMs are capable of carrying two types of reentry-vehicle warheads. Follow-on missiles envisioned in the modernization program could carry as many as three warhead types. The future bomber force, as reported publicly, will continue to carry cruise missiles—LRSO missiles in place of ALCM-Bs—but there will be fewer types of gravity bombs as most variants of the B61 bomb are retired. The future bomber force also will retain significant “uploading” capacity, to take on additional warheads and bombs if conditions warrant.

Assorted weapon yields. This aspect of adaptability also will not change significantly, with future SLBMs and ICBMs, as openly reported, still being armed with warheads of high (reportedly hundreds of kilotons or more) yield, while bombers reportedly will carry weapons of both high and low yields.

High delivery accuracy. Though improvements in the next generation seem likely, current SLBMs and ICBMs already boast accuracy reported to be within a few hundred feet of their intended targets. The modernization program is likely to impact the delivery accuracy of gravity bombs in a future force, since the follow-on B61-12 gravity weapon includes a guided tail-kit section designed to improve accuracy, as openly reported.

Technology development and rebuilding infrastructure. Beyond the replacement of aging weapons systems themselves—as planned in the modernization program—the United States also must grapple with the need to maintain and, in some cases, restart technology-development efforts surrounding our nuclear forces and to rebuild necessary infrastructure.

Examples of technologies in which the United States may face the choice of either competing or losing key competencies to adversaries include anti-ballistic missile defenses, cruise-missile technology and hypersonic delivery

vehicles, space-control capabilities, nonnuclear offensive technologies such as railguns and lasers, and command-and-control systems.

In addition, as US production of nuclear weapons in recent decades has ceased, the larger intellectual infrastructure needed to design, manufacture, and produce nuclear systems also has atrophied, creating what a growing number of observers believe are risky gaps between US capabilities and those of adversaries whose nuclear-technology programs continued apace. The US nuclear-weapons stockpile today is the smallest since the Eisenhower administration, and a comprehensive approach to sustaining overall nuclear readiness does not appear to exist. Addressing these areas of need in the 2017 NPR will contribute to overall US flexibility and resilience. The accelerating replacement of the two critical US nuclear-material production facilities should be an urgent priority. The United States reportedly has not had a fully operational plutonium or uranium production complex since 1989. Finally, US nuclear command, control, and communications systems—including early-warning sensors, mobile and fixed command-and-control centers, and communications links between deployed nuclear forces and national leaders—remain in urgent need of modernization.

In summary, the existing US nuclear modernization program is critical to sustaining the adaptability of US nuclear forces needed to support the priority national goals of deterrence, assurance, and damage limitation. The greatest virtue of the planned modernization program in this regard will be to preserve the flexibility and resilience inherent in the US nuclear triad for decades to come as production lines reopen and new systems replace those whose practical lifespans are ending. The NPR also should consider possible changes to the current modernization program to achieve greater adaptability suitable for circumstances in which threats are emerging beyond what has been expected, more funding becomes available, new technological opportunities appear, or threat conditions dictate that US capabilities must be improved at a faster-than-planned pace.

Missile Defense

Ballistic missile defense (BMD) is widely recognized as a critical component of national and regional security and has the potential to contribute significantly to deterrence, assurance, and damage limitation in a dynamic strategic environment. Strategic missile defenses were severely

restricted by treaty for 30 years on the assumption that they undermined “stable” mutual deterrence. However, missile threats facing the United States and its allies have been expanding for decades, and homeland and regional defenses now are accepted as essential contributors to security. Indeed, BMD can support all three priority purposes of US nuclear capabilities in general:

Deterrence. BMD can contribute to deterrence in several ways. First, it may provide the United States with very useful alternatives to offensive preemption or retaliation in crises. This was the case, for example, in the days prior to North Korea’s 2006 Taepodong-2 launch, when the deployment of a limited US homeland-defense system gave President Bush an alternative to a preemptive strike on the North Korean missile site (as was recommended by some at the time). Second, by helping to deny adversaries plausible limited nuclear first-use options against US allies and the US homeland, BMD can discourage even determined opponents from pursuing such dangerous strategies and deny their effectiveness in cases where opponents choose such strategies. Third, by relieving pressure to strike an adversary’s launchers preemptively in crises, effective BMD also can buy time for leaders to pursue diplomacy or nonnuclear means of averting or limiting escalation in an emerging nuclear crisis. Finally, point defense for critical military assets at home and abroad can enhance the survivability of US and Western deterrence forces that an adversary otherwise might believe it could eliminate by preemptive attack—thereby strengthening deterrence and discouraging opponents from dangerous first-strike concepts.

Assurance. First, by reducing the potential costs of conflict with an ICBM-capable adversary, missile defense of the US homeland can improve the credibility of US security guarantees to allies by helping to counter an opponent’s possible expectation that nuclear threats to the US homeland will work to decouple the United States from allies. Second, regional missile defenses help to reinforce assurance by providing local defensive capabilities while demonstrating the US security commitment. Finally, the cooperative process of developing and deploying missile defenses helps to build stronger alliance relationships and gives the United States a larger presence in, and commitment to, allies’ security.

Damage limitation. Missile defenses can contribute to damage limitation by helping to discourage an adversary from escalating a conflict and by providing a potentially meaningful degree of direct societal

protection in many plausible conflict scenarios. BMD also can provide unique damage-limitation capabilities against the possibility of an accidental or unauthorized missile strike. Finally, BMD can help provide a relatively near-term counter to the emerging North Korean missile threat—a defensive alternative to the option of a preemptive strike often discussed publicly. In addition, BMD may contribute to the goal of dissuading some adversaries from acquiring missile capabilities in the first place. For example, the prospect of strong US BMD against long-range ICBMs from Iran or North Korea could help discourage their continued investment of scarce resources in the development of such weapons.

In short, far from being an impediment to deterrence, BMD has emerged as a potentially crucial element in support of deterrence—particularly with regard to smaller and more unpredictable nuclear adversaries. BMD can also contribute uniquely to US assurance and damage-limitation goals. Recommendations for consideration to help improve the contributions of BMD to deterrence, assurance, and damage limitation include, for example: improving and expanding US capabilities for homeland defense, including defense against cruise missiles and potentially hypersonic missiles; expanding and accelerating SM-3 capabilities; the fielding of a space-based layer of sensors for persistent “birth-to-death” missile tracking and discrimination; providing operational capability to the Aegis Ashore Missile Defense Test Complex in Kauai, Hawaii; and, *inter alia*, continuing readiness efforts for a possible East Coast BMD site.⁵

Arms Control and US Goals in the New Threat Environment

Arms control is a long-standing element of nuclear policy, and its content and usefulness in the current security environment must be considered. In general, however, Russia has not been a cooperative or trustworthy arms control partner for many years. It has rejected recent US arms control overtures in strong terms, and both Russia and China currently pursue aggressive, expansionist foreign policies—backed by growing nuclear arsenals—at the expense of US allies. These conditions do not make for a promising arms control environment and suggest that a key requirement of US arms control efforts in the coming years must be to strengthen US deterrence, assurance, and damage-limitation capabilities by contributing to the adaptability of US nuclear capabilities rather than seeking continued numerical nuclear force reductions

in the pursuit of nonproliferation as the “top” nuclear policy objective. In addition, US allies and partners should be consulted closely on arms control efforts to reinforce the vital assurance goals of nuclear policy.

The supposed linkage between continuing US nuclear reductions and the advancement of US nonproliferation goals is a myth. Widespread belief that US nonproliferation goals demand continuing US nuclear reductions and limitations has had a significant effect on US nuclear policy for many years. Contrary to this widespread belief, however, available evidence suggests strongly that the reduction of US nuclear capabilities and their limitation does not advance nonproliferation. Rather, it may in fact contribute to proliferation by motivating some allies under threat in the current environment (particularly in Asia) to consider acquiring their own independent nuclear deterrence capabilities. Instead of focusing the US arms control agenda on further US nuclear reductions for nonproliferation purposes, the United States should instead emphasize proven approaches to minimizing and countering proliferation, such as extending credible nuclear deterrence to allies, denying other countries the technology required to produce nuclear weapons, addressing the actual factors that motivate countries to pursue nuclear weapons in the first place, and pursuing a variety of defensive measures to protect against proliferation.

A set of basic principles for the United States with regard to further arms control or limitation agreements should include:

1. Arms control should not be pursued for its own sake and/or necessarily for the elimination of nuclear weapons but rather to advance the traditional goals of arms control: reducing the probability of war, the consequences of war, and the cost of maintaining adequate defense capabilities. As such, a primary goal of US arms control policy now should be to advance the adaptability of US capabilities so as to strengthen their support for US deterrence, assurance, and damage-limitation goals.
2. The US arms control agenda should not be bound by the 2013 US proposal for further reductions of up to one-third of US deployed strategic weapons.
3. If US-Russia nuclear arms control negotiations again become feasible, then nonstrategic nuclear forces also must be included.

4. Effective verification and enforcement of agreements is essential, and the United States should not consider new arms control steps as long as Russia remains in persistent and stark noncompliance with existing agreements.
5. The United States should avoid reestablishing treaty limits on missile defense.

The United States should continue adhering to the New START Treaty through its 2021 end date as long as Russia remains in compliance. If Russia does not comply with New START, then the United States should mitigate the consequences and strengthen US adaptability outside the treaty as necessary. The Trump administration also should review the existing US position in support of the Comprehensive Test Ban Treaty; the National Nuclear Security Administration should, for the sake of prudence, be directed to improve its readiness for testing—even if there is no immediate need to resume nuclear testing. Finally, where feasible, the United States should explore cooperative endeavors with Russia and the PRC, such as participation in the Global Initiative to Combat Nuclear Terrorism.

The United States must be clear-eyed about its own goals, the intentions and trustworthiness of its arms control interlocutors, and the essential requirement for verification and enforcement of all existing and prospective arms control endeavors. It should consider using available arms control venues and cooperative possibilities to explore new options to reduce the probability of war, the destructiveness of war, and the cost of sustaining adequate deterrence, assurance and defense capabilities.

How Much Is Enough?

The size of a future US nuclear force is likely to be a key consideration in the forthcoming NPR. The specification of “how much is enough” in terms of nuclear force numbers has been an enduring question addressed in previous NPRs. A “minimalist” school of thought has long argued for no more than the force size necessary for a retaliatory threat to an opponent’s society, in response to an attack by that opponent. Such a threat is said to be adequate for US deterrence requirements while demanding a relatively small number of US nuclear weapons, typically ranging from a few dozen weapons to hundreds. A number of reasons

exist to reject the minimalist approach to answering the question of US nuclear force sizing:

1. Declaring a low specific number of weapons as adequate for US deterrence needs because it meets the requirements to threaten an opponent's society reflects a basic misconception of deterrence. No one can know the "minimal" number of nuclear weapons necessary to deter credibly, and even if known, the number likely would change on a continuous basis due to shifts in force structure, weapons technology, the opponent's worldview, the stakes of the conflict, context, and numerous other factors. This is the reason deterrence strategies must be sufficiently flexible to be tailored to specific contexts, not predicated on a static minimalist concept.
2. A minimal number of weapons may not be sufficiently large and diverse to discourage first-strike strategies and planning by a determined opponent. The consensus of Democratic and Republican administrations for 50 years has been to maintain a diverse and, in some ways, overlapping triad of strategic nuclear forces to ensure the survivability of US forces, as is necessary for deterrence, and thus discourage opponents from considering first-strike strategies, and to preserve credible deterrence even in the face of an opponent pursuing such a strategy.
3. The minimalist focus on threats to civilians and other societal targets as the measure of effective US deterrence capabilities is widely considered immoral, a violation of international law, and likely to be viewed as a noncredible US deterrent by some opponents.
4. A minimal force number oriented to threatening societal destruction would provide little flexibility to hold at risk other assets that an opponent's leadership might value more than civilian centers, such as military or political control targets. Thus, such a minimal deterrent could be inadequate and an imprudent approach to deterrence and assurance.
5. A minimal force would provide a future US president the most miserable option if deterrence fails—that of responding against an opponent's society with remaining forces—at the expense of other targeting options that could more likely help limit escalation of the conflict and avoid further counterstrikes from the opponent.

6. A minimal nuclear force needed to threaten society likely would be seen as wholly insufficient for assurance by at least some allies under the US nuclear umbrella.

In summary, the US goal must be for nuclear deterrence and assurance to work as effectively as possible in all cases and to limit escalation to the extent possible should deterrence fail. This demands the rejection of a minimalist approach. In the forthcoming NPR, recommendations regarding US nuclear force numbers should *not* aim for a hypothetical minimum derived from only the requirements for holding societal targets at risk, fixed budget numbers, or other static boundaries. The standards of adequacy for multiple nuclear policy goals in severe, diverse, and shifting conditions can never realistically be considered fixed. Instead, numbers should be the product of a careful assessment of the dynamic security environment and US purposes within it.

Affordability of Nuclear Deterrence

The cost of US nuclear capabilities ultimately must be judged against the value they provide in support of US national goals—especially deterring war, assuring allies, and limiting damage if deterrence fails, particularly by preventing the escalation of conflict. In that light—and considering the likely consequences of a nuclear attack—the value of nuclear capabilities needed to support these goals may be judged as virtually infinite.

Infinite resources, however, are not available for any purpose, of course. And after decades of very limited investment in nuclear capabilities, today's estimated costs for the simultaneous modernization of the US nuclear triad appear especially daunting, reportedly ranging from roughly \$400 billion over the next 10 years to as much as \$1 trillion over the next three decades. Critics of such spending levels contend that nuclear forces are inappropriate to meet new twenty-first-century threats, should be minimized rather than upgraded to avoid wider global nuclear proliferation, and will lead to the starvation of needed investments in conventional forces. However, investments in US nuclear-force modernization are, in fact, affordable and necessary; they should not rise beyond 5 to 7 percent of the US defense budget, even at the estimated peak of likely spending in the coming years. This projection is well within and even below historic US spending patterns for such forces.

Moreover, critics of nuclear-investment costs greatly underestimate the unique value of nuclear forces in sustaining deterrence against the most dangerous threats and adversaries. US nuclear forces help deter existential nuclear threats to the homeland and to our allies. They provide a deterrent against the use of other types of weapons of mass destruction—including chemical and biological agents—against which the United States no longer possesses the ability to threaten comparable retaliation. They help cement US alliances by strengthening US security guarantees to allies and strategic partners. And, by deterring an opponent's escalation, they underpin the US goal of damage limitation in the event of conflict and the US freedom to use conventional forces effectively to protect American interests.

In the near term, to protect long-overdue investments in nuclear forces Congress must consider relief from the budgetary caps imposed (through so-called sequestration) by the Budget Control Act of 2011. If current budget law is not amended, the new administration should use executive authority to exempt spending on nuclear forces from the mandatory sequestration cuts. Over the longer term, building the kind of public and intragovernmental consensus necessary to sustain investments in needed US nuclear capabilities requires novel budgeting approaches. These could include the creation of a mandatory nuclear-insurance policy—amounting to a fixed portion of defense spending—or the establishment of a “strategic deterrence fund” to cover modernization needs over longer periods of time and thereby create efficiencies.

More fundamentally, policy makers must counter the widespread lack of understanding in key US constituencies about the importance of nuclear capabilities. Senior-level political and military leaders must make a consistent and systematic effort to educate the US Congress, the general public, and the uniformed military about the overwhelming value of nuclear forces to support the country's priority security goals. Funding the US nuclear force and modernization programs is both necessary and affordable. Failure to do so would increase the risk of intolerable consequences to the nation.

Regional Security Issues for the New NPR

After the collapse of the Soviet Union, NATO reduced but by no means eliminated the role of nuclear weapons in its military strategy and deterrence posture. In light of the resurgent threat from Russia, particu-

larly since 2014, nuclear policy and its contribution to deterrence and assurance once again are major topics within the alliance. Moscow's ongoing nuclear modernization programs and its emphasis on the nuclear first use or "escalate-to-win" option—effectively the threat or limited use of nuclear weapons to coerce NATO into backing down in a conventional conflict—create concerns in NATO and a corresponding desire to strengthen deterrence and assurance. The NPR and possible revisions of NATO's 2012 Deterrence and Defense Posture Review are opportunities for clarity and direction.

The renewed adversarial relationship with Russia and the apparent narrowing of Western nonnuclear military advantages mean that the United States and NATO need to reexamine and possibly revise their nuclear policy and posture. Key issues include: the future of US nuclear forces designated for NATO, especially the US B61 bomb and the aircraft used to carry it; changes to the alliance's declaratory policy on the role of nuclear forces; involvement of additional NATO member states in nuclear-sharing arrangements; and readiness levels and deployment locations throughout the alliance. The overarching deterrence goal in this regard is to deny Russia any plausible basis for perceiving exploitable political or military advantages that could lead Moscow to consider aggression or nuclear escalation against the West, even in crises. The following are select recommendations for consideration:

1. In its forward-deployment decisions and declaratory policy, the United States and NATO must repeatedly make clear the indivisibility of the alliance and its nuclear policy: that an attack on one is an attack on all and that any Russian nuclear escalation against the West would be the worst possible course for Russia under any circumstances.
2. The B61 life-extension bomb, the B61-12, reportedly will be the only US nuclear weapon based in Europe with precision accuracy and a low-yield option. Therefore, it should not be subject to further procurement delays but instead should be advanced to the extent possible.
3. Availability of the nuclear-capable F-35A aircraft should be accelerated to provide NATO with the stealth technology to counter Russian air defenses and thereby enhance its deterrence credibility.

4. Nuclear burden sharing—especially in the deployment and support of nuclear capable aircraft, should be widened in NATO, particularly including the former Warsaw Pact countries of Eastern Europe.
5. The United States should consider deploying substrategic missiles at sea in the NATO region or on NATO territory to increase the adaptability of its nuclear deterrent.
6. The United States and NATO should prioritize creation of an integrated air and missile defense system for the alliance to help make a limited Russian nuclear attack unacceptably difficult and risky.

In summary, US nuclear forces deployed in Europe must continue to serve the dual purpose of underpinning deterrence (by posing the threat of incalculable costs in the mind of a potential aggressor) and assuring allies in the face of nuclear coercion. Adjustments to US and NATO capabilities and declaratory policy to meet these essential purposes and advance Western adaptability should now be considered.

Implications for Asian Security

Asia continues to constitute a highly dynamic security environment. With regard to US nuclear policy and posture, four imperatives stand out.

A Nuclear- and Missile-Armed North Korea Must Be Countered

This is a considerable challenge since—during the plausible time horizon of the NPR—the DPRK reportedly could emerge with a nuclear force of between 60-100 weapons, deployed on a mix of short- and long-range delivery systems. Meanwhile, the country continues to be led by an eccentric, opaque, and unpredictable dynastic regime.

US nuclear capabilities have long played a central role in deterring North Korean aggression and in assuring Asian allies, and they will continue to do so. Forward-deployable strategic weapons in the US triad provide essential support for these goals—to signal US resolve to North Korea and to allies, and to help limit escalation in the event of conflict. Additional US nuclear capabilities—nuclear capable aircraft hosted at Japanese and South Korean bases—may be important for deterrence of the DPRK. In addition, the United States should retain the ability to deploy nuclear-capable bombers in the region and demonstrate the capability for stand-off attack with stealthy delivery systems such as the

LRSO. A low-yield nuclear weapon that could be delivered promptly against defended North Korean airspace also should be considered.

Finally, US and allied missile defenses must help counter North Korean missile threats and defend against missile attack if deterrence fails.

Chinese Expansion at the Expense of US and Allied Interests Must Be Deterred

China's assertiveness in declaring control of contested islands and a widening swath of ocean has occurred in recent years alongside the expansion and modernization of its nuclear force. While China remains the least transparent of the P-5 nuclear powers, its historical reliance on a small fleet of silo-based ICBMs clearly has given way to a mix of silo-based and mobile ICBMs and sea-based SLBMs, as well as a possible role for a nuclear bomber. This shift will give China more nuclear options, and more discriminate nuclear options to deter and coerce the United States and allies in its bid for regional hegemony.

China's growing assertiveness, expanding nuclear posture, and uncertainties about its future course may well create new nuclear requirements for the United States and the corresponding need to determine whether, when, and how to deploy additional capabilities. The United States must sustain capabilities with the requisite flexibility and resilience to deter China at many possible levels of escalation, and limit damage should deterrence fail.

Assurance of US Allies in Asia Remains of Vital Importance

Assurance is based on allied confidence that the regional deterrence strategies of the United States, Japan and South Korea are credible and supported by the necessary US and allied capabilities. Formal extended-deterrence dialogues begun by the United States in 2010 appear to have had a positive impact in this regard and should be continued. The United States should consider going further to implement "NATO-like" nuclear consultation with Northeast Asian allies. The United States also should continue to press Japan and South Korea for trilateral cooperation, which would likely have a powerful effect signaling resolve against potential Chinese and DPRK aggression, and thus contribute to deterrence.

Consideration of Rising Nuclear Dangers in South Asia Remains Important

Though the United States does not have an alliance-based role in deterring aggression between India and Pakistan, US interests are involved. The possibility of a Pakistani nuclear weapon falling into the hands of terrorists is a particular concern. Therefore, US policy should continue to encourage dialogues between India and Pakistan on nuclear issues and to emphasize preparations for an emergency response to the loss of control of one or more Pakistani weapons.

In summary, as nuclear capabilities and military threats continue to grow in Asia, US nuclear forces will play a more important role in supporting key deterrence and assurance goals. Recommended here are considerations for strengthening the capabilities needed to support these goals and advance the adaptability of US forces and strategy.

Summary and Conclusion

The 2017 NPR represents an opportunity for the United States to adjust its nuclear policy direction to the new realities of the post–Cold War world. The three previous NPRs (1994, 2001, and 2010) understandably reflected their times and the expected more benign nuclear threat environment of the immediate post–Cold War period. The overriding presumption of each was that nuclear deterrence and nuclear weapons were of decreasing relevance to US and allied security because the threat environment had fundamentally changed with the collapse of the Soviet Union and Warsaw Pact and the rise of terrorism. The new realities of the threat environment, however, are very different from those of the immediate post–Cold War period. Today’s contemporary threat environment is highly dynamic, and self-declared opponents have embarked on foreign policies designed to overturn the existing international order, elevated the roles of nuclear weapons in support of these policies, and continued to modernize and expand their nuclear arsenals. The hoped-for “new world order” has been superseded by the emergence of a new threat environment that is more dangerous than the Cold War in many ways, including new nuclear threats and the apparent growing likelihood of nuclear escalation. These developments have seriously unsettled key US allies, particularly those geographically close to Russia, China, and North Korea.

US nuclear policy must shift with these new realities and again promote as priority goals the deterrence of enemies, the assurance of allies, and the limitation of damage in the event deterrence fails. Given these realities, US nuclear capabilities and strategies to support these priority goals must be adaptable to the vicissitudes of a highly dynamic threat environment and the great variability in opponents and contexts. Correspondingly, the two components of adaptability, flexibility, and resilience must be priority metrics for US nuclear strategy, forces, and infrastructure. Advancing flexibility and resilience across US nuclear policy will provide the most prudent basis possible for having the capabilities and strategies needed to meet diverse and shifting nuclear demands.

The need to adapt to new threat realities has implications across virtually all facets of US nuclear policy. It is obvious in the need to reconsider how best now to deter opponents and assure allies in Europe and Asia and in the need to reorient US arms control and declaratory policies away from their focus on progressive reductions and limitations for nonproliferation and nuclear disarmament purposes and toward supporting the priority goals of deterrence, assurance, and damage limitation for decades to come. **SSQ**

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Notes

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The Long-Range Standoff Weapon and the 2017 Nuclear Posture Review

President Trump signed a national security presidential memorandum 27 January 2017, calling for secretary of defense Gen James Mattis to “initiate a new Nuclear Posture Review (NPR) to ensure that the United States nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure allies.”¹ Many advocates of nuclear modernization were optimistic that the new president would take a very different approach to nuclear strategy than his predecessor. Some proponents of modernization saw a new NPR as an opportunity to make the case for new delivery vehicles and warheads and reexamine some of the fundamental assumptions and strategic concepts laid out in the 2010 NPR. With an expected completion date in late 2017, this NPR will significantly affect the administration’s modernization spending priorities for the remainder of President Trump’s time in office.

Perhaps the most underappreciated and maligned weapon system in the current modernization program is the long-range standoff weapon (LRSO). While each modernization program has faced some criticism from arms control and disarmament advocates, none has been as disparaged as the LRSO. Former secretary of defense William Perry, who played a major role in the development of the current AGM-86 air launched cruise missile (ALCM), went so far as to take to the pages of the *Washington Post* to call for the cancellation of the program and the retirement of nuclear-armed cruise missiles.²

On the contrary, a modern nuclear-armed cruise missile is essential to US deterrence. The challenge for the US Air Force, which seeks to replace the ALCM with the LRSO, is to effectively explain the role a nuclear-armed cruise missile plays in American nuclear strategy. In doing so, the Air Force will aid drafters of the NPR as they seek to fully understand not only the capabilities and shortfalls present in the current arsenal but also how modernization programs—including the LRSO—will reverse decades of decay in US nuclear capability. It is equally important to provide Congress with compelling justification for funding the initiatives laid out in a new NPR.

This article focuses on the role of nuclear-armed cruise missiles in nuclear strategy, with a particular focus on the LRSO. It presents brief background information then examines the arguments of detractors and makes the positive case for the weapon system—explaining the unique role it plays in creating a credible deterrent force. The article concludes with general and specific recommendations for the 2017 Nuclear Posture Review.

Background

The AGM-86 air launched cruise missile was designed in the mid-1970s and first fielded in 1982. At the time it entered service, the B-52 was facing increasingly potent Soviet integrated air defense systems (IADS) that the venerable bomber was unable to penetrate. Thus, a nuclear-armed cruise missile was designed for the primary purpose of penetrating these networks and providing a standoff strike capability deep into Soviet territory.³ With a planned service life of 10 years, the AGM-86 was to be replaced in the early 1990s. As early as 1982 the Air Force understood that the AGM-86 would have problems penetrating future Soviet IADS as they grew increasingly sophisticated. This led to the ultimate design and fielding of the AGM-129A advanced cruise missile (ACM), a low observable nuclear-armed cruise missile, first delivered to the Air Force in 1987. With the collapse of the Soviet Union on Christmas Day 1991, President George H. W. Bush began large-scale reductions in the United States' nuclear arsenal and cancelled many of the modernization programs then under way.⁴ One of these, the ACM, ultimately proved to be a cost-ineffective weapon and was retired from service in 2012.⁵

This left the Air Force in need of a nuclear-armed cruise missile capable of penetrating Russian IADS that have continued to grow increasingly sophisticated and are proliferating outside Russia. The S-300/400/500 air defense systems that Russia currently fields are the most sophisticated in the world—and a far cry from the SA-6 the Air Force faced in conflicts over the past four decades.⁶ China, too, possesses not only the most dense radar network in the world but also increasingly capable IADS that make standoff attack a necessity.

It is in this challenging air defense environment that the Air Force sought to replace the AGM-86 with a new stealth nuclear-armed cruise missile capable of either destroying these defenses or penetrating them. A growing need has also developed over the past several decades as

adversaries specifically design and site facilities that are immune to attack from US ballistic missiles. The LRSO is required to hold these targets at risk.

According to information released by the Department of Defense, the long-range standoff weapon will cost an estimated \$15–20 billion for approximately 1,000 weapons. From the limited information available, the LRSO will be a stealthy, subsonic, nuclear-armed cruise missile with a likely range of 2,500–3,000 kilometers. It will carry a modernized version of the W80-4 warhead with improved safety, security, and reliability features.⁷ The LRSO will have defensive systems not present on the AGM-86. The weapon will also have improved accuracy. Beyond these basic features, specific program requirements and capabilities are highly classified. However, it is reasonable to expect that with four decades of technological advancement since the AGM-86 was originally designed, the LRSO will incorporate a number of features that were nonexistent when the ALCM was designed.

The Opposition

The points made by opponents of the LRSO can be grouped into three main arguments. First, they argue that nuclear-armed cruise missiles are destabilizing.⁸ Second, they argue that the LRSO is a redundant capability. Third, they argue that the nation cannot afford the weapon. Each of these objections requires more detail.

Perhaps the most widely stated reason for opposition to the LRSO is the belief that nuclear-armed cruise missiles are destabilizing. According to William Perry, “Because they can be launched without warning and come in both nuclear and conventional variants, cruise missiles are a uniquely destabilizing type of weapon.”⁹ In a letter to then-president Barack Obama, Senator Edward Markey (D-MA) and seven other senators agreed with this proposition and added, “This could result in dramatic escalation and potential devastating miscalculations in a conflict with a nuclear-armed state.”¹⁰

Opponents also argue that the LRSO is a redundant capability for two reasons. First, they argue that because the B-2 and B-21 are stealth bombers and will soon carry the B61-12 gravity bomb, they will be able to penetrate advanced IADS to deliver weapons.¹¹ Second, they argue that the conventional joint air-to-surface standoff missile (JASSM) and

its extended-range variant (JASSM-ER) can effectively target an adversary's advanced IADS, making the LRSO unnecessary.

Finally, opponents suggest that the \$15–\$20 billion price tag is unaffordable.¹² The arms control and disarmament community argues that the current plan to spend \$30–\$35 billion per year on the nuclear enterprise is excessive. Consistent with this larger argument, they also declare that the LRSO is unaffordable and suggest that eliminating the LRSO is one of the ways to lower the cost of nuclear modernization.¹³

Together, the three arguments presented here represent the main thrust of opposition to the LRSO. Others have also offered critiques of the system, but the arguments offered have largely fallen within these parameters.

The Advocates

Supporters of the LRSO advance a number of justifications readily grouped into four main areas: war fighting, strategy, deterrence, and force structure.¹⁴ These four categories also require some detail.

War Fighting

The need to penetrate advanced IADS has not changed since it first led to the development of the AGM-86 in the mid-1970s. In fact, today's Russian systems are thought to be the best in the world and purportedly are able to strike both incoming cruise and ballistic missiles.¹⁵ If unconfirmed reports are correct, the accuracy of S-400/500 batteries may leave the United States no option but to either use large numbers of missiles to attrite surface-to-air missile batteries or use nuclear weapons, specifically the LRSO, to punch holes in Russian, or Chinese, networks.

Bombers armed with the LRSO will greatly complicate Russian and Chinese efforts to defend possible targets. This is because bomber attack vectors can change dramatically and are difficult for an adversary to predict, unlike ballistic missiles, which have a predictable flight path. Russia and China can observe these trajectories with high fidelity because they know the launch points of US intercontinental ballistic missiles (ICBM) and they have some sense of the launch boxes of American ballistic missile submarines. Both countries have watched American test launches of ICBMs and submarine-launched ballistic missiles (SLBM),

which gives them significant knowledge of flight physics, enabling them to develop strategies for countering these weapons.¹⁶

Although opponents of the LRSO argue that the B61 provides the United States with a low-yield option, delivering the B61 to a given target is far more challenging than many understand. Stealth bombers are not invisible. Rather, they rely on specific knowledge of adversary IADS to develop a flight path that minimizes the aircraft's radar cross-section (RCS). Thus, mobile defenses in unknown places can significantly complicate stealth's advantage. With a much smaller RCS than a bomber, the LRSO has the greatest chance of penetrating the dense IADS Russia and China are fielding, particularly near their most valuable targets.

Because of the relatively flat reentry angle of both ICBMs and SLBMs, adversaries have become adept at locating their highest value assets in facilities protected by terrain, hardening, and burying. This leaves the LRSO as the best option for some high-priority targets. Although it is not publicly known if there will be a "penetrating" version of the LRSO, its ability to collapse tunnel openings and strike terrain-protected targets is a required capability. Nuclear conflict is not like horseshoes or hand grenades; close is not good enough. The nation's ballistic missiles simply cannot destroy some critical targets.

Strategy

At the level of operational strategy, nuclear-armed cruise missiles and a future LRSO are an important part of the United States' nuclear arsenal for a number of reasons. For the B-52, which is expected to remain in service for at least three more decades, long-range standoff is the primary role the venerable bomber can play as it continues to contribute to the nuclear mission.¹⁷ This contribution should not be undervalued.

With its six decades of service in conflicts around the globe, the B-52 is respected by allies and adversaries alike and well known as a dual-capable (conventional and nuclear) bomber.¹⁸ This gives the B-52 the ability to effectively signal adversaries in a way that a stealth bomber cannot. By enabling a bomber to launch at multiple targets, the LRSO allows the president to use bombers as an effective signal of US resolve.¹⁹ For example, when President Truman sent nuclear-capable B-29 bombers to the United Kingdom during the Berlin Blockade, he was signaling Joseph Stalin that the United States was willing to use nuclear weapons if the Soviet Union attacked American forces in Berlin. Absent the required

bomber capability, Stalin may not have been effectively deterred.²⁰ Signaling intent and the ability to use bombers as an escalation/de-escalation tool play important roles in US nuclear strategy. And, maintaining a nuclear-capable B-52 is central to that capability.

Perhaps one of the least-understood aspects of American nuclear strategy is the way in which bombers are employed in executing the nuclear mission. The LRSO will allow each bomber to strike more than a dozen targets on a single mission without the risk of engagement. But, if a B-2 were armed with nothing but the B61, it would be required to employ through dense IADS to release on every individual target—greatly reducing survivability. Furthermore, contrary to popular belief, in the event a bomber executes a nuclear strike, the bomber is not on a “one-way mission.” Current mission planning expects the majority of bombers to survive a given mission and return to a reconstitution point, rearm, and execute a new mission. The United States simply does not have sufficient numbers of bombers—nuclear capable or conventional—to accept a high loss rate. Nuclear-armed cruise missiles enable both stealth and non-stealth bombers to attack targets from safer stand-off distances, which improves the survivability of each aircraft.

Deterrence

At the highest strategic level, the United States may soon find itself in a position where it lacks the range of capabilities needed to credibly hold key targets at risk. As a result, adversaries may no longer believe the United States is willing to fight and win a nuclear conflict, which is central to the credibility of American deterrence. Contrary to the view of one congressman who said, “There is no such thing as a limited nuclear war,” history would suggest otherwise. The single case in which nuclear weapons were used was purposefully limited in effect (striking distant military targets) and outcomes (capitulation rather than destruction).²¹ Should the United States lack the required capability to fight a limited nuclear conflict in the future, it could be self-deterred in certain circumstances where, for example, Russia uses low-yield theater nuclear weapons to de-escalate a conventional conflict in which it is performing poorly.²²

As former deputy assistant secretary of defense Elaine Bunn said, “The regional deterrence challenge may be the ‘least unlikely’ of the nuclear scenarios for which the United States must prepare.”²³ If crisis stability

“aims at developing incentives for using the lowest level of military force possible—all while seeking to prevent escalation,” a low-yield nuclear option is likely the best choice to deter or limit escalation in some regional scenarios.²⁴

This leaves the LRSO as the most credible stealthy and low-yield option available to the president. While some arms control advocates argue that deterrence, not war fighting, is the sole purpose of nuclear weapons, possessing the capability and will to fight and win a nuclear conflict—limited or unlimited—contributes to the credibility of American nuclear deterrence. As nuclear strategist Matt Kroenig has demonstrated, in a nuclear crisis, the country with the superior nuclear balance of power is likely to emerge victorious.²⁵ The implications of Kroenig’s findings would also suggest that the United States would be unwise to cancel the LRSO because it would diminish the nuclear superiority the United States maintains over its adversaries, which would likely reduce the probability of American success in a nuclear crisis.

Those who suggest the LRSO is a destabilizing capability are incorrect for two primary reasons. First, as former deputy secretary of defense John Hamre noted in Senate testimony, “Airborne nuclear assets are the least provocative and the least destabilizing weapons in our inventory.” He further added, “There is no known instance in history that our use of conventional cruise missiles was misinterpreted as a nuclear attack by Russia or China or any other country for that matter.”²⁶

As noted above, opponents of the LRSO suggest that an adversary cannot tell the difference between conventional and nuclear-armed cruise missiles, which makes nuclear-armed cruise missiles destabilizing. However, logic would dictate that nuclear gravity bombs would also be equally destabilizing since an adversary would have no certainty whether an American bomber were armed with B61 nuclear weapons or conventional joint direct-attack munitions (JDAM). Surprisingly, LRSO opponents argue that the B61 is the right nuclear weapon for the B-2 and B-21.²⁷ This is inconsistent with the strategic logic advanced by opponents.

Perhaps Russian nuclear scholar Pavel Podvig best explained the instability argument when he wrote, “The arbitrary nature of the assumptions that underlie the idea of strategic stability makes this concept extremely malleable and politically charged.”²⁸ The reality of conflict is that it has a context in which combatants operate. This context sets

expectations of all parties involved and indicates what behaviors are acceptable or expected. Prior to a dramatic alteration of this context—the introduction of nuclear weapons—one or more clear signals will likely precede any change. In short, the stability of deterrence depends not upon nuclear-armed cruise missiles but upon the unwritten rules and norms of conflict, which nations and their leaders understand and are rarely willing to violate.

Force-Structure Costs

In the larger nuclear modernization debate, many arms control and disarmament advocates suggest that the estimated \$1 trillion in operations and modernization expenditures the Departments of Defense and Energy are likely to spend over the next three decades is both excessive and unaffordable.²⁹ The problem with these assertions is that they rarely place the cost of nuclear operations and modernization in a larger context of defense and federal spending. The same is true of any discussion of LRSO costs. Some context for overall operations and modernization expenditures and LRSO-specific expenditures is instructive.

According to nuclear weapons scholar Stephen Schwartz, the United States spent an estimated \$5.5 trillion on the nuclear enterprise between 1940 and 1996.³⁰ Over the next three decades, the United States is expected to spend an estimated \$1 trillion to modernize the existing stockpile, operate the nation's nuclear forces, and maintain the nuclear enterprise. This equates to an average of \$33 billion per year, which is an increase from the \$25 billion the United States has averaged over the past decade.³¹ To design, field, operate, and maintain the LRSO over this three-decade period, as mentioned previously, the cost is an estimated \$20 billion—an average of less than \$750 million per year over the next three decades.

As a percentage of federal spending, the nuclear enterprise currently accounts for 0.44 percent of the federal budget and will rise to approximately 0.75 percent of the federal budget.³² In the context of the defense budget, nuclear operations currently account for 3.5 percent of the defense budget and at the height of the modernization effort will peak at approximately 6.7 percent. During the Cold War, spending on the nuclear arsenal averaged above 20 percent per year and peaked above 50 percent of defense spending during the early 1960s.³³ In the decades ahead, the nuclear arsenal is likely to be as important a part of the

military's force structure as it was during the Cold War—yet at approximately one-fifth the cost.

When compared to other forms of insurance, nuclear weapons are well worth the cost. For example, the average American spends about \$8,700 on health insurance premiums per year.³⁴ He or she also spends about \$1,300 on auto insurance per year.³⁵ By contrast, the average American taxpayer spends about \$225 annually on the nation's sovereignty insurance—nuclear weapons.³⁶ Over the next three decades the LRSO will account for about 3 percent of that cost. Perhaps the most underappreciated characteristic of the nuclear arsenal is the fact that it enables the United States to spend less on defense by reducing the overall requirement for personnel and materiel to fight conventional wars and more on other national priorities. It is important to remember that the last great power war fought by the United States consumed an average of 36 percent of the nation's GDP each year of World War II.³⁷ Using nuclear weapons and the security they provide to offset conventional defense spending is not a new idea. President Eisenhower's "New Look" policy was specifically designed to do just that.³⁸ Even today, nuclear weapons guarantee the nation's sovereignty while allowing it to allocate more resources to other priorities.

Additional context for the cost of the LRSO and the nation's nuclear arsenal is instructive. If, for example, the average American adult were to purchase one less cup of coffee per week, the United States could pay for the cost of nuclear deterrence with that savings alone.³⁹ Interestingly, Americans spend about as much on Coca-Cola products as they spend on nuclear deterrence each year.⁴⁰ Finally, according to the Centers for Medicare and Medicaid Services, the federal government could pay for the nuclear arsenal and modernization if it could reduce Medicare and Medicaid waste, fraud, and abuse by half.⁴¹ Whether Americans give up a cup of coffee each week or the government reduces waste, fraud, and abuse in Medicaid and Medicare, the LRSO will cost just 3 percent of the money spent on nuclear deterrence. Suggesting that either the nuclear arsenal or the LRSO is unaffordable is simply inaccurate.

Recommendations

While this article has focused on a discussion of the long-range standoff cruise missile and a defense of the weapon system, the LRSO is but a part of a larger nuclear deterrent that is in desperate need of modernization.

As the Trump administration develops the 2017 Nuclear Posture Review, it is important to keep in mind that the NPR is largely a political document that discusses the American view of nuclear deterrence and the role of nuclear weapons in the United States' larger national security and military strategy. With this in mind the following five recommendations are provided.

First, the Nuclear Posture Review should, at a minimum, have an unclassified version. Given that the NPR is first and foremost a political document, the fidelity lost by authoring a highly classified document is outweighed by the benefits provided by clearly laying out an administration's view of nuclear deterrence and the role of nuclear weapons in national security for the American people, allies, and adversaries. The greatest benefit the NPR can provide is in serving as a messaging tool to domestic and foreign audiences.

Second, the next NPR should discuss the threats facing the United States and the modernization efforts under way in adversary countries. Too few Americans understand the threat facing the country and assume the United States no longer faces an existential nuclear threat. They also assume the US military maintains the same level of superiority over adversaries in the nuclear realm as the country maintains in the conventional realm. They do not understand that the US arsenal has atrophied over the past 25 years. Clearly describing the threat may induce greater support for the modernization effort that is required.

Third, it is time to challenge the "no new weapons and no new capabilities" mantra that was established in the years immediately following the Soviet Union's collapse. While this idea is not enshrined in law, some within the military, Congress, and the policy community believe it is law that prevents the United States from developing and fielding new nuclear warheads and new capabilities. Allowing this thinking to persist prevents the United States from fielding the capabilities required to most effectively deter adversaries who do not hold a similar view and who are looking for a distinct advantage over the United States.

Fourth, it is time the administration vigorously challenges the narrative that nuclear modernization is unaffordable. Although a tentative congressional consensus supports existing nuclear modernization programs, there is little appetite for expanding current modernization. This is in part because the case for new capabilities has not been effectively made. It is also because of inadequate efforts to counter the narrative suggesting

nuclear modernization is unaffordable. Offering a compelling story for the role and affordability of nuclear modernization has the potential of reshaping the debate and increasing opportunities for modernization.

Fifth, the administration has the opportunity to use the NPR to make the case for the long-range standoff cruise missile by discussing the unique threats it is designed to defeat and how it contributes to the success of deterrence. As Keith Payne has noted, the number of published articles challenging the need for modernization and the utility of the systems that are part of the modernization program outweigh the number of articles in support of modernization by about six to one.⁴² While some argue that challenges from the arms control and disarmament community carry little weight, it is also possible they may be underestimating the impact of constant objections, making it important to offer a compelling alternative narrative.

As the Trump administration reimagines the nation's approach to nuclear deterrence in a strategic environment far different from that of the 2010 Nuclear Posture Review, it is time to make a full-throated defense of nuclear modernization and the long-range standoff cruise missile. The opportunity to author a Nuclear Posture Review comes once during an administration. Making the case for the programs and strategies that will ensure the credibility of American deterrence for decades to come is an opportunity that should not be lost. **SSQ**

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The Long-Range Standoff Weapon and the 2017 Nuclear Posture Review

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Missile Defense and the Nuclear Posture Review

As missile defense capabilities have matured, they have become widely recognized for their contribution to broad strategic objectives and the US nuclear posture. The growing significance of missile defenses has been more broadly reflected in major national and military strategy documents across the last several administrations.¹ A capstone Joint Staff publication singles out missile proliferation as a challenge to US military strategy and notes that a strategic posture “predicated on global agility requires the ability to protect against such a threat.”² The 2001 Nuclear Posture Review (NPR) proposed a “new triad” in which conventional forces and nuclear strike forces represented one leg, active and passive defenses the second, and responsive infrastructure the third. Although the 2010 review did not retain the new triad vocabulary, the concepts and connections persisted and expanded, as did the prospect for missile defense to enhance deterrence and strategic stability. The 2017 NPR should give renewed attention to the role of missile defense in achieving and supporting deterrence, assurance, and damage limitation goals. Given the desire to reduce reliance upon nuclear means of deterrence, missile defense and conventional strike will likely remain central to the US strategic posture.

In January 2017, President Trump issued a National Security Presidential Memorandum on Rebuilding the U.S. Armed Forces, directing the secretary of defense to conduct several reviews of military and security policy. These included a new NPR to “ensure that the United States nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure our allies,” and a Ballistic Missile Defense Review (BMDR) to “identify ways of strengthening missile-defense capabilities, rebalancing homeland and theater defense priorities, and highlighting priority funding areas.”³

The presidentially directed reviews are also being conducted in a statutory context. The National Defense Authorization Act for fiscal year 2017 contained several provisions bearing directly on the relation of missile defenses to such larger objectives. One section amended the

¹ This essay is adapted from a contribution to Keith B. Payne and John S. Foster, et al., *A New Nuclear Review for a New Age* (Fairfax, VA: National Institute Press, 2017).

1999 National Missile Defense Act with a policy statement broadening the policy objectives for missile defense. Changes include the description of future missile defenses as “effective, robust and layered,” emphasizing the importance of these attributes because the character of emerging threats is not static but rather “developing and increasingly complex.” The new language also broadened the object of defense to include not only US territory but also “allies, deployed forces, and capabilities.” Another section of the same law mandated a review of missile defeat policy, strategy, and capability, including the relationship of deterrence to missile defense and defeat capabilities. Together, these several directives represent a ripe opportunity to evaluate and adjust US missile defense efforts.

The Strategic Environment: A Missile Renaissance

The forthcoming nuclear and missile defense policy review process will begin in part with an intelligence assessment of the ballistic and cruise missile threats to the United States. Today, the United States and others face threats from missiles carrying both nuclear and conventional payloads. Despite various nonproliferation and counterproliferation efforts, the spread and evolution of such technologies are instead producing a kind of “missile renaissance.”

This new missile age of sorts is characterized by technological, commercial, and geopolitical trends contributing to a surge in the global supply and demand for a spectrum of unmanned, high-precision, and high-velocity delivery systems, including:

- guided and unguided rockets, artillery, and mortars;
- supersonic and long-range subsonic cruise missiles with improved guidance and evasion;
- guided and maneuvering reentry vehicles;
- depressed trajectory ballistic missiles;
- ballistic missile improvement in range, survivability, and mobility;
- anti-ship missiles of various kinds;
- missile-boosted hypersonic glide vehicles; and
- missile-boosted anti-satellite weapons.

In sum, this missile renaissance represents “a complex and nearly continuous threat spectrum across the characteristics of altitude, speed, propulsion type, and range.”⁴ As such, it has generated increased global supply and demand for missile countermeasures, both strike capabilities and air and missile defenses. Missiles have been used in numerous conflicts, sometimes with significant effect. The single greatest loss of American life during Operation Desert Storm came when a single Scud missile hit a US barracks, killing 27 and wounding 98.⁵ In the ongoing Yemen conflict, quasi-state actors successfully used an anti-ship cruise missile to attack an Emirati ship, and another single missile strike reportedly killed 60 Saudi, Emirati, and Bahraini military personnel.⁶ In June 2017, Iran fired a number of solid-fueled ballistic missiles into Deir el-Zour, Syria, targeting Islamic State militants.⁷ Precision-guided cruise and ballistic missiles have now become a significant means of denying access to a particular defended area.⁸

The unprecedented rate of North Korean missile testing over the past several years represents both an improvement in capability and a desire to acquire intercontinental ballistic missiles (ICBMs), an intent recently made explicit by Kim Jong-un.⁹ Should Pyongyang develop and begin serial production of an ICBM capable of threatening the US homeland, it could strain the level of homeland defenses currently fielded. Iran also continues to develop and test long-range missiles, working to improve their accuracy, range, and survivability. Iran appears to be putting more emphasis on solid-fueled rockets, permitting greater promptness and mobility. Russia continues to develop and conspicuously display more sophisticated conventional cruise missiles that threaten NATO.¹⁰ China, too, has fielded the DF-21 “carrier killer,” the DF-26 “Guam killer,” and many other shorter-range ballistic and cruise missiles as part of its anti-access and area denial strategy. Of course, both Russia and China also possess formidable arsenals of ICBMs capable of delivering nuclear weapons to the US homeland.

These and related trends contribute to the growing sense that missile defenses can support deterrence rather than undermine it. Whereas during the Cold War the United States codified virtually unmitigated vulnerability to Soviet missiles with the 1972 ABM Treaty, today there are simply too many missile-armed actors and too much uncertainty to forego defenses. Over 28 nations now possess ballistic missiles, and virtually no intelligence assessment suggests the threat is declining.¹¹

In the face of these new and emerging missile threats, demand for ways to counter them continues to grow. Recent years have seen demonstrated successes across all four families of systems currently deployed by the United States today: Patriot, the Aegis Weapon System, Terminal High Altitude Area Defense (THAAD), and Ground-based Midcourse Defense (GMD). Systems abroad include Israel's Iron Dome, David Slings, and Arrow programs; France's SAMP/T; and the nascent MEADS program being developed and under consideration by Germany. THAAD is also now operated by United Arab Emirates (UAE), and the Aegis weapons system has expanded to a number of partners. Russia likewise deploys the evolving S-300/S-400 family, and China the HQ-family.

Just as air superiority has long formed a major tenet of US operational planning, missile defenses may become a larger component of the defensive counterair mission. The expansion of missile defense capabilities and capacity, and their integration into operational planning, will lead beyond a mere responsive instrument to a more comprehensive and holistic effort.¹²

For good reason, the past several administrations have shared a discomfort about remaining wholly defenseless against ballistic missile attack. The refusal to rely on purely offensive deterrence or accept strategic vulnerability with countries like North Korea seems certain to be retained, but additional action will be required to maintain a defensive posture that outpaces such threats. A separate question concerns Russia and China. The 2010 BMDR observed that long-range homeland missile defenses would be used against missile attack from "any source," but also noted that interceptor capacity is insufficient to defeat large-scale attacks and furthermore is not "intended to affect the strategic balance" with Russia and China. The potential for active air and missile defenses might again be examined, however, to enhance the overall deterrence relationship with these actors as well.

Contributions to Deterrence

Perhaps the primary contribution of missile defense to US strategic posture concerns deterrence. The proliferation and advance of missile capabilities in the hands of potential adversaries creates real challenges for maintaining stability and deterring attack. The 2001 NPR observed that "offensive capabilities alone may not deter aggression in the new security environment of the 21st century," a critical part of the ratio-

nale for the withdrawal from the ABM Treaty. Even while declining to deploy national missile defense in 2000, President Clinton noted its potential: “Such a system, if it worked properly, could give us an extra dimension of insurance in a world where proliferation has complicated the task of preserving the peace.”¹³ The 2010 NPR likewise cited “conventional military preeminence and continued improvements in U.S. missile defenses” as means to reduce reliance upon nuclear weapons to deter nonnuclear attacks.¹⁴

While not substituting for the unique deterrent value of nuclear and other strike forces, missile defenses can contribute to deterrence in at least four ways: improving crisis stability, raising the threshold for attack, buying time and creating options for decision makers, and supporting military operations.

Crisis stability. Missile defenses may improve crisis stability by providing the United States courses of action other than preemption or retaliation. In the days prior to North Korea’s 2006 Taepodong-2 launch, some former senior officials recommended a preemptive US strike against the North Korean missile site.¹⁵ The existence of a limited US homeland missile defense capability, however, provided President Bush with an alternative to preemptively striking North Korea’s launch facilities. Such a defensive posture creates options for decision-makers that can contribute to stability. A more recent example of missile defense contributing to crisis stability occurred in October 2016, when two or more anti-ship cruise missiles reportedly were fired at the *USS Mason* as it sailed off the coast of Yemen. Instead of being hit, the ship employed defensive systems and was unharmed.¹⁶ Absent these active defenses, the United States could have been drawn further into the conflict. Instead, the United States was able to assess what had taken place and limit its response to a reprisal with a cruise missile strike.¹⁷

Raising the threshold for attack. Missile defenses also serve the purpose of raising the threshold for aggression for an adversary wishing to pursue coercive escalatory threats or actual strikes against the United States. Denying adversaries a “cheap shot” option against the American homeland or military forces may deter them from taking such actions. Missile defenses therefore can change the calculus of potential adversaries. They can create uncertainty about the effect of an escalatory threat or attack and thereby help thwart adversary escalation strategies.

Buying time and creating options. Missile defense also buys time and creates otherwise unavailable options for decision-makers. Even limited and imperfect defenses create time and space for diplomacy or to attrite adversary missile forces with other means.¹⁸ In so doing, pressure to strike adversary launchers prior to launch is thereby relaxed.¹⁹ Difficulties of Scud hunting during the Gulf War demonstrated that relying on preemption alone, in addition to potentially creating instabilities, may be unreliable, especially if an adversary deploys mobile missiles.²⁰

Supporting operations. While deterrence rests in part upon the perception and the credibility of threats, it also requires the perceived technical ability to execute deterrent threats. Point defense of strike assets, air bases, aircraft carriers, or points of debarkation can ensure the possible introduction and surging of forces into a theater.²¹ The 2010 BMDR notes this more tactical quality by observing that missile defenses support “military freedom of maneuver, by helping to negate the coercive potential of regional actors intent on inhibiting and disrupting U.S. military access in their regions.”²² The presence or absence of such tactical advantage can have a strategic effect. An adversary’s recognition that defenses help shape conflicts in a favorable manner for the United States can thus help deter conflict. In the words of Herman Kahn, “Usually the most convincing way to look willing is to be willing.”²³

Other Potential Goals for Supporting Deterrence

In terms of more specific deterrence goals, future decision-makers will have to identify a set of goals for both smaller powers like North Korea and Iran and larger powers like Russia and China. In both cases, objects of defense might be either broader territorial defense or more targeted point or preferential defenses for military bases, strategic forces, or select highly populated areas.

One possible path would be to retain a bifurcated strategy and posture similar to that currently in force, which would involve near-complete vulnerability of US territory and military forces to Russian and Chinese missiles, even of limited quantity, and relying upon an offense-dominant posture to deter such major powers. At the same time, the United States could continue to work to outpace Iranian and North Korean missile threats, retaining an advantageous and relatively defense-dominant position relative to short- and long-range missiles from both.

Alternatively, the objects of US missile defense efforts could be revised to include protection against not only attacks from North Korea and Iran, but to provide a “thin” defense against certain kinds of limited missile attack from whatever source, including Russia and China. This level of protection, as noted above, could contribute to the deterrence of coercive escalatory threats or attacks. Such a posture could prioritize protection for US population centers or for nuclear and other strategic forces so as to enhance strategic stability. The objectives of homeland defense also might be expanded to include non-ballistic missiles. Hypersonic boost-glide vehicles have recently garnered more research and development attention, but progress has been slow and much remains to be done. There also remains virtually no capability to defend against cruise missile attack on the National Capital Region. Potential options for modifying the goals of missile defense efforts upwards include:

- Increased protection of US territory and population against a limited attack from whatever source, thereby raising the threshold for attack, coercion, or blackmail. Indeed, previous US missile defense architectures have focused on thin territorial defenses or point defenses to support deterrence and enhance strategic stability, such as Sentinel and GPALS.
- Defense for NATO and other alliance territory, or perhaps preferential defense of military forces, against cruise missile and short-range ballistic missile attack—what is sometimes called “theater” missile defense. One person’s theater missile defense is another’s national missile defense, however, and even “nonstrategic” and limited missile defenses could support the strategic defense of NATO or other allies. Such an architecture might prioritize air or sea ports of debarkation/embarkation to enhance deterrence by making more credible the surging of allied forces in the face of Russian aggression.²⁴
- Defense of US nuclear and other strategic forces against ballistic, cruise, and maneuvering glide vehicles in the interest of improving survivability and thereby enhancing deterrence. This might include additional air and missile defense protection of SSBN ports, bomber bases within the United States and abroad, or ICBM fields, as well as other passive defense measures. Previous US missile defense architectures have focused on this limited defensive goal, including Safeguard and LoADs.

Assurance

A second objective that missile defense complements in the US nuclear posture is the assurance of allies. The viability of US security commitments presupposes that the United States will remain willing and able to come to the defense of its allies and avoid becoming decoupled from them. In this respect, both defenses of the American homeland and regional defenses can support assurance. In the absence of defenses, the United States might have to face the proverbial choice between trading New York for Berlin, or Los Angeles for Taipei. Military action against regional threats from Libya and Iraq, for instance, might have carried a significantly greater degree of risk had they possessed intercontinental-range missiles. Even some limited protection of the United States against long-range missile blackmail might therefore stiffen American resolve. Such a risk to the basic international order and US projection of power informs the long-standing US opposition to Iranian and North Korean ICBMs. By reducing the costs of conflict with an ICBM-capable adversary, strong homeland missile defenses can improve the credibility of US security guarantees to allies.²⁵

Regional defenses likewise can support the assurance of allies facing significant threats from states armed with missiles. The 2010 NPR noted that missile defenses reinforce regional security architectures by assuring nonnuclear allies and partners of the US security commitments, thereby helping to dissuade them from acquiring nuclear capabilities of their own—a point repeated in the 2010 BMDR.²⁶ Greater assurance and protection of allies may reduce pressure to yield to adversary threats and correspondingly may become increasingly important in the context of continued proliferation and Russian and Chinese expansionism. The 2010 NATO Strategic Concept also established missile defense as a core Alliance mission.²⁷ Defenses for NATO territory as well as other US forces deployed abroad can directly support allied confidence in the seriousness of US presence in a militarily credible way.

The deployment of THAAD to South Korea, for instance, will help protect the survivability and credibility of US and ROK retaliatory forces. In a similar manner, increased air defenses in Eastern Europe as part of the European Reassurance Initiative raise the cost of attack on alliance forces. The expense, military significance, and even symbolism of such systems may even serve, along with other presence, as a tripwire to help deter aggression.²⁸ Increased defenses for Saudi Arabia, the UAE,

and others in the Gulf may similarly provide assurance in the face of Iranian missiles.

Restrictions on the numbers, locations, and capabilities of missile defenses in Europe are sometimes floated as an attractive bargaining chip for Russian cooperation on arms control, but the Bush and Obama administrations carefully avoided formally including restrictions on missile defense in such agreements. The 2010 NPR specifically excluded missile defenses from arms control negotiations, preserving the value of missile defense to regional deterrence and assurance.

Furthermore, the cooperative process of developing and deploying missile defense systems helps build stronger alliance relationships and gives the United States a larger perceived stake in the security of allies.²⁹ Stronger relationships can in turn contribute to a sense that strategies to split regional coalitions are likely to fail, deterring their use.

With these benefits increasingly recognized by allies and combatant commands, demand for US missile defense forces is outstripping their supply. One possible way to alleviate strain on US missile defenses in a crisis is increasing acquisition of such capability by allies and partners. Japan has acquired its own Aegis BMD capability, and the UAE became the first nation other than the United States to deploy THAAD. Besides the United States, 12 other nations deploy and operate Patriot. All this serves to augment joint force projection while demonstrating alliance solidarity.

Damage Limitation

A third goal served by missile defenses is damage limitation in the event deterrence should fail.³⁰ Escalation by means of missile attack could occur against forces or allies within a region, or against the US homeland. Protection against missile attacks can both discourage an adversary from escalating a conflict and provide a kind of insurance against attack. Missile attacks occur with considerable speed, and other means of limiting damage may be unavailable. Should an adversary believe it can escalate its way out of a conventional conflict by nuclear or other means, missile defenses can buy protection for societal targets in some scenarios and time for other US forces to be brought to bear.

Missile defense can also provide protection in the event of an accidental or unauthorized missile attack. The 1999 National Missile Defense Act declared it US policy to defend its territory against limited ballistic missile

attack, whether “accidental, unauthorized, or deliberate.”³¹ Such concerns emanated in part from the prospect of a rogue commander after the dissolution of the Soviet Union, but a similar prospect could recur with another unstable or failing regime, perhaps with the delegation of launch authority down to field commanders. While the 2016 NDAA revision dropped the reference to “whether accidental, unauthorized, or deliberate,” a policy of missile defense adaptability should presuppose it within the pursuit of effective, robust, and layered homeland and regional defenses.

To be sure, the purpose of missile defense is not to merely sit and play catch but rather to support the larger strategic objectives of the United States. Missile defenses can especially support the defeat mission with improved integration of strike and defensive means, both left- and right-of-launch (or, alternatively, after an initial missile attack but before subsequent attacks). On this topic, the fiscal year 2017 National Defense Authorization Act includes a provision for a missile defeat review report by the Department of the Defense and the Joint Chiefs of Staff, to include a review of capability, policy, and strategy with respect to:

- (1) left- and right-of-launch ballistic missile defense for—
 - (A) both regional and homeland purposes; and
 - (B) the full range of active, passive, kinetic, and nonkinetic defense measures across the full spectrum of land-, air-, sea-, and space-based platforms;
- (2) integration of offensive and defensive forces for the defeat of ballistic missiles, including against weapons initially deployed on ballistic missiles, such as hypersonic glide vehicles; and
- (3) cruise missile defense of the homeland.³²

This report may serve to force better integration of missile defense into operational planning and in turn inform future missile defense requirements.

Missile defenses do not exist in a vacuum but rather should be integrated with the growing spectrum of US military force, including strike capabilities to counter missile threats prior to launch. A joint staff publication has observed that defeating missile threats prior to launch is the preferred means of countering missile threats, but such means are not a substitute for active and passive defenses.³³ As former vice chairman of the Joint Chiefs of Staff Adm James Winnefeld noted in 2015, “While we would obviously prefer to take a threat missile out while it’s still on the ground, what we would call left-of-launch, we won’t always have the luxury of doing so. And because it’s our policy to stay ahead of the

threat, we don't want there to be any doubt about our commitment to having a solid right-of-launch capability.”³⁴

In 2013, former Chairman of the Joint Chiefs of Staff Gen Martin Dempsey made a similar point in *Vision 2020*: “While these offensive actions can attrite portions of the air and missile threat, they cannot assure complete negation,” and as such “both active and passive defenses and offensive actions against air and missile threats should be part of the initial focus of every war plan.”³⁵

“Active and passive defenses will not be perfect,” noted the 2001 NPR, nor can defenses alone prevail, yet even imperfect defenses increase flexibility, help manage and mitigate risk, and support the overall effectiveness and credibility of military operations.³⁶

Shortfalls in the current BMDS include limitations with kill vehicle reliability and gaps in sensor coverage, most notably with the absence of a space-based sensor layer for persistent birth to death tracking and discrimination. Such overhead persistent coverage would close current gaps in terrestrial radar coverage, currently highly dependent on a handful of forward deployed TPY-2s and upgraded early warning radars.³⁷ A space-based sensor layer has been a feature of every missile defense architecture for the past five administrations, but none have been fielded, with the exception of two demonstration satellites. Missile Defense Agency (MDA) officials have recently emphasized the importance of making “a broader shift from a terrestrial-based system to a system that primarily plays from space in the next couple of years.”³⁸ Fielding a space sensor layer and renewing the space test bed for interceptors could dramatically improve performance across the BMDS and open new options for interceptor coverage.

Connected to damage limitation is the potential goal of dissuading adversaries from acquiring or fielding certain missile capabilities, a form of threat reduction. Such a strategy attempts to impose more costs upon the missile attacker than on the defender. The prospect of a relatively advantageous defensive posture position against long-range ICBMs from North Korea or Iran could, in principle, discourage their investment of scarce resources in such capabilities. Defenses for NATO, GCC partners, and other Asia-Pacific allies might likewise discourage investment in short- or intermediate-range missiles.

The effectiveness of dissuasion, however, seems uncertain in some difficult cases. Despite the success record of Israel's Iron Dome defenses

against rockets and mortars from Hamas and Hezbollah, for instance, considerable effort continues to be devoted to stockpiling, improving, and employing these relatively unsophisticated forces. Without greater insight into Iranian or North Korean deliberation on resource allocation, the potential dissuasive effect of missile defenses remains difficult to assess. North Korea and Iran continue to advance their missile programs, and thus far, the cost imposition has weighed just as heavily upon their neighbors to acquire missile defenses. Despite considerable progress, missile defenses appear not to have yet persuaded proliferators that missiles are, or will become, ineffective instruments. At this relatively late stage in their missile programs, the proliferation of defenses may not dissuade Iran or North Korea but could discourage other states from following a similar path. Dissuasion of further progress may require significant integration of active defenses with other strike forces to communicate a readiness to fight and win a conflict with such regional powers.

The Path Forward

Several types of action should be considered to help improve the contributions of missile defense to US deterrence, assurance, and damage-limitation goals. Such steps include not merely capability, capacity, and reliability improvements but also adjustments to policy, doctrine, and concepts of operation. The scope of such changes will of course be informed, limited, and ultimately determined by the overall national security strategy, new threat assessments, and resource limitations.

At the level of policy, the objectives of missile defense efforts might be formulated to pursue effective, robust, layered, and adaptable homeland and regional missile defenses designed to outpace developing and increasingly complex ballistic and cruise missile threats. Such a shift would move from a sharp ballistic missile defense focus to integrated air and missile defense more broadly. Such efforts potentially could be expanded to include some capability of protecting US territory and military forces against cruise missile or ballistic missile attack from any source, whether accidental, unauthorized, or deliberate. Alternatively, increased active and passive missile defenses could be focused more specifically on improving the survivability of nuclear forces and other strategic capabilities, thereby enhancing deterrence and strategic stability. Efforts abroad might include increased integrated air and missile defense capability for US and

allied forces in Europe and other regions to protect against cruise missiles and short-range ballistic missiles.

In terms of the current program of record, natural next steps may include incremental or block development of all four families of interceptor capabilities—GMD, THAAD, Aegis/Standard Missile, and Patriot. Other steps would improve efforts across the BMDS, for both homeland and regional protection. Continued maturing of missile defense includes integrating it into operationally realistic plans and building resilience for a challenging environment. Such measures include improving the survivability and graceful degradation of kill vehicles, interceptor sites, sensors, ground and support systems, and the broad missile defense enterprise to hostile environments and direct attack. Specifically for homeland defense, the flexibility, capability, and reliability of today's GMD homeland missile defenses can be improved with a redesigned kill vehicle, more energetic and selectable-stage boosters, multi-object kill vehicles, and the ability to employ a shoot-look-shoot firing doctrine.

To outpace emerging threats and retain the ability to adapt to adverse future developments, Ground-based Interceptor (GBI) capacity should be expanded beyond the 44 currently intended for 2017, both for operational and testing spares and the number operationally deployed. Readiness efforts for an East Coast site should be continued, but construction of such a site should be weighed against alternative and more flexible concepts, including transportable GBIs and an alternative interceptor underlay for area defense. Additional sensors may also be required to track missile threats from the Middle East and to address gaps for missiles traveling from southern trajectories or from sea-launched cruise or ballistic missiles.

Even if a relative rebalance should be made in favor of homeland defense, regional missile defense should not be decreased. One potential way to achieve more cost-effective regional defenses is with new and more imaginative concepts of operation to permit more flexible and survivable capabilities, such as more distributed launcher deployments, increased mobility, a network-centric architecture, and mixed-load launchers.³⁹

Some areas of focus would yield broad benefits across every aspect of the BMDS, homeland and regional defense alike. Research and development efforts for compact lasers and other directed energy weapons could ultimately revolutionize the missile defense toolbox and in the near term

improve capability with such concepts as lasers mounted on high altitude unmanned aerial vehicles within range of boosting ballistic missiles. Doctrinal and planning priorities might include greater integration of left-of-launch missile defeat efforts with active and passive defenses, as well as improved integration of active defenses within the joint force and interoperability with allies and partners.

Perhaps the single most significant development to improve regional and homeland defense alike would be a space sensor layer for persistent “birth-to-death” missile tracking and discrimination. The vantage point of space will be especially important not only for ballistic threats but also for hypersonic boost-glide vehicles in the high endo-atmosphere. Finally, in terms of institutional readiness to organize for missile defense efforts, MDA’s special acquisition authorities should be retained to maximize flexibility and responsiveness. Congress and the Department of Defense should also correct the continued decline of research and development funding necessary to outpace growing threats.⁴⁰

These and other steps will go a long way to improving missile defenses and further weaving them into planning and operational concepts. The role of missile defense in prosecuting US strategic objectives has grown over the past two decades and will likely continue to grow. The evolution of integrated air and missile defenses against a wide spectrum of threats holds considerable promise to improve flexibility and resilience in a highly dynamic strategic environment. Much remains to be done, however, to actualize this potential and further integrate them into the larger security and deterrence architecture. **SSQ**

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Notes

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Nuclear Modernization: Best Bang for Our Bucks

The next Nuclear Posture Review (NPR) that will inform US nuclear weapons modernization has the difficult task of coming up with a force posture that will keep the United States and its allies safe from an existential attack for decades. (Imagine planners in 1925 tasked with planning a defense posture that would ensure no large-scale conflict occurs through the 1980s and perhaps even the 2000s. In the 1920s, they would know nothing about stealth, radars, the Internet, and a great many other inventions and technologies that have altered warfare.) Maintaining a strong, credible US deterrent has been the most important defense priority since the dawn of the nuclear age. After the Cold War, however, the United States took a fiscal and intellectual vacation from modernizing its nuclear warheads and nuclear-capable delivery platforms. As US delivery platforms reach the end of their service lives and nuclear warheads age, programs to modernize and sustain them face a number of challenges. Fortunately, the NPR offers the Trump administration a unique opportunity to reexamine the existing strategic context, challenges, and assumptions behind the more questionable aspects of current nuclear weapons policy. Recommended policy changes may not require monetary investments and changes in the stated program of record.

Strategic Context and Challenges

For decades before the end of the Cold War, the context of the US nuclear enterprise involved preventing an all-out nuclear war with the Soviet Union as well as other existential threats to the United States and its allies. The end of the Cold War led to a general loss of interest in the nuclear enterprise and deprioritization of related issues both in government and among the public. Misplaced optimism about the future security environment resulted in reductions in US and allied defense budgets and led to changes in nuclear weapon policy that would have been unthinkable during the Cold War.¹ In this environment, US long-range delivery platform modernization stalled.

Today, US nuclear warheads and delivery platforms are old. Our nuclear warheads were built in the 1980s, and some are based on 1970s designs.

The US approach to nuclear weapons modernization changed after the end of the Cold War from building nuclear warheads for about a 10-year operational service life to extending their service lives well beyond their original 10 years and managing them through the Stockpile Stewardship Program. This sustainment program will have to continue for the foreseeable future and will require investments in the aged nuclear production and sustainment complex.

US delivery systems also are scheduled to remain in service well past their original service lives. Bombers will be required for conventional as well as nuclear missions well into the future. They can be recalled, providing decision-makers with a valuable signaling tool. However, during the 1990s, the United States purchased 21 B-2 stealth bombers instead of the planned 132, and their stealth characteristics lasted fewer years than we expected. The bomber leg of the triad continues to rely on B-52 bombers introduced into service in the 1960s. These bombers would not survive in today's contested air environment.

Intercontinental ballistic missiles (ICBM) are the cheapest leg of the nuclear triad to operate and can be launched on short notice. They also require opponents to expend a lot of their own nuclear arsenal before that leg of the triad is overcome, thus undeniably demonstrating their intent to attack the United States. However, the United States decided to decommission its most modern ICBM, the MX Peacekeeper, after the end of the Cold War and instead has continued to rely on the Minuteman III missile, developed and deployed in the 1960s and 1970s. Concerns over Minuteman III survivability had led to the deployment of the MX Peacekeeper, yet almost 30 years later, we find ourselves with the same, albeit well-sustained, Minuteman III missiles in the ground.

Submarines, while expensive, are the most survivable part of the nuclear triad. The *Ohio*-class submarines were introduced into service in the 1980s and were originally planned to serve for 30 years. We now expect them to remain in service until 2042. The submarines are fitted with Trident D-5 submarine-launched ballistic missiles.² With the submarine life spans now extended to 42 years, the Navy is facing the unprecedented task of maintaining the boat well past its intended service life. The Navy also faces the challenge of designing a new missile that would be compatible with the *Ohio*-class launch tubes as well as the upcoming *Columbia*-class launchers, all the while trying to find commonalities with a follow-up to the Minuteman III ICBM.

A triad is much more than the sum of its parts. Different systems give the president different options. They also present difficult challenges for adversaries intent on defeating them and force those adversaries to diversify their resources and methods to overcome the triad. That is why all three legs of the nuclear triad must be modernized despite the fiscal challenge. Next-generation nuclear delivery platforms will have to be in service for decades, during which time their operating environment can change drastically and challenge US security. The past three decades have taught us just how fast this can happen. The end of the Cold War and expecting Russia to become a constructive member of the international system are two examples. As late as 2010, the Department of Defense optimistically argued “Russia and the United States are no longer adversaries, and prospects for military confrontation [had] declined dramatically.”³

After the New Strategic Arms Reduction Treaty (New START) entered into force in 2011, Russia launched the most extensive nuclear weapons modernization program since the end of the Cold War. Even without increasing the prominence of its nuclear forces in its national security posture, Russia is modernizing its nuclear forces much faster than the United States and has a very active and capable nuclear weapons production complex. Its history of arms control violations is a serious concern, particularly because Russia currently deploys about 150 warheads above the New START ceiling.⁴ While that is not a violation of the letter of New START since the implementation period starts next year, it is a violation of the spirit of the treaty, particularly since Russia started off below the limits when the treaty entered into force. The US nuclear posture today is predicated on assumptions about Russian behavior that were wrong. But Russia is not the only potential threat to US and allied national security. North Korea continues to test-launch ballistic missiles that are increasingly capable of threatening the US homeland and already has a ballistic missile arsenal that can reach US allies South Korea and Japan. Pyongyang continues to advance its nuclear weapons program, undoubtedly with an eye toward achieving the capability to mate nuclear weapons to its ballistic missiles. Since 2012, North Korea has conducted 78 ballistic missile tests, of which 61 were considered successful.⁵ The neighboring state of China is also a challenge. While Chinese nuclear capabilities remain opaque, they are underpinned by a very capable nuclear production complex. China is also a leader in hypersonic technologies that might affect the strategic deterrent relation-

ship between Beijing and the United States over the course of several years. Finally, Iran, while not yet a nuclear weapon state, is flush with cash from the Joint Comprehensive Plan of Action. It will use this cash to undermine the United States and continue to develop ballistic missiles to augment its regional and global position. India and Pakistan remain wild cards, particularly in the regional context.

Fiscal Challenges

The Congressional Budget Office recently estimated that our nuclear forces would cost about \$400 billion over the next 10 years.⁶ Additional billions of dollars will have to be spent after that as systems enter operational service. While the sum might seem large, even at its peak, nuclear weapons modernization will cost less than 7 percent of the Department of Defense budget. The US nuclear deterrent is not inherently unaffordable, but it will be difficult to execute nuclear weapons modernization if sequestration budget caps remain in place. Additionally, conventional forces like fighters, ships, and munitions are going to reach the end of their service lives in concurrence with the nuclear weapons modernization program. This will create further competition for scarce resources if the budget caps are not lifted. For the value that nuclear weapons provide by deterring a large-scale attack against the United States and its allies, and in the context of a large US federal budget, nuclear weapons modernization is an excellent and cost-effective contribution to US national security. The nuclear weapons triad (ICBMs, submarines, and bombers) will be necessary both for deterrence and to provide future presidents with options should deterrence fail.

Nuclear Posture Review Opportunities

Keeping US nuclear weapons policy as it is completely disregards negative security developments since the 2010 NPR. The 2017 NPR has an opportunity to correct the misconceptions of its 2010 predecessor and also address new developments in the national security environment that have occurred since the end of the Cold War. Some of the most important changes relate to nuclear weapons policy, not necessarily to programmatic aspects of the nuclear weapons enterprise itself. Fortunately, these changes may not require monetary investments or changes in the

current program of record—something desirable given the constrained defense budget.

One of the NPR's great opportunities is a chance to reverse the Obama administration's preference for no new nuclear warheads and no new missions or capabilities for the existing warheads. This policy was predicated upon much more positive and constructive relations with the Russian Federation as well as an anticipation of other countries being interested in the peace and stability of a world without nuclear weapons. But other countries—particularly those that possess nuclear weapons—are simply not interested in such a world.

Some argue that any nuclear weapons policy changes would undermine the New START consensus on the need to modernize the US nuclear triad and short-range nuclear weapons arsenal, particularly the long-range stand-off (LRSO) missile. But that consensus is not enough to enact nuclear weapons modernization, particularly since the bulk of this modernization is scheduled to happen after New START expires. Nuclear weapons modernization must be supported on its own merit for three reasons:

1. The nuclear triad provides the president with the best options in addressing unforeseen contingencies.
2. Components in weapons originally designed for much shorter life spans are nearing the end of the far longer life spans than originally envisioned.
3. The need for nuclear capabilities will persist into the future.

Under the current circumstances, it would be prudent for the United States not to waste its precious resources trying to negotiate a New START extension, a rather one-sided agreement disadvantageous to the United States with a weak verification regime.

Additionally, by contributing to allied assurance, US nuclear weapons are a great tool of US nonproliferation policy. Allies have relied on US extended deterrence in return for not developing their own nuclear weapon capabilities (Japan, South Korea) or keeping their arsenals relatively small (the United Kingdom). To that end, the United States will have to invest in its short-range nuclear weapon arsenal, an investment that includes developing the LRSO missile.

The Trump administration should also honor the Senate's decision not to give its consent to the Comprehensive Test Ban Treaty (CTBT). Such

a step would honor the separation of powers and rule of law. It would also relieve the United States of the obligation not to take actions contrary to the object and purpose of the treaty. The directors of the US National Nuclear Laboratories in the 1990s recommended that the United States permit itself to conduct very small yield-producing experiments, but the Clinton administration insisted on a zero-yield interpretation.⁷ It is unclear whether other parties to the CTBT agree with this interpretation, although Russia and possibly China continue to conduct small yield-producing nuclear weapon experiments.⁸

Throughout the Cold War, thousands of American scientists, engineers, decision-makers, and policy makers labored to maintain a credible and militarily effective nuclear deterrent. Even the best and most properly funded nuclear weapons modernization program will fall short if the United States does not develop the necessary human skillset needed to address challenges sure to arise during the course of its nuclear weapons modernization program. This includes developing a cadre of young people well versed in nuclear policy issues, thinking, and practice as well as weapons designers, engineers, chemists, metallurgists, computer coders, and others that can tackle challenging tasks like mating warheads in the current stockpile to delivery systems of the future. Additionally, the United States must invest more resources in preserving the practical knowledge of those who built, designed, and tested weapons in the current stockpile, including skills required for instrumentation of nuclear weapons experiments. Since only limited time for these activities is available, they should be prioritized in the next budget. A strong and capable nuclear production complex is critical to deterrence and assurance as well as to being responsive to threats as they evolve in the future.

The United States must give itself the intellectual freedom to conduct nuclear weapons experiments should a very serious circumstance require it. An example of such a circumstance could be the discovery of a serious flaw in the current warhead stockpile that would require a correction and an experiment to validate such a correction. It may well find itself surprised by unforeseen developments in its stockpile. The United States was not able to conduct a nuclear test series that would validate computer codes used to model and evaluate the performance and safety of nuclear weapons prior to the Clinton administration's decision in 1992 to stop nuclear weapons testing. Additionally, over a long enough timeline, the United States might find itself in need of nuclear weapons

with new capabilities and unforeseen requirements. Such weapons could require nuclear weapon testing. If the administration takes these steps, the United States will be better equipped to revitalize the human component of the future nuclear challenge.

Conclusion

The Trump administration must reexamine assumptions underlying some of the more questionable aspects of US nuclear weapons policy. Furthermore, the national security developments mentioned above and their effect on nuclear weapons strategy and policy must be clearly communicated to Congress, the general public, and our allies. The goal is to continue to provide a safe, secure, reliable, and militarily effective nuclear deterrent and keep Americans and their allies free from nuclear coercion and attacks.

Military history teaches that the United States usually finds itself surprised by conflicts, be it their nature, their location, or both. Due to unpredictable ways in which the security environment develops, the imperative in nuclear weapons modernization ought to be creating and preserving flexibility and adaptability. The NPR is an opportunity to tackle our nuclear challenges and put US nuclear force policy on a sound footing. **SSQ**

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Notes

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Best Options for the Nuclear Posture Review

Anna Péczeli

Abstract

The Obama administration's 2010 Nuclear Posture Review (NPR) represented a significant departure from previous reviews. It explicitly included the goal of "global zero," added nuclear security to the scope of the review, declared a negative security assurance with fewer exceptions than any previous administration, and reduced the role of nuclear weapons to a narrow range of contingencies. It is essential for the Trump administration to follow its predecessor and live up to US obligations under the Nuclear Non-Proliferation Treaty by recommitting to global zero as a long-term goal. At the moment, concerns of allies are still overriding the chances of a posture that would further limit the role of nuclear weapons by implementing a "sole purpose" posture or a "no-first-use" declaration. But these policies should remain long-term goals, and the administration should continue to work to create the conditions for implementation. This includes improving regional security architectures and increasing reliance on conventional capabilities. Strategic stability should remain the organizing concept toward Russia and China, and negative security assurances should be maintained to advance non-proliferation objectives. Altogether, continuity in declaratory policy is still in the best interests of the United States as it would strengthen relations with allies, mitigate the fears of Russia and China, and pave the way toward a more cooperative relationship based on dialogue instead of threats.



Since the Obama administration issued its Nuclear Posture Review (NPR), the security environment has significantly deteriorated. The 2010 NPR stated, "Russia and the United States are no longer adversaries,

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and prospects for military confrontation have declined dramatically.”¹ After Russia’s annexation of Crimea and its infiltrations in Eastern Ukraine, it is clear the Obama administration’s assessment is no longer valid. Russia’s updated military doctrine clearly shows an increased reliance on nuclear capabilities; Moscow regularly intimidates NATO allies on the Eastern flanks by rhetorical threats, aggressive military drills, and airspace violations. Relations with China have also worsened due to Beijing’s ambitious modernization efforts and its increasing confidence in protecting its own zone of influence in the Pacific. During the eight years of President Obama’s administration, North Korea significantly enhanced its nuclear and ballistic missile capabilities. Its stated goal is to acquire an intercontinental ballistic missile that could provide the capability to launch a nuclear warhead against the US homeland. As a result of these developments, it is clear that the time is right to reevaluate the 2010 NPR and revisit the Obama administration’s policies.

On 27 January 2017, President Trump issued a memorandum on rebuilding the armed forces.² In it he mandated, “The Secretary [of Defense] shall initiate a new Nuclear Posture Review to ensure that the United States nuclear deterrent is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure our allies.” According to a 17 April 2017 press release from the Department of Defense (DOD), “Secretary Mattis directed the commencement of the review, which will be led by the deputy secretary of defense and the vice chairman of the joint chiefs of staff, and include interagency partners. The process will culminate in a final report to the president by the end of the year.”³

In general, the main goal of the NPR is to assess the threat environment, outline nuclear deterrence policy and strategy for the next five to ten years, and align the country’s nuclear forces accordingly.⁴ This document is essential for all aspects of nuclear strategy. First, it defines the role of nuclear weapons in US declaratory policy, which provides some context to the administration’s thinking on nuclear issues. It also supports presidential policy and assures allies of the US commitment to protect them so that they do not build their own nuclear arsenals. Second, the review contains key decisions on the future of the nuclear force structure and the prospect of modernization plans. Finally, it lays the groundwork for the president’s employment guidance document,

which is the highest political guidance provided to military planners on targeting policy and nuclear strike options.

Since the end of the Cold War, each administration has issued its own NPR, but the scope and the framework have been different in all cases. This article builds on the lessons of past NPRs and makes a strong case for maintaining continuity with President Obama's declaratory policy, in terms of both framework and content.

The Framework

Compared to previous nuclear posture reviews, the 2010 NPR process was special as it included high-level representatives from all relevant agencies. The Clinton administration's 1994 NPR was the brainchild of secretary of defense Les Aspin. It was a rather internal bottom-up review process, focusing on a number of force structure decisions. The Office of the Secretary of Defense (OSD) took the leading role and co-chaired the working groups with the Joint Chiefs of Staff (JCS). The outcomes of the review process were announced in September 1994.⁵

The Bush administration's review was mandated by Congress, and due to the ongoing Quadrennial Defense Review (QDR) it had a much wider scope. The working groups were co-chaired by senior officials from the DOD and the Department of Energy (DOE), and the White House was also engaged in the process.⁶ The Bush NPR was submitted to Congress 31 December 2001. Although it looked at nuclear weapons in a broader context, the main decisions still focused on deterrence and modernization.

Among the three reviews, the Obama administration's triggered the strongest interagency cooperation. The OSD and the JCS were leading the process jointly, but the Department of State, the DOE, the National Nuclear Security Administration (NNSA), US Strategic Command, the White House, and the intelligence community were also strongly engaged. In addition, the broad scope of the review made it necessary to involve the departments of Homeland Security (DHS) and Treasury, and there were extensive consultations with Congress and US allies as well. President Obama engaged the NPR process through National Security Council meetings and by separate meetings with his staff and others.⁷

The most important benefit of this framework was the broader scope that the other departments brought to the table. As opposed to the traditional focus on deterrence and nuclear modernization, the Obama ad-

ministration's NPR was the first to include nuclear security as an objective. Due to the State Department's involvement, the document also reflected several measures—such as the new negative security assurance—which helped strengthen the non-proliferation regime and advance US negotiating positions in global arms control forums.

This balanced approach to nuclear strategy and the involvement of the various departments helped build consensus around the document, which facilitated effective implementation. The regular consultations with allies ensured they understood President Obama's nuclear strategy goals and accepted that certain force structure decisions, for example the retirement of the Tomahawk nuclear sea-launched cruise missiles, were not meant to weaken the credibility of US assurances.

In light of all these benefits, the Trump administration should also make a strong effort to include all relevant departments and regularly consult with allies on the decisions that will affect their security as well. This will strengthen relations between the United States and its allies and also help in implementing the new strategy.

Besides the strong interagency cooperation, the Obama administration's NPR process was also unique in terms of transparency. In the case of the Clinton administration, the NPR was not released to the public; the DOD prepared a brief press release with slides on the most important conclusions of the review. In addition, the transcripts of the briefings to Congress and to the media were also released.⁸

The Bush administration followed this template and did not release its NPR. The document went to Congress on 31 December 2001 along with a very brief unclassified report.⁹ A subsequent briefing to the press included public release of some slides on the NPR's main findings.¹⁰ In addition to these sources, the *Los Angeles Times* and the *New York Times* acquired the full text in March 2002, and substantial excerpts of the NPR were published on the Internet.¹¹ The Bush administration's NPR contained many innovative ideas about the role of nuclear weapons, such as the concept of the new triad, but due to the high level of secrecy around the document, the White House and the DOD failed to explain this new approach to the public, to the military, or to Congress. After the main architect of the document, Keith Payne, left office, leadership was lacking, the administration could not defend its policy agenda, and it lost the support of Congress. This made procurement extremely difficult and caused many problems in implementing the strategy.¹²

In contrast to the first two reviews, the 2010 NPR report was the most substantial such write-up ever released. On 6 April 2010 the DOD published a 49-page summary of the results of the review, along with background briefing slides for the media, a fact sheet, and the release of the exact size of the US nuclear weapons stockpile as of September 2009.¹³ This helped to articulate clearly the administration's thinking on nuclear issues to the public, to Congress, to allies, and to adversaries. If the Trump administration wants to prevent misunderstandings about its nuclear posture and does not want to be in the defensive about its new strategy, transparency can actually help to avoid the mistakes of past administrations.

The Role of Nuclear Weapons

The last Nuclear Posture Review applied a comprehensive approach and took an integrated look at deterrence. The 2010 NPR named two primary threats to US national security: nuclear terrorism as the “most immediate and extreme danger” and nuclear proliferation.¹⁴ These challenges made it necessary to broaden the traditional scope of the NPR, and the 2010 document became the first to include nuclear security in its priorities.

Besides the broadened scope, the Obama posture also presented a major shift regarding the role of nuclear weapons. The tone of the 2010 NPR was significantly different from previous documents. This was the first time the goal of global zero was explicitly included in an NPR. The administration, however, did not intend to alienate conservative circles, and it tried to guarantee a bipartisan support behind the new nuclear posture. To maintain cooperation between the left and right wings of Congress, the Obama administration brought together the long-term goal of eliminating all nuclear weapons and the near-term goal of maintaining a safe, secure, and effective nuclear arsenal.¹⁵ The latter commitment laid the foundation for major modernization programs, and the administration pledged to put the necessary financial support behind it.

In this regard, Christopher Ford, the National Security Council's senior director for weapons of mass destruction and counterproliferation, said at the 2017 Carnegie International Nuclear Policy Conference that the Trump review will include an assessment of whether global nuclear disarmament is a realistic goal. He stated, “We are reviewing policy across the board . . . that necessarily includes reviewing, among many other

things, whether the goal of a world without nuclear weapons is in fact a realistic objective in the near-to-medium term in light of current trends in the international security environment.”¹⁶

The desire to move toward global zero and the need to maintain a safe, secure, and effective nuclear arsenal on the way to zero have been at odds for a long time. Regarding the second goal, during the 2016 presidential campaign candidate Trump made clear that the United States will not be second to any other nuclear power, and he committed to modernizing the entire nuclear weapons complex.¹⁷ However, as of summer 2017, the administration still had not made a strong commitment to global zero. In the forthcoming Nuclear Posture Review, it would be crucial to strengthen the US commitment to this goal. At the May 2017 Nuclear Non-Proliferation Treaty (NPT) Review Conference (RevCon), statements by non-nuclear weapon states emphasized the continued importance of moving toward a world without nuclear weapons and the need for nuclear weapon states to live up to their disarmament pledge.¹⁸ Besides, even after the annexation of Crimea and the dramatic deterioration of NATO-Russia relations, the 2014 Wales Summit and the 2016 Warsaw Summit both emphasized that NATO will continue to work “to create the conditions for a world without nuclear weapons in full accordance with all provisions of the NPT.”¹⁹ Therefore, not including the goal of global zero in the next NPR would be an alarming step to adversaries and to some allies as well. The NPT obliges all nuclear weapon states (NWS) to conduct negotiations in good faith toward zero. Although there is no timeframe for implementation, and the actual meaning of this obligation continues to be debated, the NPT is still the only legally binding international agreement that obligates all five NWSs to move in this direction. Therefore, if the Trump administration decided not to recommit to this goal, it could be seen as a violation of the spirit of the NPT. Such a decision could be grounds for dangerous miscalculations about US intentions in the eyes of adversaries and may help them justify further quantitative and qualitative increases in their own arsenals. Furthermore, it could also undermine the entire NPT regime and validate the efforts of frustrated non-nuclear weapon states who already are looking for other ways to advance disarmament. Finally, the twin pillars of global zero and the promise to maintain a safe, secure, and effective nuclear arsenal were key to building bipartisan support behind the 2010 NPR. Therefore, if the Trump administration also aims to secure wide

support for its nuclear strategy, then continuity with the Obama posture is the best approach.

Besides the long-term goal of global zero, another important statement of the last NPR was that the use of nuclear weapons will only happen in “extreme circumstances to defend the vital interests of the United States or its allies and partners.”²⁰ Adding that “the fundamental role of U.S. nuclear weapons, which will continue as long as nuclear weapons exist, is to deter nuclear attack on the United States, our allies, and partners,” represented a different tone and a more limited role for nuclear weapons than in previous administrations.²¹ The 2001 NPR stated that “nuclear weapons play a critical role in the defense capabilities of the United States, its allies and friends. They provide credible military options to deter a wide range of threats, including WMD and large-scale conventional military force. These nuclear capabilities possess unique properties that give the United States options to hold at risk classes of targets [that are] important to achieve strategic and political objectives.”²² The 2001 document made a strong case that nuclear weapons had a “critical role” in deterring chemical, biological, and large-scale conventional attacks. In contrast, the 2010 NPR emphasized the limited role of nuclear weapons and the fact that they are maintained fundamentally to deter nuclear attacks. This was a significant shift from a wide range of scenarios to “a narrow range of contingencies in which U.S. nuclear weapons may still play a role in deterring a conventional or chemical-biological weapons (CBW) attack against the United States or its allies and partners.”²³ A fundamental role, however, does not mean “sole purpose,” which could have been a further step toward limiting the role of nuclear weapons. The Obama administration gave much consideration to implementing a sole purpose posture as the leadership of the Department of State was advocating in favor of this shift.²⁴ A sole purpose declaration would have meant that nuclear weapons only serve to deter or to respond to a nuclear attack by adversaries. But, according to experts and senior government officials from the Obama administration, this would not rule out the first use of nuclear weapons against nuclear powers.²⁵ This argument is based on the moral and legal tradition that if a threat is clearly imminent, it is just for a state to act to protect itself and not absorb an enemy’s first blow.²⁶ Accordingly, if deterrence fails and a nuclear attack appears imminent, then first use is (or should be) morally acceptable under the sole purpose posture.²⁷ The real restriction

a sole purpose posture implies is that nuclear weapons would only have a role in scenarios where the adversaries have nuclear weapons, thus it would automatically rule out the use of nuclear weapons against all non-nuclear weapon states. In this case, nuclear weapons would no longer have any role in scenarios involving chemical or biological weapons or a major conventional aggression by any state.

During the debate under the Obama administration, the DOD cautioned against dramatic changes in declaratory policy and emphasized the benefits of the long-standing tradition of the so-called calculated ambiguity strategy. The main idea behind this strategy is that the United States does not specify the nature of response to a non-nuclear aggression but at the same time it threatens with an overwhelming and devastating counter-attack. This could mean an asymmetric nuclear attack in response to the use of chemical or biological weapons.²⁸ Maintaining this option implies that the Obama administration still saw a few non-nuclear scenarios when the threat of a devastating nuclear response was deemed essential for the security of the United States or its allies and partners.

As a result, the 2010 NPR concluded that sole purpose was acceptable as a long-term goal but the current circumstances were not adequate to implement it immediately. The document stated, “the United States is therefore not prepared at the present time 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.”²⁹ To create these conditions, the United States outlined two goals: first, it “will continue to strengthen conventional capabilities and reduce the role of nuclear weapons in deterring non-nuclear attacks, with the objective of making deterrence of nuclear attack on the United States or our allies and partners the sole purpose of U.S. nuclear weapons”³⁰ and, second, it will “continue efforts to strengthen regional security architectures and eliminate chemical and biological weapons, so that over time all states possessing nuclear weapons can be secure in making deterrence of nuclear attack the sole purpose of nuclear weapons.”³¹

It is very unlikely that the adversaries of the United States could pose an existential threat with conventional, chemical, or biological weapons (CBW). Taking into consideration the unquestionable conventional superiority of the United States, conventional weapons could provide an adequate response option in any of the above scenarios. However, a number of allies (such as the Baltic States or Israel) still believe that

their neighbors could actually threaten their existence with non-nuclear means. In these cases, US extended nuclear deterrence and calculated ambiguity are considered crucial to prevent such an attack. Therefore, declaring a sole purpose posture under the current circumstances would be seen by some allies as a weakening of US commitments. This, however, does not mean that the Trump administration should renounce sole purpose. It should, in fact, recommit to sole purpose as a long-term goal because it would be a demonstration of its intention to live up to its NPT commitments by reducing the role of nuclear weapons in the future. Just as during the 2010 NPT Review Conference, this could strengthen US negotiating positions at the 2020 RevCon by alleviating criticism from the non-nuclear weapon states.

The Trump administration should also continue efforts to create the conditions for a sole purpose posture by focusing on and investing in conventional capabilities and by strengthening regional security architectures through arms control measures in the field of CBW threats. As soon as allies believe these capabilities are no longer threatening their very existence, a sole purpose posture should be implemented.

The other issue where the Obama administration showed a rather cautious approach was the question of a no-first-use (NFU) policy. The benefits and costs of implementing this policy were also thoroughly examined during the 2009–2010 NPR process and during the later revisions as well. However, an NFU policy would be even more restrictive than a sole purpose posture. It would mean that the United States would only use nuclear weapons in response to a nuclear attack by its adversaries. By definition, it would entirely rule out the use of nuclear weapons against all non-nuclear weapon states and also would eliminate the option of nuclear use in response to major conventional or CBW attacks. In this case, both the Department of State and the DOD openly advocated against the introduction of such a policy. Adm Cecil D. Haney,³² former commander of Strategic Command, and senior cabinet members including secretary of state John Kerry, secretary of defense Ashton Carter, and secretary of energy Ernest Moniz all openly stated that they did not support implementing a no-first-use policy.³³

Again, allies' concerns were an influential factor. Compared to the early years of the Obama administration, today allies in Europe and Asia are even more worried about their security. A significant improvement in adversarial relations or additional US assurance measures, for

example increased conventional presence or ballistic missile defense deployments, would alleviate some of their concerns and create the conditions for reducing their reliance on extended nuclear deterrence. NFU was also dismissed because of concerns about the global benefits of such a policy. As this is not a legally binding guarantee and cannot be verified, a significant level of trust is needed to adjust force structures based on the promises of adversaries. Although China and India both declared a NFU policy, there are obvious exceptions in both cases that devalue their commitments. These factors were influential during the 2016 Prague legacy review and played an important role in the decision of the Obama administration to dismiss a NFU policy.³⁴

Although the conventional superiority of the United States is unquestioned globally, it is not necessarily the case in every regional scenario. In the Eastern flanks of NATO, for example, Russia still has a competitive advantage that might create appetite to seize NATO territory if nuclear first use is off the table. China might also achieve such a capability in key regions of the Pacific. Therefore, as long as adversarial relations do not change for the better and allies continue to feel insecure, the time does not seem right for a no-first-use policy. However—just as in the case of sole purpose—the Trump administration should work in this direction. Following the recommendation of nuclear policy analyst James Acton, the United States should work cooperatively with Russia and China toward a “durable balance of conventional forces in key theaters” where neither side would worry about its own security and neither side had the impression that it might achieve some advantages by initiating a conflict. A further step in declaratory policy could include a promise that the United States would only consider the use of nuclear weapons if it faced an existential threat or if its allies and partners did.³⁵ It would maintain the option of nuclear use in response to a major non-nuclear aggression, but at the same time, this would still constitute a more limited role than the Obama doctrine of using nuclear weapons only in “extreme circumstances to defend the vital interests of the United States or its allies and partners.”³⁶ Most countries have their own idea about the vital interests of their nation. The core of this concept is territorial security and the security of the population. But in addition to these interests, it can include a broader set of issues: for many countries, the security of their forward-deployed troops and military bases would also belong here, or energy security, or access to global markets. Existential threats,

on the other hand, are threatening the territorial integrity and the very survival of a state. Therefore, declaring that the United States would only consider the use of nuclear weapons if it faces with an existential threat against itself, its allies, or its partners could be a small but meaningful step toward easing the paranoia of Russia and China about US intentions, and it could also help to rebuild a partnership with these states.

Strategic Stability vis-à-vis Russia and China

Regarding the relations with Russia and China, the 2010 NPR was also different from its predecessors. In 2001, the Bush NPR recognized “the changed relationship with Russia” and stated that the “United States seeks a more cooperative relationship with Russia and a move away from the balance-of-terror policy framework.”³⁷ Beijing, at the same time, was handled in a different framework, as a state of concern and a potential conflict contingency: “Due to the combination of China’s still developing strategic objectives and its ongoing modernization of its nuclear and non-nuclear forces, China is a country that could be involved in an immediate or potential contingency.”³⁸

In contrast, the 2010 NPR elevated China to the same category as Russia. It mentioned both Russia and China in the context of a more stable strategic relationship: “Russia and the United States are no longer adversaries, and prospects for military confrontation have declined dramatically. The two have increased their cooperation in areas of shared interest, including preventing nuclear terrorism and nuclear proliferation.”³⁹ Additionally, “The United States and China are increasingly interdependent and their shared responsibilities for addressing global security threats, such as weapons of mass destruction (WMD) proliferation and terrorism, are growing. The United States welcomes a strong, prosperous, and successful China that plays a greater global role in supporting international rules, norms, and institutions.”⁴⁰

Instead of confrontation, the new organizing concept with these two states was strategic stability: “By promoting strategic stability with Russia and China and improving transparency and mutual confidence, we can help create the conditions for moving toward a world without nuclear weapons and build a stronger basis for addressing nuclear proliferation and nuclear terrorism.”⁴¹ In this regard, the 2010 NPR implied that strengthening strategic stability with these two states and implementing

transparency and confidence building measures would lead to broader cooperation on arms control and nuclear security issues.

Although relations with both countries have worsened since 2010, it does not mean that the strategic stability concept was the wrong approach toward these states. Despite the geopolitical differences, there are still a number of areas where the United States needs cooperation from Russia and China. Arms control efforts, preventing the proliferation of weapons of mass destruction and their means of delivery, advancing nuclear security, resolving the crisis in Syria, and finding a diplomatic solution to the North Korea nuclear debate are all among these areas. Therefore, the Trump administration needs to invest in reviving the strategic stability dialogue with Moscow and Beijing. Finding common understanding of the capabilities that might upset stability can help normalize the relations and reduce the chances of miscalculation and unnecessary confrontations in the future.

Revisiting the Issue of Negative Security Assurance

Another innovation of the 2010 nuclear strategy was the rhetoric toward other adversaries, be they non-nuclear weapon states like Syria or Iran, or nuclear powers like North Korea. In this regard, the Obama NPR declared a negative security assurance with fewer exceptions than any other administration before. The first articulation of a negative security assurance dates back to June 1978 when the Carter administration declared that “the United States will not use nuclear weapons against any non-nuclear weapons States Party to the NPT or any comparable internationally binding commitment not to acquire nuclear explosive devices, except in the case of an attack on the United States, its territories or armed forces, or its allies, by such a State allied to a nuclear-weapon State or associated with a nuclear-weapon State in carrying out or sustaining the attack.”⁴² This basically excluded from the assurance any non-nuclear weapon state which was allied or associated with a nuclear weapon state (such as the Soviet Union)—the so-called Warsaw Pact exclusion clause.

Although the policy of a declared negative security assurance has been present in US nuclear policy since President Carter, the conditions of this assurance have significantly changed over time. After Ukraine acceded to the NPT in 1994 and transferred all of its (post-Soviet) nuclear warheads to Russia for elimination, the United States rephrased its

assurance and pledged to “reaffirm, in the case of Ukraine, their commitment not to use nuclear weapons against any non-nuclear weapon state party to the Treaty on the Non-Proliferation of Nuclear Weapons, except in the case of an attack on themselves, their territories or dependent territories, their armed forces, or their allies, by such a state in association or alliance with a nuclear weapon state.”⁴³ This eliminated the reference to a “comparable internationally binding commitment not to acquire nuclear explosive devices”; thus the NPT membership (with some exceptions) remained the ultimate requirement of the US negative security assurance.

In April 1995, the Clinton administration went a bit further and in the NPT Review and Extension Conference declared that “the United States reaffirms that it will not use nuclear weapons against non-nuclear weapon states parties to the Treaty on the Non-Proliferation of Nuclear Weapons except in the case of an invasion or any other attack on the United States, its territories, its armed forces or other troops, its allies, or on a State toward which it has a security commitment, carried out or sustained by such a non-nuclear weapon State in association or alliance with a nuclear-weapon state.”⁴⁴ This added two new dimensions to the negative security assurance: first, the case of invasion, which was not included previously; and second, the term “any other attack” which meant to reflect the growing concerns about a chemical or biological weapons attack on the United States or its allies and partners.⁴⁵

In comparison to these declarations, the 2010 assurance significantly limited the cases when the United States would consider the use of nuclear weapons against non-nuclear weapon states. The Obama NPR stated that “the United States will not use or threaten to use nuclear weapons against non-nuclear weapon states that are party to the Nuclear Non-Proliferation Treaty (NPT) and in compliance with their nuclear non-proliferation obligations.”⁴⁶

Thus, the assurance became dependent on a single factor: NPT membership and compliance with nuclear non-proliferation obligations. If these criteria are met, non-nuclear weapon states are no longer threatened with US nuclear weapons, even if they attacked the United States or its allies and partners with biological, chemical, or conventional weapons. However, to maintain the credibility of US assurances, the NPR made it clear that in these cases, any CBW or conventional aggression by the adversaries would be responded with a devastating conventional attack. As Principal

Deputy Undersecretary of Defense for Policy James N. Miller stated at the 2010 Congressional hearing on the NPR, this “is a shift from calculated ambiguity” in the case of most non-nuclear weapon states.⁴⁷

Although the administration maintained the right to revisit this assurance in case the threat posed by biological weapons increased, this was still an important rhetorical innovation in two regards. First, the number of contingencies and “threatened states” has been reduced. While previous administrations maintained the right to respond with nuclear weapons to any WMD scenario, the Obama team extended the negative security assurance to all states which are compliant with the NPT (even if they attacked the United States or its allies and partners with chemical or biological weapons). Second, the NPR provided a positive path for those states that—from a US perspective—are labeled as “non-compliant,” such as Syria or North Korea. If these states abandon their activities and come back into compliance with the NPT, the negative security assurance will be extended to them as well. Including an incentive in the NPR and approaching these proliferation challenges from a positive angle, not just threatening them with nuclear weapons but also offering a way out, was again a significant rhetorical departure from previous NPRs, and an important contribution to global non-proliferation efforts.

In its NPR, the Trump administration will need to address this issue and answer a number of questions. First, the White House should decide if it wants to maintain the same conditions as the Obama administration. Second, it needs to clarify the conditions on which it decides compliance. And third, it will need to make a judgment whether under the Joint Comprehensive Plan of Action (JCPOA) Iran qualifies for the assurance. If the administration declares Iran is in compliance with the NPT, then it is important to remember that the threat of nuclear weapons is no longer an option against Iran, and members of the administration can no longer claim that “all options are on the table” against Tehran.

In general, negative security assurances are important non-proliferation tools through which nuclear weapons states can assure non-nuclear weapon states that nuclear threats are off the table, if they hold on to their non-proliferation obligations. As a result of the implementation of the Biological and Toxin Weapons Convention (BTWC) and the Chemical Weapons Convention (CWC) the possible circumstances have been significantly narrowed in which enemies could jeopardize the vital interests of the United States or its allies and partners by non-nuclear

means. In this regard, the Bush administration's NPR named Russia, China, North Korea, Iran, Iraq, Syria, and Libya as potential countries against which it was planning nuclear contingencies. Nuclear options remain on the table in the case of Russia, China, and North Korea because they possess nuclear weapons. The proliferation concerns of Iraq and Libya were resolved under the Bush administration, and the Obama administration addressed the cases of Iran and Syria. With Iran's efforts to implement the JCPOA and Syria's accession to the CWC in 2013, it seems that these states no longer represent a WMD threat. This means that conventional weapons can actually provide all the guarantees that are needed to address the security needs of the United States and its allies vis-à-vis these states. Therefore, if the Trump administration decides to continue cooperation with Iran in the implementation of the JCPOA, then there is a window of opportunity to declare an "unconditional" negative security assurance that would cover all non-nuclear weapon states.

Consultation with Allies

The last major innovation of the Obama posture was linked to the relations with allies. A 2006 SAIC study found that close US allies and friends would like to see the United States "smarter in dealing with other countries' perspectives on nuclear issues and to listen more to other countries' views."⁴⁸ In this regard, it was an important change of previous practices that during the drafting of the 2010 NPR, the United States consulted with its allies several times. For example, the retirement of the Tomahawk cruise missiles (which played an important role in US extended nuclear deterrence in East Asia) was discussed with South Korea and Japan in advance.⁴⁹

The 2010 NPR further stated that any additional reduction in US nuclear forces would be pursued in consideration of the assurances toward the allies: "any future nuclear reductions must continue to strengthen deterrence of potential regional adversaries, strategic stability vis-à-vis Russia and China, and assurance of our allies and partners. This will require an updated assessment of deterrence requirements; further improvements in U.S., allied, and partner non-nuclear capabilities; focused reductions in strategic and non-strategic weapons; and close consultations with allies and partners."⁵⁰

The question of reductions is specifically important in the case of NATO allies, which still host around 180 US non-strategic nuclear

weapons in their territory. Given this linkage, and as a result of a number of international events, such as President Obama's Prague address, the UN Security Council's nuclear summit in September 2009, the negotiations on the New START Treaty, the first Nuclear Security Summit, as well as the review of NATO's strategic concept, the 2010 NPR enjoyed greater attention in Europe than the previous NPR processes. Based on five different country case studies (France, Estonia, Poland, Germany, and Norway), Professor Harald Müller of the Peace Research Institute argued that depending on their security interests and preferences the document allowed each NATO member state to read into the NPR what they wanted. Nuclear weapon states welcomed continuities in the validity of nuclear deterrence, and the importance of a safe, secure, and effective arsenal. Eastern European countries were pleased by the reaffirmed nuclear assurances. And disarmament advocates were content with the inclusion of global zero as the ultimate goal. Although the issue of non-strategic nuclear weapons in Europe appeared to be the most important question to NATO members, the 2010 NPR avoided a clear position on it and linked any changes to a consensual decision by all NATO members.⁵¹ "The United States will consult with our allies regarding the future basing of nuclear weapons in Europe, and is committed to making consensus decisions through NATO processes. . . . No changes to U.S. extended deterrence capabilities will be made without continued close consultation with allies and partners."⁵²

Due to the alarming status of the security environment and to the heightened nuclear rhetoric of the past few years, allies are likely to be even more concerned about the outcomes of the Trump review. Therefore, the Trump administration should make every effort to conduct regular consultations with its allies about their security needs and adjust US posture and forces in a way that it would address their concerns without upsetting their adversaries.

Lingering Ambiguities

Although the 2010 NPR included many innovations in nuclear posture, Scott Sagan and Jane Vaynman identified three "lingering ambiguities" which the NPR report failed to clarify and the Trump administration should consider. The first issue was the role of allies in supporting the United States for a greater reliance on conventional deterrence. The 2010 NPR recognized the improved conventional capabilities of allies that are

important assets in defending against regional conventional threats, but the document did not specify what role allies played in strengthening regional conventional capabilities or in the ability of the United States to “project those capabilities.”⁵³

The second issue was the question of prevention and preemption. In this regard Sagan and Vaynman argued that the option to use nuclear weapons in prevention or preemption was ruled out in the case of non-nuclear weapon states which are parties to the NPT and are in compliance with their non-proliferation obligations. However, there was no discussion about the case of states that did not fall under this negative security assurance. While the Bush administration declared several times that all options (including the preventive use of nuclear weapons) were on the table in the Iran nuclear debate, the Obama administration’s nuclear posture did not clarify its position in the NPR.

The third ambiguity according to Sagan and Vaynman related to the policy toward biological weapons. Following the new negative security assurance, the 2010 NPR included a clause that “Given the catastrophic potential of biological weapons and the rapid pace of bio-technology development, the United States reserves the right to make any adjustment 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.”⁵⁴ According to this reservation, nuclear weapons did not have a role against biological weapons in the case of those states that were protected by the negative security assurance—but it might change in the future. Thus, the United States maintained a way out of this commitment. The Trump administration will need to decide if this clause is still necessary, and it should clarify what type of change in biotechnology would make the negative security assurance invalid.

Conclusion

Whenever a new administration takes office, it must deal with the legacies of its predecessors. In this case, the Trump administration cannot avoid reflecting on the Obama administration’s nuclear strategy, and if it decides to abandon those policies, it will need to explain why those changes were necessary. It is clear that the security environment has turned for the worse since 2010, and maintaining an effective deterrence might necessitate some adjustments in the force structure. It might mean an increased need for new capabilities, or some modernization

plans might seem redundant and unnecessary under the current circumstances. The new NPR will have to address these issues and take stock of the security needs of the United States and its allies and partners.


But the NPR should not focus only on deterrence needs and modernization efforts. It is equally important to look at nuclear strategy in a comprehensive way and harmonize deterrence requirements with the goals of assuring allies, advancing nuclear security, and strengthening non-proliferation. To make sure all these goals are mutually reassuring, the NPR process needs to involve the Department of State, the Department of Energy, allies, and Congress. A highly transparent and inclusive process can facilitate implementing a new nuclear strategy, and it can also guarantee the necessary political and financial support for President Trump's vision of a "nuclear deterrent [which] is modern, robust, flexible, resilient, ready, and appropriately tailored to deter 21st-century threats and reassure our allies."⁵⁵

In terms of rhetoric, the last NPR represented a significant departure from previous nuclear postures. It explicitly included the goal of global zero in the text of the nuclear posture, added nuclear security to the scope of the review, declared a more comprehensive negative security assurance than any previous administration, and significantly reduced the role of nuclear weapons to a narrow range of contingencies against fewer states. It placed strategic stability at the center of US-Russia and US-China relations, and involved the allies in the NPR drafting process to a greater extent. This puts a lot of pressure on the Trump administration because adversaries could see any limitation to this posture as a validation of their own aggressive behavior and a justification of their robust modernization efforts—which could put the blame on the United States for certain steps Moscow and Beijing were planning to do anyhow. In the meanwhile, non-nuclear weapons states could see any major shift from the Obama NPR as a violation of the spirit of the NPT and a sign that they need to look for other means to put pressure on nuclear weapon states. In this regard, it is essential for the Trump administration to recommit the United States to the long-term goal of global zero to show that it intends to live up to its commitments under the NPT.

As for US declaratory policy, it seems that the concerns of allies are overriding the chances of a posture that would further limit the role of nuclear weapons. As a result, the time does not seem right for a sole purpose posture or a no-first use declaration. However, the Trump

administration should emphasize that these remain long-term goals, and it should continue to work to create the conditions for implementing these policies. Improving regional security architectures and increasing reliance on conventional capabilities will remain important elements of this effort. Besides, additional reassurance measures by non-nuclear means can also reduce the reliance of allies on extended nuclear deterrence.

Regarding the relations with potential adversaries, strategic stability should remain the organizing concept in the US-Russia and US-China relations, and the Trump administration should work to reinstate these dialogues as there are a number of areas where mutual interests require cooperation with these states. In the relations toward other adversaries, negative security assurances proved to be a useful tool to advance non-proliferation objectives, and the administration should build on the positive results of previous administrations. In this regard, there is an important window of opportunity. If the Trump administration finds a way to continue the cooperation with Iran in the implementation of the JCPOA, an “unconditional” negative security assurance could be implemented.

Despite the dramatic changes in the security environment, it seems that continuity in declaratory policy is still in the best interests of the United States. Maintaining the most important building blocks of the Obama posture could strengthen relations with allies, mitigate the fears of Russia and China, and pave the way toward a more cooperative relationship based on dialogue instead of threats. It could strengthen the non-proliferation regime by bridging the alarming gap between the nuclear weapon states and the non-nuclear weapon states. A number of scholars have stated in the past that changes in US nuclear posture affect the thinking of other nuclear powers, and many of them are changing their own doctrines in response to the changes of US nuclear doctrine. Therefore, the Trump administration should keep in mind the tremendous responsibility it has while it is formulating the next nuclear posture review. 

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Nuclear Arms Control: A Nuclear Posture Review Opportunity

Stephen J. Cimbala

Abstract

US nuclear posture includes national priorities for nuclear arms control. One important issue for the Trump administration is the possibility of extending or revising the New Strategic Arms Reduction Treaty (START) of 2010 that goes into effect in 2018 and expires in 2021. The analysis that follows compares outcomes from New START and lower numbers of deployed weapons for the United States and for Russia, in terms of their implications for deterrence and arms control stability. The significance of missile defenses in this context is also addressed, since Russia has defined US missile defenses as destabilizing with respect to nuclear arms control and potentially nullifying of Russia's nuclear deterrent.

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Vladimir Putin's third term as Russian president conflicted with the goals of Barack Obama's second term as US president. As a result, US-Russian political relations were mired in negativity, precluding the possibility of any follow-up agreement to the New START nuclear arms reduction treaty of 2010.¹ If relations between the two countries eventually improve, should America and Russia extend New START or, with more ambition, seek post-New START reductions in their numbers of operationally deployed long-range nuclear weapons and launchers? This question must be considered part of the current US Nuclear Posture Review (NPR). The discussion that follows addresses this issue in four steps: (1) where things stand now, (2) options for strategic nuclear arms reductions, (3) the implications of missile defenses for nuclear strategic stability, and (4) conclusions and related discussion.

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Nuclear Stasis

More than two and one-half decades after the end of the Cold War and the demise of the Soviet Union, post-Soviet Russia and the United States maintain numerous nuclear weapons deployed on intercontinental and transoceanic launchers, including land-based intercontinental ballistic missiles (ICBM), submarine-launched ballistic missiles (SLBM), and heavy bombers capable of carrying a variety of munitions, including gravity bombs, air-launched cruise missiles (ALCM), and advanced cruise missiles. Even after complying with the reductions called for in the New START agreement signed by presidents Obama and Medvedev in 2010, Russia and the United States will deploy a maximum number of 1,550 long-range or “strategic” nuclear weapons on a maximum of 700 deployed intercontinental launchers.² In addition, a significant number of each state’s strategic nuclear weapons will require prompt launch for survivability, increasing the risk of nuclear instability in time of crisis.

It would be an understatement to say that the current nuclear relationship between the United States and the Russian Federation is an historical and strategic anomaly. Their nuclear arsenals remain sized in relation to each other and directly pointed at one another despite the fact that, were nuclear crisis management and deterrence to fail, no acceptable outcome to any nuclear war between the United States or NATO and Russia is foreseeable.³ To be sure, former President Obama’s national security strategy and nuclear policy documents indicated that, so long as nuclear weapons existed anywhere, the United States would maintain a nuclear force and supporting infrastructure second to none. And he was right: with nuclear weapons, bluffing is a dangerous game. States that want to play this game need to know, and their enemies must know, that their nuclear deterrent is safe, secure, reliable, and proof against either of two kinds of error. First, the US nuclear deterrent should be promptly responsive to duly authorized commands for nuclear retaliation after having been attacked—but the United States must not launch a nuclear retaliatory attack on a mistaken premise that an enemy has already launched a nuclear first strike. Second, US nuclear weapons also provide “extended deterrence” for American allies and, in so doing, support global nonproliferation by limiting those states’ vulnerability to

nuclear coercion and/or attack, and thus reducing their incentives to become nuclear-weapons states.

How many weapons are needed to satisfy these criteria is an arguable question. Since the end of the Cold War, the United States and Russia have downsized their nuclear arsenals considerably. The New START limitations (1,550 deployed weapons on 700 deployed intercontinental launchers) for each state are a long way from the tens of thousands of deployed weapons that marked the height of the Cold War. Politically the United States and Russia have convergent and divergent interests. On the one hand, Russia's annexation of Crimea in 2014 and continuing destabilization of eastern Ukraine have provoked NATO responses that include larger US and allied force deployments in Eastern Europe, including in states bordering Russia, as well as having boosted American and allied expenditures for conventional defense in Europe.⁴ On the other hand, Russia and the United States have at least partly overlapping and congruent interests in defeating terrorism, in a stable post-NATO Afghanistan, and in preventing the spread of nuclear weapons to rogue states or nonstate actors, including terrorists. In Europe, NATO seeks to maintain a spectrum of deterrent and defense capabilities to forestall aggression, to prevail in a conventional war if necessary, and to deter nuclear first use. NATO also faces the challenge of Russian hybrid warfare, including nonkinetic components such as cyberwar, active measures, disinformation, and varieties of influence operations. Although it is hoped that neither hybrid nor conventional warfare would escalate beyond the nuclear threshold, US strategic nuclear forces and other nuclear weapons deployed on the territories of NATO allies support NATO's mission as being capable of deterring and resisting aggression at all levels. NATO requires this flexibility because, as military planners well know and history teaches, states often get the wars that they did not plan for or expect.

Granted, Russia maintains its strategic and shorter range nuclear forces for political and military reasons other than those having to do with its relations with the United States and NATO. Russia enjoys the cachet and spillover diplomatic suasion of being a nuclear superpower treated as an equal by the United States in nuclear arms control. Tables 1 and 2 summarize Russian and American strategic nuclear forces in 2016.

Table 1. Russia strategic nuclear forces, 2016

Type	Launchers	Warheads per launcher	Total warheads
ICBM^a			
SS-18	46	10	460
SS-19	20	6	120
SS-25	90	1	90
SS-27 Mod. 1 (mobile)	18	1	18
SS-27 Mod. 1 (silo)	60	1	60
SS-27 Mod. 2 (mobile) (Russian RS-24)	63	4	252
SS-27 Mod. 2 (silo) (Russian RS-24)	10	4	40
RS-26 Yars-M	0	0	0
SS-27 Mod. (rail mobile)	0	0	0
SS-XX "heavy" (silo) (RS-28 Sarmat)	0	0	0
Subtotal ICBM	307	27	1,040
SLBM^b			
SS-N-18	2/32	3	96
SS-N-23	6/96	4	384
SS-N-32	3/48	6	288
Subtotal SLBM	11/176	13	768
Bombers/weapons			
Bear-H6	27	6 ^c	162
Bear-H16	30	16 ^c	480
Blackjack	13	12 ^d	156
Subtotal bombers/weapons	70	34	798
Total	553	74	~2,600^e

Source: Hans M. Kristensen and Robert S. Norris, "Russian Nuclear Forces, 2016," *Bulletin of the Atomic Scientists* 72, no. 3 (2016): 125–34, <http://doi.org/f8n4ft>. See also Arms Control Association, "Russian Strategic Nuclear Forces under New START," October 2016, <https://www.armscontrol.org/factsheets/Russian-Strategic-Nuclear-Forces-Under-New-START>.

Note: The following key applies also to tables 2–8.

^aIntercontinental ballistic missile

^bSubmarine-launched ballistic missile

^cAir-launched cruise missile (ALCM), bombs

^dALCMs, short-range attack missiles (SRAM), bombs

^eAbout 1,800 warheads are actually deployed on missiles and at bomber bases. Bombers carry three kinds of weapons: ALCMs, gravity bombs, and SRAMs air-to-ground. Also, under New START counting rules, each bomber counts as a single warhead.

Table 2. US strategic nuclear forces, 2016

Type	Launchers	Warheads per launcher	Total warheads
ICBM			
Minuteman III	440	1	440
SLBM			
Trident II D5	288	4	1,152
Bombers/weapons			
B-52H	44 ^a	— ^b	200
B-2A	16 ^a	— ^b	100
Subtotal bombers/weapons	60		300
Total	788	~5	1,892

Source: Hans M. Kristensen and Robert S. Norris, “United States Nuclear Forces, 2016,” *Bulletin of the Atomic Scientists* 72, no. 2 (2016): 63–73, <http://doi.org/b8zj>. See also Arms Control Association, “U.S. Strategic Nuclear Forces under New START,” October 2016, <https://www.armscontrol.org/factsheets/USStratNukeForceNewSTART>.

^aCounts only primary mission aircraft tasked for nuclear missions

^bUS bombers can deliver variable mixes of air-launched cruise missiles and gravity bombs, depending on mission.

In military terms, Russia’s conventional (nonnuclear) forces are vastly inferior to those of the former Soviet Union and to those currently deployed by the United States and NATO. Although members of the alliance assume a NATO military attack on Russia is inconceivable, Russians fear that an imbalance in usable military power between NATO and Russia reduces Russia’s military shadow over contestable parts of the former Soviet space that Moscow regards as a zone of privileged interest.⁵ In addition, although Russian officials rarely speak of it in public, Russia cannot help but notice the increasingly competent and “wired” military of the People’s Republic of China and its higher profile in support of China’s expanded definition of its interests in Asia and elsewhere.⁶

But Russia would be mistaken to assume that nuclear weapons can, in the long run, compensate for deficiencies in its conventional armies, navies, and air arms of service. Leading Russian military thinkers have acknowledged the need for comprehensive military reform in everything from manpower policy to weapons modernization.⁷ Russia’s own documented interests in military cyberwar, together with its abysmal performance in the war against Georgia in 2008, are only two indicators of its recognition that nuclear weapons cannot resolve most of the outstanding security issues in Russia’s favor.⁸ Sooner or later, nuclear cover for conventional military weakness falls flat because nuclear weapons are uniquely blunt weapons of mass destruction, not weapons for prevailing

in combat at an acceptable cost. Therefore, Russia's putative case, that tactical nuclear weapons can be used for "de-escalation" of a conflict to Russia's advantage that would otherwise pose an unacceptable loss of territory or sovereignty, is an example of military doublethink.⁹ This implies, or logically leads to, the following conclusion: Russian nuclear weapons, like those in America, will continue to be seen as a last-ditch option in peacetime and crisis by decision-makers with the practical effect that, unlike in the Cold War, their main utility is deterring each other rather than truly being tied tightly and seamlessly to a chain of promised escalation like that seen in US and Russian postures in the Cold War.

Options for Reductions

What do the preceding arguments suggest about the actual numbers of strategic nuclear weapons the United States and Russia might require for credible deterrence within the 2018–2021 time frame?¹⁰ Tables 3 through 7 illustrate some benchmarks by which one could measure the deterrence stability and military viability of US and Russian long-range nuclear forces. The tables summarize the outcomes of nuclear force exchanges for the United States and Russia under four assumptions about operational deployments.¹¹ Tables 3 and 4 assume future Russian and American forces with maximum deployment limits as agreed under New START (1,550 weapons counted under New START rules). For comparison, tables 5 and 6 assume post–New START reductions to a lower maximum limit of 1,000 deployed weapons. In tables 7 and 8, each state is limited to a hypothetical force structure with a maximum limit of 500 operationally deployed weapons on transcontinental launchers.¹²

Table 3. US nuclear exchange outcomes (1,550 deployment limit)

Type		US New START 1,550		Balanced triad	
GEN^a—LOW^b	Total	Available	Alert	Surviving	Arriving
ICBM	420	420	420	420	378
SLBM	1,064	958	958	958	862
Bombers	48	43	43	43	35
<i>All</i>	1,532	1,421	1,421	1,421	1,275
GEN—ROA^c	Total	Available	Alert	Surviving	Arriving
ICBM	420	420	420	42	38
SLBM	1,064	958	958	958	862
Bombers	48	43	43	14	11
<i>All</i>	1,532	1,421	1,421	1,014	911
DAY^d—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	420	420	420	420	378
SLBM	1,064	958	642	642	577
Bombers	48	43	0	0	0
<i>All</i>	1,532	1,421	1,062	1,062	955
DAY—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	420	420	420	42	38
SLBM	1,064	958	642	642	577
Bombers	48	43	0	0	0
<i>All</i>	1,532	1,421	1,062	684	615

Note: The following key applies to tables 3–8.

^aGenerated alert of full nuclear force (available)

^bLaunch on warning

^cRide out attack

^dDay-to-day forces on nuclear alert

Table 4. Russia nuclear exchange outcomes (1,550 deployment limit)

Type		Russia New START 1,550		Balanced triad	
GEN—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	542	542	542	542	488
SLBM	640	576	576	576	518
Bombers	76	68	68	68	55
<i>All</i>	1,258	1,186	1,186	1,186	1,062
GEN—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	542	542	542	79	71
SLBM	640	576	576	576	518
Bombers	76	68	68	22	18
<i>All</i>	1,258	1,186	1,186	677	607

Table 4. Russia nuclear exchange outcomes (1,550 deployment limit)
(continued)

Type		Russia New START 1,550		Balanced triad	
DAY—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	542	542	542	542	488
SLBM	640	576	115	115	104
Bombers	76	68	0	0	0
<i>All</i>	1,258	1,186	657	657	591
DAY—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	542	542	542	54	49
SLBM	640	576	115	58	52
Bombers	76	68	0	0	0
<i>All</i>	1,258	1,186	657	112	101

Table 5. US nuclear exchange outcomes (1,000 deployment limit)

Type		US New START 1,000		Balanced triad	
GEN—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	300	300	300	300	270
SLBM	648	583	583	583	525
Bombers	48	43	43	43	35
<i>All</i>	996	926	926	926	830
GEN—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	300	300	300	30	27
SLBM	648	583	583	583	525
Bombers	48	43	43	14	11
<i>All</i>	996	926	926	627	563
DAY—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	300	300	300	300	270
SLBM	648	583	391	391	352
Bombers	48	43	0	0	0
<i>All</i>	996	926	691	691	622
DAY—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	300	300	300	30	27
SLBM	648	583	391	391	352
Bombers	48	43	0	0	0
<i>All</i>	996	926	691	421	379

Table 6. Russia nuclear exchange outcomes (1,000 deployment limit)

Type		Russia New START 1,000		Balanced triad	
GEN—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	342	342	342	342	308
SLBM	576	518	518	518	467
Bombers	76	68	68	68	55
<i>All</i>	994	928	928	928	830
GEN—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	342	342	342	59	53
SLBM	576	518	518	518	467
Bombers	76	68	68	22	18
<i>All</i>	994	928	928	599	538
DAY—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	342	342	342	342	308
SLBM	576	518	104	104	93
Bombers	76	68	0	0	0
<i>All</i>	994	928	446	446	401
DAY—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	342	342	342	34	31
SLBM	576	518	104	52	47
Bombers	76	68	0	0	0
<i>All</i>	994	928	446	86	78

Table 7. US nuclear exchange outcomes (500 deployment limit)

Type		US New START 500		Balanced triad	
GEN—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	115	115	115	115	104
SLBM	336	302	302	302	272
Bombers	48	43	43	43	35
<i>All</i>	499	460	460	460	411
GEN—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	115	115	115	12	10
SLBM	336	302	302	302	272
Bombers	48	43	43	14	11
<i>All</i>	499	460	460	328	293

Table 7. US nuclear exchange outcomes (500 deployment limit) (continued)

Type		US New START 500		Balanced triad	
DAY—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	115	115	115	115	104
SLBM	336	302	203	203	182
Bombers	48	43	0	0	0
<i>All</i>	499	460	318	318	286
DAY—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	115	115	115	12	10
SLBM	336	302	203	203	182
Bombers	48	43	0	0	0
<i>All</i>	499	460	318	215	192

Table 8. Russia nuclear exchange outcomes (500 deployment limit)

Type		Russia New START 500		Balanced triad	
GEN—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	257	257	257	257	231
SLBM	192	173	173	173	156
Bombers	51	46	46	46	37
<i>All</i>	500	476	476	476	424
GEN—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	257	257	257	50	45
SLBM	192	173	173	173	156
Bombers	51	46	46	15	12
<i>All</i>	500	476	476	238	213
DAY—LOW	Total	Available	Alert	Surviving	Arriving
ICBM	257	257	257	257	231
SLBM	192	173	35	35	31
Bombers	51	46	0	0	0
<i>All</i>	500	476	292	292	262
DAY—ROA	Total	Available	Alert	Surviving	Arriving
ICBM	257	257	257	26	23
SLBM	192	173	35	17	16
Bombers	51	46	0	0	0
<i>All</i>	500	476	292	43	39

The preceding tables show that each state has numbers of surviving and retaliating weapons sufficient to satisfy the criterion of “unacceptable damage” in a second strike so long as unacceptable damage is defined by reference to the destruction of populations and societal values alone. If we use McGeorge Bundy’s formula of 10 weapons on 10 cities as a “disaster beyond history,” then even 500 deployed weapons provide several hundred retaliatory warheads for either side under plausible conditions of nuclear attack and response.¹³ However, this “city busting” criterion does not address the more nuanced requirements imposed on US (and doubtless Russian) military planners. Essentially, policy makers and planners have three paths or opportunities here: (1) drop the numbers of deployed weapons and launchers to a “minimum deterrent” standard, (2) agree to more limited nuclear reductions in a post–New START regime (New START light), and/or (3) “multilateralize” the arms-reduction talks to include China (essential if minimum deterrence is the goal but still useful if larger than minimum deterrent forces are being considered as the endgame).

What actually gets decided in Washington or in Moscow depends as much on politics as it does on strategy. On one hand, it will be difficult to sell domestic political forces in the United States (for example, Republican members of Congress) or in Russia (the Russian military-industrial complex) on post–New START reductions as drastic as a maximum deployment limit of 500 weapons. In addition, such a truly minimum deterrent option for the United States and Russia would require that the post–New START negotiations be expanded to include other nuclear weapons states. On the other hand, reductions to a maximum number of 1,000 operationally deployed weapons for each state should be politically feasible. Russia’s nuclear force modernization plans are ambitious but not necessarily affordable or otherwise feasible. The current status of Russia’s military-industrial complex is less than enviable. Russia’s nuclear warning and C3 system (command, control, and communications) system has serious deficiencies in satellite coverage and other weaknesses.¹⁴ It might turn out that Russia’s New START–compliant force will level off at some number below 1,550 deployed warheads and that Russia would be quite agreeable to the 1,000 benchmark for further reductions. At the same time, if a post–New START regime follows New START counting rules, each bomber would count as one weapon, and the actual number of weapons deployed by each state would exceed

the notional deployment ceiling (1,000) by several hundred warheads. A US-Russian post–New START agreement for a maximum of 1,000 operationally deployed long-range weapons maintains their shared “nuclear superpower” status relative to other nuclear weapons states and should be considered one possibility for the nuclear posture review. This status, however, confers responsibilities on Moscow and Washington for taking the lead in reducing nuclear danger, including measures to prevent the further spread of nuclear weapons and to roll back existing cases of system-disturbing nuclear proliferation in states such as North Korea.

Missile Defenses: Prophecy or Problem?

Missile defenses, if successful, offer the possibility that deterrence by threat of unacceptable retaliation could be supported by deterrence based on denial of the attacker’s objectives.¹⁵ Today missile defenses remain technologically and politically contentious. Russian objections to the US- and NATO-proposed European Phased Adaptive Approach (EPAA) to missile defenses remained emphatic even as US Department of Defense studies cast doubt on the technical proficiency of the proposed components for the European BMD (ballistic missile defense) systems.¹⁶ A study by the National Academy of Sciences (NAS) on missile defense technologies called into question some of the thinking of the Obama administration and the Missile Defense Agency about the priority of certain missions and technologies for BMD.¹⁷ But other expert scientists criticized the NAS study as containing “numerous flawed assumptions, analytical oversights, and internal inconsistencies” leading to “fundamental errors in many of the report’s most important findings and recommendations” and as undermining its scientific credibility.¹⁸

Future technology challenges to the development and deployment of missile defenses will have more to do with the complexity of software engineering for multiple contingencies and players, compared to the bipolar and physics-centric context of the Cold War.¹⁹ Suffice it to say that the academic and policy arguments continue as to the feasibility and desirability of building missile defenses, alongside the inertial pull of research and development funding in this direction since the Reagan administration’s Strategic Defense Initiative.²⁰ But this issue remains important to the nuclear posture review.

If the linkage between US and NATO plans for European missile defenses and further progress in US-Russian strategic nuclear arms reductions was not yet a hostage relationship, it was clearly a problematical connection.²¹ The New START agreement does not preclude the United States from deploying future missile defenses, despite Russian efforts during the negotiating process to restrict American degrees of freedom in this regard.²² Former Russian president Dmitri Medvedev and his predecessor-successor Vladimir Putin made it clear that Russia's geo-strategic perspective links US and NATO missile defenses to cooperation on other arms control issues. Meanwhile, in 2011 the United States and NATO moved forward with the first phase of a four-phase deployment of the EPAA for missile defenses.²³ In March 2013, secretary of defense Chuck Hagel announced plans to modify the original plan for EPAA by abandoning the originally planned deployments of SM-3 IIB interceptor missiles in Poland by 2022. But this step failed to reassure Russian skeptics about the claims that US and NATO regional and global missile defenses were not oriented against Russia. Russian officials frequently reiterate demands for a legally binding guarantee from the United States and NATO that Russian strategic nuclear forces would not be targeted or affected by the system.²⁴ Table 9 summarizes the status of the EPAA BMD as of autumn 2013.

Although the prospects for US-Russian or NATO-Russian agreement on European missile defenses might seem challenging at this writing, the prospects for American cooperation with allies and partners outside of Europe on regional missile defenses are more favorable. The potential bull market for missile defenses lies in Asia, including prompts from Sino-Japanese rivalry, North Korean threats and missile tests, and deterrence challenges between India and Pakistan. Missile defenses might appeal to states in Asia as support for deterrence by denial of enemy attack and as a means of damage limitation, should deterrence fail. Missile defenses for some US allies and partners might also reinforce security guarantees based on the American nuclear umbrella and consequently reduce the incentives for those states to develop their own nuclear arsenals.²⁵ Each of these BMD aspects have direct bearing on and relevance to the US nuclear posture review.

Table 9. European phased adaptive approach to missile defense

Facet	Phase I	Phase II	Phase III	Phase IV (canceled March 2013)
Time frame	2011	2015	2018	2020
Capability	Deploying today's capability	Enhancing medium-range missile defense	Enhancing intermediate-range missile defense	Early intercept of MRBM ^a , IRBM ^b , and ICBM ^c
Threat/mission	Address regional ballistic missile threats to Europe and deployed US personnel	Expand defended area against short- and medium-range missile threats to Southern Europe	Counter short-, medium-, and intermediate-range missile threats to include all of Europe	Cope with MRBMs, IRBMs, and potential future ICBM threats to the United States
Components	AN/TPY-2 (FBM) ^d in Kurecik, Turkey; C2BMC ^e in Ramstein, Germany; Aegis BMD ^f ships with SM ^g -3 IA off the coast of Spain	AN/TPY-2 (FBM) in Kurecik, Turkey; C2BMC in Ramstein, Germany; Aegis BMD ships with SM-3 IB off the coast of Spain; Aegis Ashore ^h with SM-3 1B in Romania	AN/TPY-2 (FBM) in Kurecik, Turkey; C2BMC in Ramstein, Germany; Aegis BMD ships with SM-3 IIA off the coast of Spain; Aegis Ashore with SM-3 IB/IIA in Romania and Poland	AN/TPY-2 (FBM) in Kurecik, Turkey; C2BMC in Ramstein, Germany; Aegis BMD ships with SM-3 IIA off the coast of Spain; Aegis Ashore with SM-3 IIB in Romania and Poland
Technology	Exists	In testing	Under development	In conceptual stage when canceled
Locations	Turkey, Germany, ships off the coast of Spain	Turkey, Germany, ships off the coast of Spain, ashore in Romania	Turkey, Germany, ships off the coast of Spain, ashore in Romania and Poland	Turkey, Germany, ships off the coast of Spain, ashore in Romania and Poland

Note: Separate national contributions to the mission of European BMD have been announced by Netherlands and France.
 Source: Karen Kaya, "NATO Missile Defense and the View from the Front Line," *Joint Force Quarterly* 71 (4th Quarter 2013): 86, <http://ndupress.ndu.edu/JFQ/Joint-Force-Quarterly-71/>.

^aMedium-range ballistic missile

^bIntermediate-range ballistic missile

^cIntercontinental ballistic missile

^dAN/TPY-2 (FBM)—Army Navy/Transportable Radar Surveillance, Model 2 (Forward-based Mode)

^eCommand, control, battle management, and communications

^fBallistic missile defense

^gStandard missile

^hLand-based component of the Aegis BMD system

Beyond the Nuclear Posture Review per se, the question of missile defenses raises important issues having to do with the relationship between the politics and the technology of deterrence. Missile defenses that are “too good” potentially undermine stable deterrence based on assured retaliation that inflicts unacceptable damage. But a mixture of defenses of uncertain performance with offenses threatens to create an open-ended arms race and additional uncertainties that, during a crisis,

might contribute to first-strike fears. Added to this, new technologies for improved accuracy in long-range strike weapons and better remote sensing could pose greater threats to platform survivability based on hardening or concealment. And, once having been deployed, defenses would themselves become attractive targets for defense-suppression attacks, creating incentives for pre-emptive strikes against defenses while preemption against enemy offensive forces remained on the table. To be clear, the next NPR will have to address how offenses and defenses work together to (1) support deterrence and defense policy objectives and (2) remember the lessons learned from years of Cold War and later experience about the unique character of nuclear weapons and nuclear danger, albeit in a changing world.

Conclusions and Recommendations

The United States and Russia have opportunities for nuclear arms reductions if other issues of military-strategic disagreement, including Russia's possible violation of the INF Treaty, can be managed successfully. However, arms control is primarily a political process, not a technical one. The two states must agree that their leadership on global non-proliferation and nuclear risk reduction is a matter of priority on account of their large arsenals, their high visibility in nuclear world politics, and their experience in nuclear consultation and negotiation. Analysis shows that US-Russian strategic nuclear stability is possible at various levels of deployed warheads and launchers. The Trump administration's nuclear posture review might be just the occasion for new ideas, including new departures in nuclear arms control. Several possibilities and recommendations emerge.

1. The United States and Russia should agree now to extend the duration of the New START treaty and, in addition, enter into discussions about post-New START reductions consistent with strategic stability.
2. Military-to-military exchanges between US and Russian specialists, suspended during the Obama administration, should be resumed in the interest of transparency and security.
3. US-Russian arms-reduction talks should deal not only with simple counts and verification but also with the larger contexts of strategy

and security as perceived by both states; for example, what are the consequences of possible improvements in missile defenses and in conventional long-range precision strike weapons, for nuclear deterrence based on assured retaliation?

4. Since the likelihood of a tactical nuclear first use is higher than the probability of a separate decision for a strategic nuclear first strike, more transparency about NATO and Russian tactical nuclear weapons deployed in Europe and in Asia is essential. An outbreak of accidental or inadvertent nuclear war growing out of an escalation from conventional war is as likely, or more likely, than a mistaken strategic nuclear response *per se*. At the same time, smaller weapons are, for deterrence purposes, ambiguously connected to the possible employment of larger and more destructive forces. Tactical nuclear weapons are linked to strategic weapons because of the complex dual nature of the former: they are possible firebreaks between lesser and greater degrees of war. The process of negotiating increased transparency with respect to the numbers, locations, and capabilities of tactical nukes should begin now.²⁶ But the road to tactical nuclear arms reductions as between NATO and Russia is a much more difficult problem than further reductions in US and Russian strategic nuclear weapons, and for that reason it requires a separate study in its own right.
5. US-Russian cooperation on theater missile defenses in Europe should be encouraged, including the development of joint centers of observation and monitoring against threats from the Middle East or other outside-of-Europe locations. Current generations of strategic antimissile defenses are promissory notes, not proven technologies under conditions of wartime stress.²⁷ Russian officials continue to assert nevertheless that current and prospective US missile defense plans threaten the viability of Russia's nuclear deterrent and, therefore, international stability.²⁸ Doubtless future antimissile technologies will improve relative to ballistic offensive weapons, given the ages of the latter.²⁹ However, the ultimate outcome of competition between defensive antimissiles and offensive countermeasures remains at the mercy of creative science and engineering as well as politics and state priorities.³⁰ US- and NATO-proposed missile defenses for Europe are admittedly a matter of

contemporary controversy.³¹ But they should not be an excuse for Russia, the United States, or NATO to defer progress on strategic and nonstrategic nuclear reductions in offensive weapons.

Many of these recommendations might be grouped under the heading of creating new, or revived, knowledge communities among arms-control specialists and others in the national security and military studies worlds. These communities would cut across professional and national boundaries to bring together interested specialists and policy makers for discussions about their perspectives on nuclear deterrence, crisis management, nonproliferation, nuclear security, and other issues. Something like this occurred between the United States and the Soviet Union during the Cold War. Over time, shared expectations and understandings about the bases of nuclear deterrence, the “deliverables” possible in arms control, and the challenges of nuclear crisis management helped to control the arms race and bring a peaceful end to the Cold War. In the twenty-first century, academics and practitioners will have to shepherd understandings about the relationship between offenses and defenses, the implications of cyberwar for nuclear deterrence, and the impact of third offset technologies (artificial intelligence, nanotechnology, and 3-D manufacturing, among others) on nuclear arms control and deterrence strategy. In addition, the conversation on strategic nuclear arms control must move from a two-sided American and Russian experience toward a tripartite nuclear summitry that includes China, despite individual, different policy objectives, experiences, and strategic perspectives with respect to nuclear weapons.

With regard to arms control more generally, Paul Bracken emphasizes that the challenges of the second nuclear age may be very different from the first: “Arms control is in desperate need of fresh ideas. It’s like Sanka, an old, tired brand that is still around but in need of a makeover. I want to put the challenge to arms control in just this way. Without new energy and a new edginess, arms control’s downward spiral into irrelevance will continue. Arms control is too important to allow this to happen.”³²

The nuclear posture review presents an opportunity for fresh ideas and new energy to prevent the collapse and relevance of arms control. The Trump administration and the Department of Defense should seize this opportunity before it fades away. **SSQ**

Notes

1. For example, see Peter Baker, Neil MacFarquhar, and Michael R. Gordon, "Syria Strike Puts U.S. Relationship with Russia at Risk," *New York Times*, 7 April 2017, <https://www.nytimes.com/2017/04/07/world/middleeast/missile-strike-syria-russia.html>.

2. Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms (Washington, DC: Department of State, 8 April 2010), <http://www.state.gov/documents/organization/140035.pdf>.

3. Aaron Mehta, "Former SecDef Perry: US on 'Brink' of New Nuclear Arms Race," *Defense News*, 3 December 2015, <http://www.defensenews.com/story/defense/policy-budget/2015/12/03/former-secdef-perry-us-brink-new-nuclear-arms-race/76721640/>.

4. Philip M. Breedlove, "NATO's Next Act: How to Handle Russia and Other Threats," *Foreign Affairs*, July/August 2016, <https://www.foreignaffairs.com/articles/europe/2016-06-13/natos-next-act>. On current and prospective Russian strategic military thinking, see Stephen R. Covington, *The Culture of Strategic Thought behind Russia's Modern Approaches to Warfare* (Cambridge, MA: Belfer Center, Harvard Kennedy School, October 2016).

5. BBC, "Russia Security Paper Designates NATO as Threat," 31 December 2015, <http://www.bbc.com/news/world-europe-35208636>.

6. See, for example, Mark B. Schneider, Testimony before the U.S.-China Economic and Security Review Commission, Hearing on "Developments in China's Cyber and Nuclear Capabilities," 26 March 2012, <http://www.uscc.gov/sites/default/files/3.26.12schneider.pdf>; and Office of the Secretary of Defense, *Annual Report to Congress, Military and Security Developments Involving the People's Republic of China 2014* (Washington, DC: Office of the Secretary of Defense, 2014), https://www.defense.gov/Portals/1/Documents/pubs/2014_DoD_China_Report.pdf.

7. For example, see Ariel Cohen and Robert E. Hamilton, *The Russian Military and the Georgian War: Lessons and Implications* (Carlisle, PA: Strategic Studies Institute, US Army War College, June 2011); and Rod Thornton, *Military Modernization and the Russian Ground Forces* (Carlisle, PA: US Army War College, June 2011).

8. Timothy L. Thomas, *Russia: Military Strategy: Impacting 21st Century Reform and Geopolitics* (Fort Leavenworth, KS: Foreign Military Studies Office, 2015), 253–99. Thomas discusses Russian concepts of information warfare and related policy and planning decisions.

9. For an expert appraisal of Russian military thinking about tactical nuclear weapons, see Jacob W. Kipp, "Russian Doctrine on Tactical Nuclear Weapons: Contexts, Prisms, and Connections," in *Tactical Nuclear Weapons and NATO*, ed. Tom Nichols, Douglas Stuart, and Jeffrey D. McCausland (Carlisle, PA: U.S. Army War College, April 2012), 116–54. See also Olga Olikier, "No, Russia Isn't Trying to Make Nuclear War Easier," *National Interest*, 23 May 2016, <http://nationalinterest.org/feature/no-russia-isnt-trying-make-nuclear-war-easier-16310>.

10. Regardless the outcome of the analysis, the exercise is necessary in order to impose analytical boundaries on the discussion. See Keith B. Payne, "Why US Nuclear Force Numbers Matter," *Strategic Studies Quarterly* 10, no. 2 (Summer 2016): 14–24, <http://www.au.af.mil/au/ssq/digital/pdf/Summer16/Payne.pdf>.

11. Grateful acknowledgment is made to James Scouras for use of his Arriving Weapons Sensitivity Model in this study. Dr. Scouras is not responsible for its use here or for any arguments in this paper.

12. Force structures in the analysis are notional and not necessarily predictive of actual deployments. For expert appraisal, see, in addition to previous citations, Hans M. Kristensen,

"Trimming Nuclear Excess: Options for Further Reductions of U.S. and Russian Nuclear Forces," *Special Report no. 5* (Washington, DC: Federation of American Scientists, December 2012), <https://fas.org/pub-reports/trimming-nuclear-excess/>; Gen James Cartwright, retired, chair, Global Zero Nuclear Policy Commission, *Report: Modernizing U.S. Nuclear Strategy, Force Structure and Posture* (Washington, DC: Global Zero, May 2012), https://www.globalzero.org/files/gz_us_nuclear_policy_commission_report.pdf; and Pavel Podvig, "New START Treaty in Numbers," *Russian Strategic Nuclear Forces* (blog), 9 April 2010, http://russianforces.org/blog/2010/03/new_start_treaty_in_numbers.shtml. See also Joseph Cirincione, "Strategic Turn: New U.S. and Russian Views on Nuclear Weapons," *New America Foundation*, 29 June 2011, http://newamerica.net/publications/policy/strategic_turn; and Arms Control Association, "U.S. Strategic Nuclear Forces under New START," <http://www.armscontrol.org/factsheets/USStratNukeForceNewSTART>.

13. McGeorge Bundy, "To Cap the Volcano," *Foreign Affairs* 48, no. 1 (October 1969): 10, <http://doi.org/d6mc7p>.

14. Russia's strategic nuclear forces and their progression may be followed on Pavel Podvig's expert blog, *Russian Strategic Nuclear Forces*. See, for example, "New START Treaty in Numbers," n. 12.

15. According to Adam B. Lowther, deterrence can be conceptualized as a continuous spectrum with three components: deterrence by dissuasion, deterrence by denial, and deterrence by threat. Moving across the spectrum from dissuasion through denial to threat increases the level of action by the state attempting to deter. See Lowther, "How Can the United States Deter Nonstate Actors?" in *Deterrence: Rising Powers, Rogue Regimes, and Terrorism in the Twenty-first Century*, ed. Adam Lowther (New York: Palgrave-Macmillan, 2012), 163–82, esp. 166–67.

16. Desmond Butler, Associated Press, "Flaws Found in U.S. Missile Shield for Europe," *Army Times*, 9 February 2013, <http://www.armytimes.com/mobile/news/2013/02/ap-flaws-missile-shield-020913>. See also "U.S. Missile Defense Shield Flawed: Classified Studies," *Russia Today*, 9 February 2013, <https://www.rt.com/usa/us-missile-defense-flaws-811/>.

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19. Rebecca Slayton, *Arguments that Count: Physics, Computing, and Missile Defense, 1949–2012* (Cambridge, MA: MIT Press, 2013), 188–97.

20. Superior treatment of technical, political, and economic challenges to US and NATO plans for European missile defenses is provided in Steven J. Whitmore and John R. Deni, *NATO Missile Defense and the European Phased Adaptive Approach: The Implications of Burden Sharing and the Underappreciated Role of the U.S. Army* (Carlisle, PA: US Army War College, October 2013).

21. For US and NATO missile defense plans, see LTG Patrick J. O'Reilly, USA, director, Missile Defense Agency, "Ballistic Missile Defense Overview" (presentation, 10th Annual Missile Defense Conference, Washington, DC, 26 March 2012, <https://mostlymissiledefense.files.wordpress.com/2013/06/bmd-update-oreilly-march-2012.pdf>).

22. Treaty between the United States of America and the Russian Federation.

23. See Karen Kaya, "NATO Missile Defense and the View from the Front Line," *Joint Force Quarterly* 71 (4th Quarter 2013): 84–89, <http://ndupress.ndu.edu/JFQ/Joint-Force-Quarterly-71/>; John F. Morton and George Galdorisi, "Any Sensor, Any Shooter: Toward an Aegis BMD Global Enterprise," *Joint Force Quarterly* 67 (4th Quarter 2012): 85–90, http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-67/JFQ-67_85-90_Morton-Galdorisi.pdf; and Frank A. Rose, deputy assistant secretary, Bureau of Arms Control, Verification and Compliance, "Growing Global Cooperation on Ballistic Missile Defense, Remarks as Prepared, Berlin, Germany," 10 September 2012, <http://www.state.gov/t/avc/rls/197547.htm>.

24. For example, see RIA Novosti, "Moscow Needs More 'Predictability' in NATO Missile Defense Plans," *Sputnik News*, 23 October 2013, <https://sptnkne.ws/eHdh>.

25. See Kevin Ayers, "Expanding Zeus's Shield: A New Approach for Theater Ballistic Missile Defense in the Asia-Pacific Region," *Joint Force Quarterly* 84 (1st Quarter 2017): 24–31, http://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-84/jfq-84_24-31_Ayers.pdf, for a discussion of challenges and opportunities. See also essays in *The Asia-Pacific Century: Challenges and Opportunities*, ed. Adam Lowther (Maxwell Air Force Base, AL: Air University Press, April 2013).

26. Pavel Podvig, "What to Do about Tactical Nuclear Weapons," *Bulletin of the Atomic Scientists*, 25 February 2010, <https://web.archive.org/web/20100504022115/http://www.thebulletin.org:80/web-edition/columnists/pavel-podvig/what-to-do-about-tactical-nuclear-weapons>.

27. Slayton, *Arguments that Count*, 199–226. Slayton offers pertinent historical perspective. See also Keir Giles with Andrew Monaghan, *European Missile Defense and Russia* (Carlisle, PA: Strategic Studies Institute, US Army War College Press, July 2014); and Andrew Futter, *Ballistic Missile Defence and US National Security Policy: Normalization and Acceptance after the Cold War* (New York: Routledge, 2013).

28. For example, at the Geneva disarmament conference in March 2017, Lieutenant General Viktor Poznikhir, deputy head of the Main Operations Department of the Russian General Staff, averred that deployment of US missile defenses "ruins the current system of international security" and that "the United States hopes to gain strategic advantage by downgrading the deterrence potentials of Russia and China. This may cause serious effects in the field of security." Poznikhir, cited in "Military Expert Warns US ABMs Can Detect Any Missile Shield, Even Russian Ones," TASS, 28 March 2017, <http://tass.com/defense/937949>.

29. For example, the possibility of "left-of-launch" techniques for interfering with enemy missile launches before missiles actually reach the launch pad or during the launch itself. See David E. Sanger and William J. Broad, "Trump Inherits a Secret Cyberwar against North Korean Missiles," *New York Times*, 4 March 2017, <https://www.nytimes.com/2017/03/04/.../north-korea-missile-program-sabotage.html>.

30. Morton and Galdorisi, "Any Sensor, Any Shooter."

31. For US and NATO missile defense plans under the European phased adaptive approach, see Kaya, "NATO Missile Defense," and O'Reilly, "Ballistic Missile Defense Overview."

32. Paul Bracken, *The Second Nuclear Age: Strategy, Danger, and the New Power Politics* (New York: Henry Holt–Times Books, 2012), 260–61. For an illustration of some new approaches, see the collaborative work between RAND and the Korea Institute for Defense Analyses in Paul K. Davis, Peter Wilson, Jeongeun Kim, and Junho Park, "Deterrence and Stability for the Korean Peninsula," *Korean Journal of Defense Analysis* 23, no. 1 (Spring 2016): 1–23, <http://www.kida.re.kr>.

Nuclear Weapons and Political Behavior

James Wood Forsyth Jr.

Abstract

Nuclear weapons are designed to deter and dissuade. While incapable of producing meaningful military effects, they are extremely capable of producing political ones. Arguments for a large US force have no meaning unless tied to a counterforce strategy or to risky guarantees that, in general, embolden leaders to take risks they would not ordinarily take if acting on their own. The slow, steady spread of nuclear weapons is likely to continue. Therefore, revitalizing the nuclear enterprise is a paramount concern. However, upgrading systems today need not equate to an increase in aggregate numbers. The United States would do well to keep its nuclear arsenal relatively small and in accordance with the New Strategic Arms Reduction Treaty (START). Many of the ideas and arguments in this article have appeared in earlier versions of *SSQ* and have become even more relevant to the national security debate surrounding the current Nuclear Posture Review (NPR).¹

* * * * *

The United States must greatly strengthen and expand its nuclear capability until such time as the world comes to its senses.

—Donald Trump

Twitter post, 22 December 2016

Nuclear weapons restrain the political behavior of nuclear leaders and reduce the likelihood of war among nuclear powers.² In this regard, they can be the most politically useful weapons a state can possess. Contrary to the tweet above, the United States does not need to expand its nuclear capabilities until the world comes to its senses. Rather, it needs

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to upgrade its existing arsenal while tacitly acknowledging that a small number of nuclear weapons is all one needs to produce dramatic political effects. To appreciate this argument, one must comprehend what nuclear weapons do: they deter and dissuade. Second, in today's nuclear game, large aggregate numbers do not matter. Both of these aspects have implications for today, especially as the US conducts its Nuclear Posture Review.

What Nuclear Weapons Do and How They Do It

Nuclear weapons, more so than any other weapon, “hold power at bay,” as Bernard Brodie so aptly put it; they inhibit statesmen from “launching a career of aggression by socializing them to the dangers of nuclear war.”³ As Kenneth Waltz pointed out, statesmen do not want to be part of a system that constrains them; however, that is the kind of system that results among nuclear powers. Each is socialized to the capabilities of the other, and the relationship that emerges is one tempered by caution despite the composition, goals, or desires of its leaders.⁴ In short, nuclear weapons deter and dissuade statesmen from behaving recklessly. Since deterrence and dissuasion play such critical roles in this line of reasoning, it is important to be clear about their meanings.

Deterrence puts the target state on notice: “don’t do this, or else.” It involves “setting the stage—by announcement, by rigging the trip-wire, by incurring the obligation—and *waiting*” (emphasis in original).⁵ Dissuasion is not announced, nor does it put the target state on notice. There are no trip wires or obligations, no waiting or threats. Where deterrence is specific, dissuasion is general. For deterrence to work, “one must dig in or lay a mine field.”⁶ For dissuasion to take hold, one need only possess mines, albeit nuclear ones.⁷ In either case, statesmen are not sensitive to the number of nuclear weapons a state might possess; they are sensitive to whether a state has them at all.

To explain this sensitivity, a brief discussion on the role of structure in international politics is warranted. Structural analysis addresses the positioning of actors in social and political systems, the properties and relations that make them parts of a system.⁸ Within the field of international politics, most scholars accept Waltz’s tripartite conception of structure (functional differentiation, ordering principles, and power distribution). In the standard Waltzian account, international systems are largely undifferentiated—and pretty much all the same. States are assumed to be “like units” made different only by their position among

other states—strong states being privileged over weak ones. Anarchy is the ordering principle of international systems, meaning there is no higher authority for states to appeal to reconcile differences or ensure their survival. Power is distributed unevenly throughout the system, so states are unequal—making international systems unequal. To say structural theory provides a positional picture of international politics is to say that states can be measured in terms of relative power and how they stack up against one another.

Few things affect this “stacking up” more than nuclear weapons, which is why statesmen pay attention to who has them and if they might be used against them. In this regard, nuclear weapons play a socialization role. Since socialization is important to this discussion, we must be clear about its meaning.⁹ Socialization refers to a relationship between at least two parties where A influences B. B, affected by A’s influence, then influences A. As Waltz explained, “Each is not just influencing the other; both are being influenced by the situation their interactions create.” Moreover, the behavior of the pair cannot be “apprehended by taking a unilateral view of either member.”¹⁰ Each acts and reacts in accordance with the other.

No one tells all the states in the world to behave themselves, yet most of them do most of the time. States are socialized to this idea by interacting with other states, particularly the great powers—whose role it is to set and enforce the rules of the game. In both instances, socialization is “a process of learning to conform one’s behavior to societal expectations” and a “process of identity and interest-formation.”¹¹ Socialization draws members of a group into conformity with its norms and also encourages similarities in behavior. Analogically speaking, political relationships among nuclear powers are like economic markets in that both are about self-help. They are also “individualist in origin, spontaneously generated, and [may even be] unintended.”¹² However, unlike markets, which theoretically can be left to their own devices to self-correct in times of disequilibrium, nuclear relationships must be corrected by leaders in times of crisis. This can be explained in terms of structural theory and the socializing effect of the survival motive. Because no higher authority exists to protect states from the harmful intentions of others, statesmen must pay attention to survival. Nothing threatens survival more than the threat of nuclear war, which is why statesmen are so highly sensitive to it. China’s behavior is instructive.

China's nuclear numbers remain small compared with those held by Russia and the United States. Yet despite these rather large nuclear inequities, China continues to extend its influence throughout the region. It reasoned that a small nuclear arsenal is sufficient to allow internal and external freedom of action and ensure survival, while socializing rivals to the dangers of war. Unless a rival is willing to significantly raise the stakes, there is little they can do, militarily, to prevent China from pursuing its strategy. But it might be a mistake to suggest China is actively deterring the United States or Russia with their nuclear weapons or vice versa. Instead, it might be more accurate to conclude that the three countries have tacitly entered into a period of mutual dissuasion. Although nothing official has been declared, all know the stakes are too high for anyone to engage the other militarily.¹³

Nuclear powers quarrel, threaten, and even fight proxy wars against one another. Yet they rarely, if ever, fight wars against one another, and when they do, those conflicts are restrained. Why? The risks of nuclear war compel statesmen to consider survival; they must act with deliberate restraint, devising their courses of action in terms of how others might react, even if they prefer not to.¹⁴ From this, might we conclude that nuclear relations are law-like?

All human conduct is shaped in some measure by what individuals believe to be general laws. In science, laws establish relations between variables; however, in international politics, there are precious few laws that operate with Newtonian fidelity. Instead, there are softer, law-like relationships and such relationships are not based on a linkage that has been found, but on one that has been found repeatedly. To assert that democracies do not fight wars against one another is to make a law-like statement.¹⁵ Moreover, states, like humans, respond to signals and interpret them by putting them into some general category thought to be law-like. As mathematician Jacob Bronowski noted, "We then assume that the future will have some general likeness with futures we have met before which followed this kind of signal, and this is the kind of future we prepare for."¹⁶ It might be premature to assert nuclear relations are law-like, but nothing sends a stronger signal to nuclear statesmen than the threat of nuclear war.

Nuclear Weapons and Political Behavior

During the Cuban Missile Crisis, Kennedy and Khrushchev sought solutions short of war, despite their sharp political, cultural, and economic differences. That the Soviets underestimated how the United States would react when confronted with missiles based off the coast of Florida is interesting, but not as telling as how both leaders behaved when they realized what was at stake. Secretary of State Dean Rusk's comment that "we were eyeball to eyeball" is illustrative for several reasons. First, the two sides were staring into the face of grave danger. Second, both quickly recognized that the outcome of the crisis depended as much on the moves of one side as it did the other. Last, during the entire crisis, the actual number of Soviet weapons on Cuban soil was never the focal point of US concern. In fact, the true number of these weapons—strategic and tactical—was not known until many decades later. War was the focal point—a threshold easily recognized, best not crossed, and worth avoiding. One quotation is representative of many others. In a meeting with the Joint Chiefs of Staff, President Kennedy outlined what was on his mind.

If we attack Cuban missiles, or Cuba, in any way, it gives them a clear line to take Berlin, as they were able to do in Hungary under the Anglo war in Egypt. . . . We would be regarded as the trigger-happy Americans who lost Berlin. We would have no support among our allies. We would affect the West Germans' attitude toward us. And [people would believe] that we let Berlin go because we didn't have the guts to endure Cuba. . . .

If we go in and take them out in an air strike . . . we increase the chance greatly, as I think—there's bound to be a reprisal from the Soviet Union, there always is—[of] their just going in and taking Berlin by force. Which leaves me one alternative, which is to fire nuclear weapons—which is a hell of an alternative—and begin a nuclear exchange, with all this happening.¹⁷

As early as 1962, the superpowers understood they could race to the brink, but no further, lest they run the risk of nuclear war, a risk that neither side would willingly take. Following the crisis, both sides took steps to reduce uncertainty and improve crisis stability.

As Kennedy and Khrushchev became increasingly socialized to the possibilities of nuclear war, the relationship that emerged was tempered by fear of annihilation. The Kargil crisis between India and Pakistan shared a similar set of circumstances. Prior to the arrival of nuclear weapons on the subcontinent, India and Pakistan fought three times. In the summer of 1999, one year after nuclear tests were conducted successfully within

both countries, another war erupted in the mountains along the line of control in Kashmir. Yet the war in Kargil did not escalate beyond small-scale fighting. Why? Nuclear optimists stress the pacifying effect nuclear weapons played in resolving the crisis; pessimists claim both sides got lucky by avoiding nuclear war. Reality might be somewhere in between, which is why Kargil should be considered a close call. Even in a close call like that one, both sides opted for something other than nuclear war, which says something important about the behavior of nuclear-armed states. Today, with both parties possessing nuclear forces, the sharp differences that separate India and Pakistan apparently are not substantial enough to drive either side to war.¹⁸ While the two sides actively engage in a game of tit-for-tat, nuclear weapons have socialized leaders to the dangers of nuclear war and, as a result, the relationship between them has steadied. Far from perfect, relations between India and Pakistan can be summarized as tense but stable.¹⁹

More recently, the socialization effects of nuclear weapons were on display between North Korea and the United States, and despite the rhetoric from both sides, each took steps to clarify positions and prevent war. The United States' willingness to seek help from its rival China only underscores how far states are willing to go to avoid a nuclear confrontation.²⁰ From the perspective of socialization, this was understandable if not predictable. The political behavior of nuclear states cannot be resolved into a simple set of two-way interactions; making that assumption only obscures the socialization effects produced by their interactions. "Each acts and reacts to the other," Waltz explains. "Stimulus and response are part of the story. But also the two of them act together in the game, which—no less because they have 'devised' it—motivates and shapes their behavior. Each is playing a game, *and* they are playing a game together. They react to each other and to the tensions their interactions produce" (emphasis in original).²¹ In the game of international politics, few things create more tension among states than the fear of annihilation. Because nuclear weapons produce this fear faster than anything else on the planet does, they "motivate and shape" state behavior or draw members of a group into conformity with "the tensions their interactions produce."²² In this sense, nuclear weapons restrain the behavior of nuclear leaders, making them cautious, regardless of which states we are talking about or how many weapons they might possess.

Yet in the anarchic world of international politics, caution is not always a good thing. When formulating his gamble in the Crimea, for example, President Putin bet correctly that the West would remain cautious and not respond militarily, thus running the risk of a nuclear confrontation. This implies nuclear-armed leaders have something of a free hand when dealing with nonnuclear powers, especially if they also possess capable conventional forces. There was little the West could do militarily in the Crimea to halt Russia. That said, if Ukraine had possessed a small number of nuclear weapons, their deterrent and dissuasive effects would have been felt by all, including Russia, making the risk (perhaps) not worth the gamble.

Critics will contend that the kind of restraint noted above rests on a level of rationality not found in the real world. In fact, the opposite is the case: it is more difficult to find an example of an irrational state leader in the real world than a rational one. What is an irrational actor? Is it a state that violently disagrees with the policies of the United States? If that is the case, there are precious few. Perhaps North Korea fits this description. On the other hand, it could be someone who fits the literal meaning of the word irrational. An actor is said to be irrational if he or she demonstrates an inability to reason; however, as previously mentioned, in international politics those actors are hard to find. Instead, what we find “out there” are fairly reasonable actors who formulate decisions based on their interpretation of the world around them. Nothing shapes the world around them more than nuclear weapons, which is why nuclear-armed leaders behave cautiously when staring into the face of another nuclear-armed leader.²³ It should be noted that policies based on that sort of reasoning are neither rational nor irrational, but merely reasonable.

Making Numbers Count

As scholar Stephen Walt has remarked, American policymakers clearly understand the relationship between nuclear weapons and political behavior or “they wouldn’t be so worried when states like North Korea or (maybe) Iran seek to join the nuclear club.”²⁴ They freely recognize that a small number of nuclear weapons in the hands of one state restrains what another state can do.

Strategists have long recognized that throwing more men into battle may increase the carnage but not necessarily procure victory. The same holds true for nuclear weapons states. With nuclear weapons, state

power tops out quickly. Simply put, large arsenals buy statesmen little. The fact that a state may have a nuclear weapon or seek to acquire one is enough to condition statesmen to act cautiously. This begs the question: how many nuclear weapons does a state need? That is a big question for which there is, theoretically speaking, a small solution: one an adversary might be able to take out with a first strike and one that it knows it cannot. Since deterrence and dissuasion hold as a result of a viable second-strike capability, the number of aggregate weapons need not be large.

This cannot be overstated: one 300-kiloton weapon is more than enough to destroy a city the size of London. If a bomb of that size were detonated above Trafalgar Square on a workday, approximately 240,000 people would die instantly and 410,000 casualties would be sustained. Nearly everything within a 3 km radius would be destroyed, with burn victims reaching out as far as Victoria Park. The same bomb detonated above Mumbai on a workday would kill over one million people and produce more than two million casualties.²⁵ Even if one were to assume the worst, a “bolt from the blue” where a state loses 50 percent of its nuclear capability to a first strike, a reasonably small force of several hundred weapons would allow that state to strike back over 100 times before it had to negotiate. No state on the planet could withstand that sort of punishment, and no sane leader would run that sort of risk.²⁶

Yet suppose an adversary were contemplating a first strike. What do you think the second question put to the leader would be? It would have to be: and which city of ours are you willing to give up in exchange? The example is illustrative for two reasons. First, strategy is not contingent upon the first move but on the following ones.²⁷ Second, in high-stakes games like nuclear war, there are no viable second or third moves. Everything turns on preventing the first move, which makes the game relatively easy to understand. Moreover, leaders—socialized to the dangers of nuclear weapons—understand that while numbers count, a small number of nuclear weapons is more than enough to dissuade the staunchest of rivals, even ones with comparably large numbers. Again, China’s behavior is instructive.

For illustrative purposes, let us assume that China has approximately 260 nuclear warheads for delivery by nearly 150 land-based ballistic missiles, 48 sea-based ballistic missiles, and bombers.²⁸ In contrast, the United States possesses 450 operational ICBM silos with 400 missiles deployed, each capable of carrying up to three warheads; 14 Trident

submarines, each equipped with 20 submarine-launched ballistic missiles (SLBM) that are capable of carrying as many as eight warheads each, and roughly 60 nuclear bombers each capable of carrying a variety of payloads to include air-launched cruise missiles (ALCM).²⁹ It is assumed Russia has a similar mix. Yet, despite these rather large nuclear inequities, China continues to modernize its military capabilities and extend its influence throughout the region. How does one explain this?

Apparently, China is confident its small nuclear arsenal is sufficient to restrain the actions of other nuclear powers. Shrewd states recognize this. There is little the United States or Russia can do, militarily, to prevent China from pursuing its interests. This is not the same as saying that nothing can be done to influence China's policies. China's economic, diplomatic, and military policies can be influenced by the coordinated economic, diplomatic, and military policies of the United States and its allies, but China's strategic designs are secured by its relatively small nuclear arsenal.³⁰

Yet there are those who insist the United States must maintain a nuclear arsenal large enough to cover all of its contingencies. In other words, while China has to contend with the United States and Russia, the United States has a greater number of potential contenders and needs a larger number of weapons for it to create a larger number of options. There is logic in that line of reasoning, but it rests heavily on the outdated thinking of the Cold War where each side actively deterred the other weapon for weapon. In fact, the United States and Russia are already restrained by China, even if that was not China's original intention. Presumably, if China's relatively small nuclear force is capable of restraining the United States and Russia, it is also capable of restraining India and Pakistan. In other words, China's relatively small nuclear arsenal creates enough options for it to restrain three regional nuclear powers as well as the United States. Unless one assumes America must guard against something more dangerous than what China faces, it is reasonable to conclude that a relatively small nuclear force is all the United States needs to meet its security needs.

There are those who will wonder about the remotest of possibilities: the United States awakens one day to discover that all the nuclear powers in the world, including some of its staunchest allies like England, France, and Israel, have united against it. What then? To ensure our security, the United States would presumably need at least one more nuclear weapon

than all the nuclear powers on earth combined. But again, even in this most bizarre of worlds, the socialization effects of a small nuclear arsenal would be felt by all because challengers could never be sure who the United States would strike first, which is something its leaders would have to threaten to do to ward off attack.

Along those lines, some will insist that the United States should maintain a large arsenal so it can extend security guarantees to others. While security guarantees might have played an important role in the past, the United States ought to avoid becoming the nuclear lender of last resort because guarantees, in general, are risky endeavors. Henry Kissinger made this plain when he counseled European allies not to keep “asking us to multiply strategic assurances that we cannot possibly mean or if we do mean, we should not want to execute, because if we execute, we risk the destruction of civilization.”³¹ They can also create moral hazards emboldening leaders to take risks they would not ordinarily take if acting on their own. Lastly, guarantees are complicated by the dilemma of adverse selection: lenders rarely know in advance if they have guaranteed a worker or a shirker.³²

In fact, arguments for a large force have no meaning unless tied to a counterforce strategy, which, when judging by the political behaviors of nuclear armed leaders, is not necessary.³³ During the Cold War, the superpowers raced to increase their numbers in an attempt to prevent one from acquiring a numerical advantage over the other. All the while, leaders on both sides lost sight of the fact that nuclear weapons, while incapable of producing meaningful military effects, are extremely capable of producing political ones—which makes them foundational to national security. If leaders in China, Russia, and the United States understand this, others do too, which is why the slow, steady spread of nuclear weapons is likely to continue.

Implications for Today

Nuclear weapons make statesmen cautious in the face of grave danger and reduce the likelihood of war among nuclear powers. Furthermore, statesmen are not sensitive to the number of nuclear weapons a state might possess; they are sensitive to whether a state has them at all. As policymakers await the release of the administration’s Nuclear Posture Review, the broader question remains: what size force does the United States need?

The United States would do well to keep its nuclear arsenal relatively small and in accordance with the New START treaty. As small arsenals become the norm, the number of nuclear states in the world might rise but the actual number of weapons in the world should remain comparatively low or at least not rise to levels seen during the Cold War. As states acquire new nuclear weapons, the demand to modernize old ones will also increase. This will have a profound effect on the United States. As it stands today, the United States has not modernized its nuclear force since the 1980s. Revitalizing the nuclear enterprise is a paramount concern. But unlike force modernization efforts of the 1980s, which led to the deployment of one new ICBM system, an SLBM, a new bomber, and cruise missiles, upgrading systems today need not equate to an increase in aggregate numbers. The United States needs a modern, reliable nuclear arsenal, but it need not be large. A small “upgraded” arsenal is one we can all live with. **SSQ**

Notes

1. Portions of this article can be found in James W. Forsyth Jr., “The Common Sense of Small Nuclear Arsenals,” *Strategic Studies Quarterly* 6, no. 2 (Summer 2012): 93–111, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-06_Issue-2/06-Forsyth.pdf; James W. Forsyth Jr., B. Chance Saltzman, and Gary Schaub Jr., “Remembrance of Things Past: The Enduring Value of Nuclear Weapons,” *Strategic Studies Quarterly* 4, no. 1 (Spring 2010): 74–90, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-04_Issue-1/ForsythSaltzmanSchaub.pdf; and James W. Forsyth Jr., B. Chance Saltzman, and Gary Schaub Jr., “Minimum Deterrence and Its Critics,” *Strategic Studies Quarterly* 4, no. 4 (Winter 2010): 3–12, http://www.airuniversity.af.mil/Portals/10/SSQ/documents/Volume-04_Issue-4/ForsythSaltzmanSchaub.pdf.

2. This has been a recurring theme in contemporary international politics. Perhaps its etiology can best be seen in Kenneth Waltz, “The Spread of Nuclear Weapons: More May Be Better,” *Adelphi Papers* no. 171 (London: International Institute for Strategic Studies, 1981), <http://doi.org/fqdjhg>.

3. What follows is a standard structural explanation. For the definitive account, see Kenneth N. Waltz, *Theory of International Politics* (New York: McGraw Hill, 1979).

4. *Ibid.*, 99. As Waltz put it, when thinking in structural terms,

We take states with whatever traditions, habits, desires, and forms of government they may have. We do not ask whether states are revolutionary or legitimate, authoritarian or democratic, ideological or pragmatic. We abstract from every attribute of states except their capabilities. Nor in thinking about structure do we ask about the relations of states—their feelings of friendship and hostility, their diplomatic exchanges, the alliances they form, and extent of contacts and exchanges among them. We ask what range of expectations arises merely from looking at the type of

order that prevails among them and the distribution of capabilities within that order. We abstract from any particular qualities of states and from all of their concrete connections. What emerges is a positional picture, a general description of the ordered arrangement of a society written in terms of the placement of units rather than in terms of their qualities.

5. See Thomas Schelling, *Arms and Influence* (New Haven: Yale University Press, 1966), 70–71.

6. *Ibid.*, 72.

7. My use of the term here stems from the work of Patrick Morgan, whose thoughts on general deterrence are particularly useful. Dissuasion and general deterrence share many common elements. Both are rooted in deterrence theory and share an emphasis on uncertainty and ambiguity. Because it is ambiguous, theorizing on general deterrence has been difficult. The same can be said for dissuasion. See Patrick M. Morgan, *Deterrence Now* (Cambridge, UK: Cambridge University Press, 2003).

8. Jack Donnelly, “The Differentiation of International Societies: An Approach to Structural International Theory,” *European Journal of International Relations* 18, no. 1 (March 2012): 151–76, <http://doi.org/c6z7mw>. As Donnelly suggests, Waltz’s neorealism may have become passé but structural theorizing has not. Also see Barry Buzan and Mathias Albert, “Differentiation: A Sociological Approach to International Relations Theory,” *European Journal of International Relations* 16, no. 3 (September 2010): 315–37, <http://doi.org/dn7kf3>.

9. A significant element of structural theory, which is often overlooked, is the concept of socialization. For an account of how socialization works on material concerns, see Waltz, *Theory of International Politics*, chapter four and 74–76. For the same regarding ideational concerns, see Alexander Wendt, *Social Theory of International Politics* (Cambridge, UK: Cambridge University Press, 1999).

10. Waltz, *Theory of International Politics*, 74–75.

11. Wendt, *Social Theory*, 170.

12. Waltz, *Theory of International Politics*, 91.

13. Exact numbers are difficult to find. According to one article, Russia has approximately 12,000; the United States 9,400; France 300; China 240; Britain 225; Israel 60–80; Pakistan 70–90; India 60–80; and North Korea fewer than 10. Robert S. Norris and Hans M. Kristensen, “Global Nuclear Inventories 1945–2010,” *Bulletin of Atomic Scientists* 66, no. 4 (October 2010): 77–83, <http://doi.org/cc2d67>. Other estimates put the US number closer to 5,000, placing the total inventory between Russia and the United States closer to 17,000.

14. Analogically speaking, they may behave like firms in an oligopolistic market, where the actions of one have a profound effect on the others. This is an essential Waltzian claim. See *Theory of International Politics*, Ch. 7-8.

15. On the law-like nature of the democratic peace, see Jack Levy, “The Causes of War: A Review of the Evidence,” in *Behavior, Society and Nuclear War*, ed. Phillip E. Tetlock, Jo L. Husbands, Robert Jervis, and Charles Tilly (New York: Oxford University Press, 1989), 209–333. For the philosophical argument, see Michael Doyle, “Kant, Liberal Legacies, and Foreign Affairs,” *Philosophy and Public Affairs* 12, no. 3 (Summer 1983): 205–35, <http://www.jstor.org/stable/2265298>; and Michael Doyle, “Kant, Liberal Legacies, and Foreign Affairs Part 2,” *Philosophy and Public Affairs* 12, no. 4 (Autumn 1983): 323–53, <http://www.jstor.org/stable/2265377>. For a quantitative account, see Rudolph J. Rummel, “Libertarianism and International Violence,” *Journal of Conflict Resolution* 27, no. 1 (March 1983): 27–71, <http://www.jstor.org/stable/173842>. For an example of the structural account, see Clifton T. Morgan and Sally Campbell, “Domestic Structure, Decisional Constraints, and War: So Why

Kant Democracies Fight?," *Journal of Conflict Resolution* 35, no. 2 (June 1991): 187–221, <http://www.jstor.org/stable/174144>.

16. Jacob Bronowski, *The Common Sense of Science* (Cambridge, MA: Harvard University Press, 1978), 114.

17. See Ernest R. May and Philip D. Zelikow, *The Kennedy Tapes: Inside the White House During the Cuban Missile Crisis* (Cambridge, MA: Harvard University Press, 1997), 175–76.

18. The Kargil conflict is the case often cited as the exception to the rule. The conflict began in May 1999 and ended in July of that year. During this time, Indian army units attacked Pakistani forces, and Indian jets bombed their bases high in the Himalaya Mountains. Although Indian forces carefully stayed on their side of the line of control in Kashmir, Indian Prime Minister Atal Bihari Vajpayee informed the US government that he might have to order an invasion into Pakistan. Eventually, President Clinton got involved and assured both sides he would take an interest in resolving the dispute. Although at least 1,000 Indian and Pakistani soldiers were killed during this crisis, I do not agree with those who think of Kargil as a war. If one unquestionably accepts Singer and Small's definition of war (see J. David Singer and Melvin Small, *The Wages of War 1816–1965: A Statistical Handbook* [New York: John Wiley and Sons, 1972], which defines war as a conflict that involves one member of the interstate system on each side in which the battle-connected deaths totaled at least 1,000), the Kargil crisis was a war. However, if one thinks of war in terms of the ordinary sense of the word, its conduct more closely resembled a "nasty skirmish." For a full account see Kenneth Waltz and Mark Sagan, *The Spread of Nuclear Weapons* (Norton and Co.: New York, 2003).

19. For interesting perspectives, see Sumit Ganguly, "Nuclear Stability in South Asia," *International Security* 33, no. 2 (Fall 2008): 45–70, <http://www.jstor.org/stable/40207131>; and S. Paul Kapur, "Ten Years of Nuclear Instability in Nuclear South Asia," *International Security* 33, no. 2 (Fall 2008): 71–94, <http://www.jstor.org/stable/40207132>.

20. Clearly, this is an evolving situation. All I am suggesting is the socialization effects of nuclear weapons are at work. As to the final outcome, I make no predictions.

21. Waltz, *Theory of International Politics*, 75.

22. *Ibid.*, 75–76.

23. On the face of it, this might appear to be contradictory, especially when considering the actions of Mr. Putin. However, from the other side, it does appear to explain the cautious reactions of President Obama.

24. Stephen M. Walt, "All the Nukes That You Can Use," *Foreign Policy Voices* (blog), 24 May 2010, <http://foreignpolicy.com/2010/05/24/all-the-nukes-that-you-can-use/>.

25. Forsyth, Saltzman, and Schaub, "Minimum Deterrence and its Critics."

26. Along these lines, national security advisor McGeorge Bundy concluded, "A decision that would bring even one hydrogen bomb on one city of one's own country would be recognized in advance as a catastrophic blunder; ten bombs on ten cities would be a disaster beyond history, and a hundred bombs on a hundred cities are [sic] unthinkable." See McGeorge Bundy, "Cap the Volcano," *Foreign Affairs* 48, no. 1 (October 1969): 9–10, <http://www.jstor.org/stable/20039419>.

27. I thank Everett Dolman for tutoring me on this.

28. See Hans M. Kristensen and Robert S. Norris, "Chinese Nuclear Forces, 2016," *Bulletin of Atomic Scientists* 72, no. 4 (2016): 205–11, <http://doi.org/f8xpvx>. These authors estimate that, in total, China has a stockpile of approximately 260 nuclear warheads for delivery by nearly 150 land-based ballistic missiles, 48 sea-based ballistic missiles, and bombers. The Chinese intercontinental ballistic missile (ICBM) force will probably continue to grow slowly, such that the number of ICBM warheads primarily targeted against the United States may exceed 100

a decade from now. Also see William J. Perry and James R. Schlesinger, *America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States* (Washington, DC: United States Institute of Peace Press, 2009), 10–11, https://www.usip.org/sites/default/files/America's_Strategic_Posture_Auth_Ed.pdf.

29. These numbers are reflective of the New START that went into effect in 2011 with all limits being reached by 2018.

30. If, as some suggest, China feels encircled by the American presence in the region, the United States must devise a strategy that does several things. First, it must recognize that China has legitimate interests in the region and find ways to accommodate China as it pursues them. Second, it must assure allies in the region that the growth of China's power does not threaten them. Third, it must not take actions to provoke the Chinese. In getting at all three, basing becomes a major concern.

31. Quoted in Kenneth Waltz, "Nuclear Myths and Political Realities," *American Political Science Review* 84, no. 3 (September 1990): 731–45, <http://www.jstor.org/stable/1962764>.

32. That said, I do not think the United States should step away from its guarantees, but it is important to examine the value of such guarantees. Under what conditions are they most stabilizing and beneficial? See Jurgen Brauer and Hubert Van Tuyall, *Castles, Battles and Bombs* (Chicago: University of Chicago Press, 2009), 261–65.

33. Counterforce arguments are making a comeback. See Keir A. Lieber and Daryl G. Press, "The New Era of Counterforce: Technological Change and the Future of Nuclear Deterrence," *International Security* 41, no. 4 (Spring 2017): 9–50, <http://doi.org/f96z7c>.

Book Reviews

Nuclear Weapons and Coercive Diplomacy by Todd S. Sechser and Matthew Fuhrmann. Cambridge University Press, 2017, 333 pp.

In 2016, then-presidential candidate Donald Trump appeared to endorse the proliferation of nuclear weapons, saying, “wouldn’t you rather, in a certain sense, have Japan have nuclear weapons when North Korea has nuclear weapons?”¹ In doing so he endorsed the common assumption that North Korean possessing nuclear weapons would provide them such a coercive advantage that Japan (and South Korea) would have no choice but to similarly acquire nuclear weapons. This concern about nuclear coercion was specifically invoked in the 2010 Nuclear Posture Review that stated, “Their provocative behavior has increased instability in their regions and could generate pressures in neighboring countries for considering nuclear deterrent options of their own.”² Todd S. Sechser and Matthew Fuhrmann dispute that nuclear weapons provide a coercive advantage and, looking at the historical cases, argue that in fact nuclear weapons do not provide any additional coercive advantage to the possessor.

Throughout *Nuclear Weapons and Coercive Diplomacy*, Sechser and Fuhrmann develop and test a theory they call “Nuclear Skepticism.” The key points of this theory are that nuclear weapons do not add to a state’s ability to coerce, nuclear coercive threats are not perceived as credible due to their disproportionate effects, and coercive threats from nuclear states are no more likely to succeed than threats from nonnuclear states. Sechser and Fuhrmann rely on Schelling’s classic definition of a split in coercive diplomacy between compellence (or threats intended to change the status quo) and deterrence (or threats intended to maintain the status quo), with the exception that they use “compellent threat” and coercion interchangeably.³ This differentiation between coercion and deterrence is very significant for their theory because they are not questioning the usefulness of nuclear weapons for deterrence (which has been extensively studied), but instead for compellent actions (which has been relatively neglected). Within their theory, they identify a number of problems with the use of nuclear weapons for coercion, the most significant of which is that, unlike deterrence, the stakes for compellence are not generally high enough to make a nuclear threat credible.⁴

Coercive threats, in their definition, generally resolve around relatively minor disputes where nuclear usage would be overkill given the stakes, the international costs (via sanctions or military response) are likely too high to be worth a relatively small gain, and signaling nuclear resolve remains difficult. While that may be the case now, they do point out that these international norms and repercussions may not always exist, and it is not hard to imagine a world where the military utility of nuclear weapons outweighs the cost of their usage.⁵

Examining the historical record quantitatively, Sechser and Fuhrman look at the effectiveness of compellent threats by nuclear and nonnuclear states.⁶ Through their analysis, they determine that nuclear states have no better success rate than nonnuclear states in issuing successful compellent threats or in territorial negotiations. While their quantitative analysis shows that nuclear states do not have a better success rate than nonnuclear states in coercive diplomacy, their first set of analyses does not directly measure the success rate of nuclear threats. To account for this, Sechser and Fuhrmann conducted a detailed analysis of the 19 cases of explicit nuclear threats throughout the nuclear era, ranging from nuclear alerts to overt nuclear threats. Again, they find success in only 10 of the 19 cases studied which, although higher than the success rate for general compellent threats, does not demonstrate much coercive advantage for nuclear weapons.

Through their analysis, they additionally expose some broader definitional and signaling issues. In one particularly illustrative case of failed coercion, President Nixon deployed nuclear bombers to signal resolve against North Korea, but that signal that was totally missed by both the Soviet Union and North Korea. They also identify that of their 19 nuclear threat cases, a good number of them could be viewed as a deterrent success, vice a coercive action. The most significant of these cases was the Cuban Missile Crisis, commonly viewed as validating nuclear coercion but that could also be seen as a deterrent and bargaining success.

One of the major critiques of their analysis is the definition of nuclear coercion. Throughout the 19 specific cases they analyzed, some are clearly nuclear while many of them contain borderline nuclear aspects or—in the case of Israel—the nuclear coercion of a third party. Additionally, the line between coercion/compellence and deterrence is quite vague and in most cases depends upon your point of view. Many of their cases included a nuclear dyadic relationship and inherently contained both compellent and deterrent aspects. Thus, it is not always clear whether nuclear coercion is ineffective or deterrence is just that much more effective. Even when one party did not have nuclear weapons, the great power politics of the Cold War (and associated extended deterrence) may have dwarfed any coercive benefits of nuclear weapons.

Additionally, Sechser and Fuhrmann acknowledge that many leaders believe, at least at first, that they have gained some coercive benefits from nuclear weapons. While the case of Pakistan demonstrates nuclear powers may learn that nuclear weapons have limitations, that does not necessarily mean a young nuclear power will not initially act aggressively. The authors make a compelling case that nuclear coercion is no more effective than nonnuclear coercion, but that does not mean the transition period until new nuclear states learn their coercive limitations will not be dangerous. Thus, a note of caution is in order since just because none of the nuclear states to date have used nuclear weapons in a coercive attempt, that does not mean future ones will not.

Despite those criticisms, this study opens a relatively neglected sector of nuclear scholarship and many promising avenues for future research. A variation of this study would be to compare the utility of nuclear coercion for conventionally weak and conventionally strong states, since for a conventionally weak state (for example, North Korea) nuclear weapons may not be redundant. Another relevant research topic would be to determine if the coercive utility of nuclear weapons changes as nuclear weapons change in size or precision, since nuclear overkill was one of their causal mechanisms. Even though nuclear coercion is not effective in the scenarios they analyzed, that does not mean it is without utility under changing conditions.

In their timely analysis of nuclear coercion theory, Sechser and Fuhrmann convincingly argue that in today's world nuclear states do not possess more coercive power than other non-nuclear states. The lessons they identify in their study of nuclear coercion have important implications, not just for nonproliferation efforts but also for deterrence theorists, particularly in the analysis of nuclear signaling challenges. Importantly, lest any nuclear critics try to use their work as evidence for disarmament, they point out that many of the challenges with coercion are not an issue for deterrence and "it would be a mistake to assume that nuclear weapons are irrelevant just because they do not have coercive effects."

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Notes

1. Stefanie Conden, "Donald Trump: Japan, South Korea Might Need Nuclear Weapons," CBS News, 29 March 2016, <http://www.cbsnews.com/news/donald-trump-japan-south-korea-might-need-nuclear-weapons/>.

2. Department of Defense, “2010 Nuclear Posture Review Report,” April 2010, https://www.defense.gov/Portals/1/features/defenseReviews/NPR/2010_Nuclear_Posture_Review_Report.pdf.

3. Thomas Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1968), 36–59, 69.

4. Specifically, they argue that compellent threats are generally issued over relatively minor issues such as territorial disputes. Since it does not seem reasonable that China would kick off a nuclear war with the United States and Japan over the Senkakus, nuclear brinkmanship is not convincing to adversaries in these situations.

5. An important caveat is that this is only true today because in most coercive situations nuclear weapons are largely redundant to conventional forces and because the overkill caused by nuclear usage in a low-stakes coercive situation would undoubtedly invoke significant international backlash.

6. Specifically, they use two different data sets: Sechser’s Militarized Compellent Threat dataset, which contains some 200 cases of compellent threats, and Huth and Allee’s dataset for territorial negotiations between 1919 and 1995, which contains 1,528 rounds of negotiations.

Arms and Influence: U.S. Technology Innovations and the Evolution of International Security Norms by Jeffrey S. Lantis. Stanford Security Studies, 2016, 260 pp.

Despite sharing a title with Thomas Schelling’s 1966 publication, author Jeffrey Lantis explores a much different look in this newer version. Lantis’ *Arms and Influence* explores a constructivist view of how technological change drives governmental elites to establish policy and conditions and subsequently cause normative shifts globally. The text is well reasoned, elegantly constructed, and extremely informative without being overly complex. Facts are solidly blended with their theoretical basis efficiently throughout the text. Examined cases include nuclear proliferation, arming space, and President Obama’s drone war as Lantis maps each instance through the baseline norm kindling, a technological spark, and subsequent policy fires as elite actors sought norm changes either domestically or internationally. Although the relationships are complex, this book makes the reading easy and is extremely informative about how technological changes affect social behavior through norms.

A typical norm life-cycle model includes emergence, broad acceptance, and internalization stages. Expanding from this baseline, Lantis offers continuing challenges to norm structures from elite actors conducting top-down contestation and redefinition. A social construction of technology lens allows one to see where multiple cases show technological change driving national leadership (specifically that of the United States) to consider new approaches to international norms. Non-US leaders are considered from the “bandwagoning” perspective, where they lend influence to help the United States achieve a goal. This theoretical aspect, redefinition or contestation, sees the former as seeking multilateral changes and the latter altering domestic policies. Lantis used four criteria to select case studies: (1) those featuring the United States’ democratic tendencies, (2) traditional studies providing systemic material in quantity, (3) studies where norms appeared dynamic, and (4) studies that appeared representative of contemporary politics. These criteria lead to Lantis’ exploring five cases, two in atomic weapon development, two in space concerns, and one on President Obama’s drone war. Each case demonstrated how elites contested norms even if overall changes did not occur.

The first cases proposed two nuclear proliferation examples as a contested norm. Contestation appears first through nuclear weapon proliferation and then in nuclear-related export controls. Lantis starts his cases immediately following World War II and considers how American

moves from prohibitive standard with sole nuclear controls to a discriminatory standard after nuclear technologies spread. The discriminatory standard cooperated with bandwagoning powers to achieve desired effects while prohibitive standards use international agencies to prevent trade in nuclear technologies. The nuclear norm looked to stop terrorists from gaining access to nuclear fuel or reprocessing technology that would enable weapons-grade uranium access. Despite contesting the norm, this example establishes a protected space to deny technological access. The protected space is intended to prevent war or terrorist actions from raining nuclear fire on US citizens while controlling emerging powers through dictating allowed nuclear accesses. The author establishes how various organizations, like the International Atomic Energy Agency and the Nuclear Suppliers Group, work as bandwagoning agents outside state controls to achieve results similar to state policy actions.

The next block, again in two cases, concerns space technologies, surveillance, and armament. The surveillance chapter explores state sovereignty norms to consider when border security expands into a responsibility to protect (R2P). Lantis develops situations where knowing an event occurs, such as genocide in Darfur or ethnic conflict in Kosovo, leaves states or international organizations responsible to take further action. Some arguments compare to how states use private surveillance norms, but the real debate is whether nongovernmental organizations can motivate other actors to intervene because of exclusionary knowledge. The answer is 100 percent absolutely, positively maybe. Too many other factors appear in surveilling unfortunate events to motivate intervention just because the details are unpleasant. As in the recent Syrian cruise missile strikes, once a humanitarian event occurs, states often require intent, capability, and demonstrated national interest before intervening.

Part two, norms in space, considers a contested space environment as opposed to a peaceful commons. Like earlier reprocessing debates, Lantis suggests dual-use considerations create conflict for senior leaders as to whether they establish controlled areas or allow free-market expansion. President Reagan's Strategic Defense Initiative was critical in establishing funding and policy for military operations in and from space as a means to contest norms. Lantis frequently conflated his examples by blending what would be an established ballistic missile defense protecting the homeland and an antisatellite system denying the adversary a space high ground. Although the conflation is technically possible, one should consider the intent as the primary focus, not just if a system can vertically reach a target area. Denying a ballistic missile, either in boost or reentry, requires capability to reach and target in space. Strong dual-usage aspects again mean this norm, like nuclear fuel and R2P intervention, remains contested.

The last case examined, although not the last textually, shows the clearest contested norm results with a redefinition caused by expanded US drone strikes during the global war on terrorism. Lantis uses a traditional norm based on government-authorized political assassinations and offers weaponized drones as the technological improvement and change agent. Although weaponized drones have existed for almost 20 years, Lantis notes early development and deployment were classified, meaning norm discussions about usage never occurred publicly. President Obama's drone war became public when he conducted twice as many targeted killings during his first 10 months in office as President Bush authorized during his two terms. This expansion created public notice and pushed ethical debates regarding drone killing into open forums. The norm redefinition sought emphasized a legal attack basis and an imminent threat to US persons as the twin pillars for ethical action. This norm redefinition was successful through strong bandwagoning actions from states like Russia and China, which desired their own operational drone campaigns against terrorists, separatists, and freedom fighters challenging their authority.

Overall, Lantis does an excellent job advancing constructivist theory by demonstrating how policy elites contest and redefine international norm structure through demonstrated cases in nuclear technology, space access, and drone employment. *Arms and Influence* adheres to a solid methodology for presenting historical norms, applying a technological change, and demonstrating policy outcomes in an easily understood and useful manner. This text is invaluable in understanding how societal behaviors relating to technological changes emerge and, further, how government agencies and senior leaders can influence those behaviors. Lantis' book should be a key read for most line officers, especially those working policy or strategy functions, due to its interpretation of technology and related behaviors and of essential elements of Air Force activity. This book is enjoyable, well argued, easily read, and a solid contribution to any bookshelf.

Lt Col Mark T. Peters, USAF

Against the Tide by Rear Adm Dave Oliver, USN, Retired. Naval Institute Press, 2014, 178 pp.

Against the Tide is an aptly named survey of the leadership qualities and professional values of Adm Hyman Rickover, the long-esteemed visionary and architect of the Navy's nuclear submarine force. As written by his subaltern, Rear Adm Dave Oliver, USN, retired, Admiral Rickover is portrayed as an unconventional figure whose often-controversial leadership and interpersonal style rankled subordinate and president alike but undeniably yielded long-lasting impacts on the Navy's submarine force and America's Cold War nuclear deterrent. From the outset, Oliver states the book is not intended as a biography of Rickover but, rather, a sampling of the shaping forces which gave rise to his vision for the Navy's nuclear enterprise and a distillation of the management principles that emerged from his years at its helm. While some potentially rich detail is omitted from the description of Rickover's complete professional history, Oliver presents a succinct account of a man ahead of his time in his vision for the potential of nuclear power, its applications for operational use at sea, and the organizational culture changes necessary to run a war-fighting enterprise with no tolerance for error.

On an individual level, Rickover was notable in numerous ways, having been the longest-serving man in the history of the naval service at the time of his retirement, with a six-decade career spanning World War II, Korea, and Vietnam. However, his storied career began vastly different than those of his beribboned contemporaries, having been seemingly sidelined during key tests of wartime mettle during World War II. While Rickover held positions distant from the sound of the guns, his mind teemed with ideas for organizational management, with his experience pruned and shaped by the lessons of navigating the political and bureaucratic narrows of Washington, DC. As the war ended, Rickover's service was notable but undistinguished compared to the martial feats of his contemporaries in the Pacific, and the light of his career appeared to wane during the postwar drawdown. However, this seemingly fallow period bore fruit in 1948, when President Truman formed the Atomic Energy Commission and Rickover was tapped to advise the group on how nuclear power would be leveraged for operational use in the Navy. In this instance, Oliver highlights Rickover's proof that an officer's effectiveness is not always proven in the crucible of combat but, rather, can also be manifest in his ability to envision, create, and manage an enterprise with truly strategic impact.

The irony of Rickover's success as the chief designer of the Navy's nuclear submarine enterprise is that it did not stem from the blind faith in machinery and engineering so commonly found during the military-industrial swell of the 1950s and 1960s. Rather, Rickover espoused a seemingly contrarian view, emphasizing the intellect, judgment, and performance

of his personnel first. Only after one had demonstrated excellence in these areas could he be admitted to the elite circle of the nuclear submarine force, given its engineering complexity, uncompromising operational standards, and unforgiving working conditions. To staff such a force at its inception, Rickover went against the traditional wisdom of valuing experience over all else, on occasion selecting submarine novices ahead of diesel submarine crews with wartime experience. His rationale for such decisions was rooted in his emphasis on the ability to assess and solve complex problems in situations of strategic importance while safely operating the submarine, its reactor, and nuclear weapons in wartime. Given the operational emphasis on deterrence rather than direct confrontation, Rickover favored the uncorrupted judgment and logical thought of the newcomers, vice his perception of combat-tested (and potentially risk-prone) diesel submarine veterans from World War II. Such decisions harken to the tough balance required by Rickover's management style, with subordinate commanders expected to boldly and courageously employ their submarines to established limits, while simultaneously balancing this boldness with an uncompromising deference to nuclear safety, thus presenting an interesting contrast for the reader.

Rickover's unique and sometimes controversial management style is truly the heart of *Against the Tide*, with the lessons varying widely but firmly rooted in his nonnegotiable personal traits of personal responsibility when in command, attention to detail (particularly in the realm of nuclear safety), and the mastery of one's professional craft. While seemingly simple principles, Oliver effectively conveys that a failure to uphold these fundamental rules can have a profoundly harmful impact on any organization, whether endangering the lives of a submarine crew or placing the survival of one's business in jeopardy. Expanding beyond personal traits, Oliver does present Rickover's leadership style as bordering on micromanagement, with his taking a personal interest in the evaluation, selection, and placement of every officer in the nuclear submarine force and paying constant attention to their performance throughout the duration of their career. However, Oliver does present this oversight though a nostalgic lens, with Rickover's severity a natural byproduct of a devoted and exacting mentor. Further, Oliver intimates it was this toughness which girded Rickover for organizational culture battles within the submarine community and across the Navy, with his success largely dependent upon his keen understanding of people and firm grasp of interorganizational realpolitik.

The brevity of *Against the Tide* makes the book an accessible venture into the mind and actions of Hyman Rickover and the genesis of today's nuclear submarine force. However, the reader would have benefitted from a deeper analysis of Rickover's formative years, particularly his early shipboard experiences and following command at sea. While Oliver alludes to these eras in passing, the book largely centers on Rickover's successes during his years as a senior officer, leaving the treasured lessons of his early years relatively untouched. This critique aside, the book is a fascinating account of a lesser-known Cold War luminary, with its unique vantage point offering lessons for all students of leadership, military and civilian alike.

Maj Walter J. Darnell III, USAF

Intercept 1961: The Birth of Soviet Missile Defense by Mike Gruntman. American Institute of Aeronautics and Astronautics, 2015, 309 pp.

In *Intercept 1961: The Birth of Soviet Missile Defense*, Dr. Mike Gruntman adds important historical context to the ongoing debate about nuclear weapons and countering ballistic missiles. These discourses in the United States focus largely on North Korea and Iran and the viability, cost, and necessity of mid-course interceptors. Yet conspicuously absent from the discussions are the Cold War relics ringing Moscow, the Russian Federation's nuclear-tipped

missiles pointing toward the sky, poised to defeat incoming American warheads. Gruntman's work explicates the national effort that led to this posture in an informative look at the evolution of the Soviet Union's missile defense from its days as an offshoot of Stalin-era air defense to a robust, strategic defense system that remains operational to this day.

Gruntman pulls the curtain back to expose the inner workings of the Soviet polity as it pertains to strategic defense, reminding the reader of the paranoia, simultaneously altruistic and pessimistic ideology, and structural dysfunction of the system put in place by Stalin and the institutional momentum of that polity which continued after his death. The author details the embryonic beginnings, with the Soviets using their own experts and technology as well as those "borrowed" from the vanquished Germans and ends the story with the Soviets' completion of the first reliable operational system in 1961. The catalyst for the effort was surprising: Soviet generals recognized the coercive and destructive capacity of ballistic missiles even before the Americans were able to field them but felt compelled to wait until Stalin's death to propose that missile defense be placed among the top priorities of the growing military-industrial complex. The government of Khrushchev listened.

The scale of the resultant Soviet effort was staggering; the resources put into strategic defense speak volumes of the fear felt by the Soviets (or fear engineered to support domestic compliance). Gruntman illuminates the scale by exposing the colonizing of the Soviet southern frontiers with cities built for the test range personnel, as well as the massive expansion of the various, relevant bureaucratic arms in Moscow. The author also points out that the expenditures for strategic defense at times were roughly equal to those expenses for strategic attack! Just as staggering was the dysfunction of the Soviet leaders that helped and hindered the programs. Gruntman reminds the reader of the inevitable competition between Soviet bureaucratic functions that were assembled by the Soviet government for similar purposes; he binds the story together by describing the tenuous relationships between the capable yet egoistical program leaders and their Communist Party bosses in order to secure power, funding, and sometimes their own survival. Gruntman seamlessly switches between the Moscow bureaucracy and the distant test ranges to show how the efforts of the former influenced the latter and how quickly the overall program was put to use.

This book is a treasure for scholars of Soviet history and comparative politics as well as historians and practitioners of rocketry, radar, and space operations. The author provides a rich, descriptive historical narrative indicative of an intellectual passion and firsthand information (and it was a delight to see some of his citations were authors/contributors sharing the same last name as his own). He finds the right balance between technical details, state decision making, and the lives and decisions of individual participants in this story. He does not overwhelm the reader with excessive recitation of physical facts, nor does he leave the descriptions as merely explorations of the human condition. Rather, he uses appropriate measures of each; the quantitative and qualitative are used to enrich each other. For readers interested, he provides adequate detail for easily accessible additional research; for example, coupling the descriptions in his book with a virtual tour of Moscow and Kazakhstan via Internet satellite imagery was an enjoyable exercise in Cold War history for this reviewer.

However, international relations specialists will be left wanting, and more attention to the motivations of Soviet leaders would have helped contextualize the narrative; informative references to actions of the fledgling NATO alliance that may have engendered a Soviet response, and vice versa, would have been valuable (although it must be mentioned that Gruntman warns his readers up front that the geopolitical wranglings of the superpowers are intentionally left out). He does include an informative appendix on preceding and contemporary American efforts, but its segregation is detrimental to the story. Certainly there is a balance to be found in

a work of this type, but the question of why the Soviets acted in the way they did is not really answered. Because the author opens the door by addressing U-2 overflights and the employment of antiaircraft and anti-missile missiles, more time exploring what necessitated those actions was appropriate.

Similarly, Gruntman provided some very informative, enjoyable sidebars (such as his elucidation of Soviets addressing a person as citizen instead of comrade when the latter was subject to investigation or imprisonment) but left out some other, necessary explanations; this reviewer read Gruntman's work with access to search engines and online reference sources to better flesh out the narrative desired by the author, such as his invocation of the American Navajo missile as a tool for comparison, which he left poorly described. Interestingly, he does include a Russian pronunciation guide for terms relevant to his work, which may be useful to some readers (and he takes great effort at explaining the various Soviet agencies and their corresponding acronyms).

Intercept 1961 is an enjoyable, informative read, both by itself and as a part of a tour of either Cold War technology or Cold War politics. It cannot stand alone in either Cold War application, but its rich historical narrative will be immeasurably useful for students and scholars seeking to build their holistic understanding of that period. Further, it reminds the reader that the current American midcourse defense system is simply the latest exercise in a continual effort at reducing the threat of ballistic missiles. Gruntman's work changes the discourse by offering vastly more detail than arguments found in the popular press or scholarly articles of today.

Lt Col Jasin Cooley, USAF

Strategy & Defence Planning: Meeting the Challenge of Uncertainty by Colin Gray. Oxford University Press, 2014, 225 pp.

Strategy specialist Colin Gray delivers an excellent discussion illustrating how history, politics, and military means all intertwine during defense planning in his work *Strategy & Defence Planning: Meeting the Challenge of Uncertainty*. Dr. Gray considers this work as the third in a series leading from the two previous texts within the same vein: *The Strategy Bridge* (2010) and *Perspectives on Strategy* (2013). The earlier books provide an overview of various national strategy options, while this volume strives to answer the how and why questions for defense planners. After reviewing his previous strategic conclusions, Gray in this text examines how historical perspectives contribute to planning, political influences, and popular factors and then constructs an imminently usable framework for defense planners. Gray's key assumptions emphasize that all future events are unknown and nonquantifiable, so all defense planning serves to reduce uncertainty rather than guarantee outcomes.

Gray provides a theory outline for defense planning within a societal context through strategic, historical, and political references. Working from a solid core provided by the other two volumes, the text details how defense planning functions anticipate challenges without predicting future events. Much like every good intelligence process, planning reduces uncertainty for policy makers about ways and means options for future events. Strategic planners are guided to blend political ends, strategic ways, and military means in creating a comprehensive approach to deal with emerging events. Gray recognizes three potential challenges within his theory: planners cannot know which contingency will happen, what the future context may be, and what cause will initiate those conflicts. For Gray, defense planning serves as a strategic outlook combining historical perspectives with the political realities in attempting to mitigate future crises.

Gray's first step in addressing future concerns looks back to historical perspectives. Historical planning addresses two potential issues: time only moves forward, and, at its best, history only provides a potential pattern rather than specific future events. History's forward movement

from past to present recognizes politics as the expression of societal and national power in every age. When pursuing a security end, future contingency events will likely be similar to those of the past, expressing behaviors caused by the cultural and political contexts from which they emerge. Gray notes a key human behavior, constraint, as future actions may not follow any rational pattern. Predicting future events through past occurrences remains problematic as not only do trend analysis type predictions not account for irrational behavior, they may also neglect strategic shifts. In one example, the late 1940s transition to nuclear weapons and the subsequent impact on all strategic planning for the century's remainder was neglected by defense planners prior to that transition. Gray also notes the absence of nuclear employment from any conflict since World War II provides no assurances a nuclear weapon will not be employed next week, next year, or even in the next decade. Anticipating any events still falls within a defense planner's potential challenges and should be addressed during the process.

Gray rapidly shifts from a theoretical perspective to defense planning framework. His framework includes discussing how to transfer political ends into military means that remain supported by the general populace. Politics requires interaction from both the national government and the populace supporting those governments. National populations tend to be motivated by three factors—fear, honor, and interest—which must all be accounted for during planning. The text suggests addressing current fear regarding what may happen and how those events affect national honor with historical support from Thucydides and Clausewitz. Finally, ongoing national interests for stability, growth, and security should be addressed in an understandable and easily conveyable manner. For example, US engagement in World War II after the Japanese attack on Pearl Harbor addressed fears of an invasion of California, defending honor after a sneak attack, and overall interest in popular security. Gray urges planners to consider interactions between civilian and military interests, including responsibility, values, statecraft, and any potential opportunity costs on the various involved actors. He illustrates politicians will primarily continue to seek power while military leaders prefer certainty in purpose aligned with clear leadership decisions. Seeking political power does not always guarantee an alignment between a national strategy, ways to employ military means, and reaching desired ends for all parties.

Gray continues his defense planner framework, identifying several strategic concepts required to even attempt to anticipate future events. Planners should identify motivation and priorities through existing strategies, science and certainty, politics and economics, and historical perspectives. Through all events, planners should maintain an awareness of potential gaps and errors within those fields as well as their own tolerance for shortfalls within planning. Events need breadth, depth, and context to adequately translate through planning, and all sources include some errors based on both recording means and their perspective. Error tolerance builds upon Gray's common themes of future uncertainty, though reinforcing future events is not quantifiable. He further states any metric analysis based on future events should be regarded with suspicion. Gray's framework concludes with two pages of key findings, too long to summarize here but excellent in suggesting ways to ensure ends, ways, and means are adequately linked within planning (pp. 202–3).

One of the work's true strengths is the constant reference to other strategic contributors. Clausewitz and Thucydides' foundational works, *On War* and *The History of the Peloponnesian War*, are consistently referenced. In addition, Schelling's texts, *The Strategy of Conflict* and *Arms and Influence*, play a central role supporting overall concepts. Gray also notes the influence of Nassim Taleb's *Black Swan* in understanding how, at best, future events remain largely undetermined. For the unfamiliar, Taleb's work examines the influence of potential high impact events, referred to as black swans, which—though statistical outliers—change the shape of everything after

within those areas. The terrorist attacks on 9/11 were a black swan event, completely different from all other attacks but sufficiently drastic to change all future planning regarding terrorism.

Gray is a continual contributor to strategic planning discussions and clearly notable within a field with very few truly outstanding authors. If one does not have time to fully consider outside works, Gray's strategic synopsis (p. 71) and defense planning assumptions (pp. 202–3) alone make this work worth adding to your shelf. That said, every chapter should be thoroughly read as each contributes a better strategic understanding and defense planning framework. This work significantly adds to anyone's strategic understanding, through careful source consideration, inclusion of popular motivation, and excellent planning framework. I consider Gray's work a must read for all field grade officers or equivalents involved with planning at any level.

Lt Col Mark T. Peters, USAF

US Foreign Policy and Defense Strategy: The Evolution of an Incidental Superpower by Derek S. Reveron, Nikolas K. Gvosdev, and Mackubin Thomas Owens. Georgetown University Press, 2015, 262 pp.

With *US Foreign Policy and Defense Strategy*, the authors synthesize concepts from two related academic fields—national security and strategic studies—with a bit of international relations thrown in for good measure. This book is not a historical review of US policy and strategy; rather, history informs how the United States assumed primacy among nations in the twentieth century and the ways by which foreign policy and national defense contributed to the rise of the “incidental superpower.”

The authors are current or former professors of national security affairs at the US Naval War College. All three have extensive academic experience with several published books in the national security and strategy fields. By merging their expertise, they have exploited a unique niche, combining foreign policy considerations with defense strategy. Despite having multiple authors, the book is not merely a compilation of their respective writings on related subjects but rather a well-integrated and superbly researched study.

The structure of the book illuminates a dialectical discussion on the United States as superpower and the conditions that led to this status. The introduction and first chapter summarize the main points of the book, providing an overview and explanation for the rise of American power. Subsequent chapters are analytical essays, highlighting US defense organization, civil-military relations, foreign policy, warfare and peace, and the peculiarities of defense financing. The final chapter concludes and projects US foreign policy and defense strategy into the future. The authors took great pains to integrate related ideas so previously introduced material is referenced in subsequent chapters. It is well written, concise, and lacks obfuscating jargon. A minor distraction is with the order of chapter 3, “The American Way of Civil-Military Relations.” Structurally, the outline of the book has civil-military relations following the discussion about the US defense organization, which seems to suggest a cause-and-effect relationship—that civil-military relations is a result of how the United States organized for defense. Rather, the nature of US civil-military relations, rooted in the constitutional order that sets relations between the military and political branches, precedes any understanding about the organizational structure that follows from this precept.

The crux of their thesis is that the United States' rise to power was not accidental but incidental. Despite a previous history of relative isolation from the affairs and conflicts of powers outside the western hemisphere, the perceived challenges of the post–World War II security environment created conditions for US political leadership to acquiesce and assume the mantle of an “incidental” superpower.

The historical focus for the book is primarily from World War II to the present, which necessarily constrains analysis to ideas and events over approximately a 70-year period. Where necessary, additional historical context buttresses their arguments, but overall, this is a study of US foreign policy and resulting defense strategy as a result of a postwar environment characterized by ideological struggles and wars of liberation.

Despite a progressive vision for international harmony through the League of Nations championed by Woodrow Wilson following World War I, the United States returned to its previous pattern of demobilization and withdrawal from entangling alliances outside of the western hemisphere. Referencing political scientist Bear F. Braumoeller, the authors argue this pattern was not a result of nationalistic isolationism but of a fight between political factions, those advocating using US military power to advance international ideals or those who wanted greater autonomy to advance primarily American interests. Nonetheless, America post-World War I saw a return to previous patterns of using nonmilitary instruments of power in the pursuit of US interests.

Preferring to impose harsh measures on Germany, triumphant British and French leaders unwittingly set conditions for a second world war, leading to the eventual rise of American global leadership. As “the last nation standing,” the United States held almost half the share of global GDP at the end of the war. Reluctantly, political leaders realized that there was no return to the previous status quo ante. Thus, the organization for defense, the creation of international security and financial structures, the expeditionary nature of US military power, tensions with civil-military relationships, the ways by which the machinery of war is financed, and preferences for converting foes to friends reflects a uniquely American approach to foreign policy and defense that was incidental to any preferred strategy.

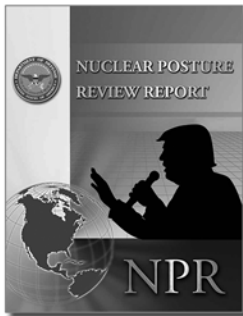
One of the key challenges for books of this type is determining not only what to include, but also limiting discussion to information of direct relevance to the main points of the book without stripping the coherence of the overall narrative. For the most part, the book succeeds in this endeavor with the exception of chapter 5, “The American Way of War.” Summarizing the multifarious theories of the American way of warfare would be difficult for a book-length treatment, but to do so in only 25 pages meant that only a gloss was provided on the many variables of a complex subject.

The strength of the arguments presented in the book will not fade with time but will continue to be a scholarly source for understanding how the United States historically managed the challenges of being a superpower without necessarily having a deliberate strategy for securing long-term benefits. It is only in retrospect that we can see the efficacy of any so-called grand strategy. The authors present a convincing account of the United States’ rise to dominance as a result of environmental pressures and internal adaptations that facilitated its superpower status. I highly recommend this book, not only for instructors and students of foreign policy and strategic studies but also for any reader interested in how the United States became an “incidental” superpower.

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