NATIONAL INSTITUTE FOR PUBLIC POLICY

Journal of POLICY & STRATEGY

Vol. 3, No. 2

Journal of Policy & Strategy

Editorial Office

National Institute for Public Policy, 9302 Lee Highway, Suite 750, Fairfax, VA 22031 USA,
Telephone: 703-293-9181, Fax: 703-293-9198, www.nipp.org

The National Institute Press would like to express their appreciation to the Sarah Scaife Foundation for the generous support that made the *Journal of Policy & Strategy* possible.

Design by Stephanie Koeshall

Journal of Policy & Strategy

Vol. 3, No. 2 2023

TABLE OF CONTENTS

EDITOR's NOTE

Welcome to Issue 2, Volume 3 of National Institute's online *Journal of Policy & Strategy*—a quarterly, peer-reviewed publication. In this issue, under the heading "Analysis," readers will find enlightening articles by Matthew Costlow, John Mark Mattox, Keith Payne and David Trachtenberg. Collectively, these articles focus on the subjects of deterrence (theory and policy), disarmament and arms control. This issue also includes two extensive and thoughtful interviews: the first with former U.S. Strategic Command Commander, General Kevin Chilton (USAF, Ret.) focusing on U.S. deterrence requirements and the 2022 *Nuclear Posture Review*; the second with Thomas Kent, former President and CEO of Radio Free Europe/Radio Liberty focusing on Russian propaganda and disinformation.

This issue of the *Journal of Policy & Strategy* continues to provide proceedings from National Institute's monthly online symposia, "webinars." These proceedings are drawn from four different symposia that collectively focused on: "Allied Assurance and Extended Deterrence in a Multipolar World"; "The Benefits of Strengthened Homeland Missile Defense"; the U.S. *National Security Strategy* and *National Defense Strategy*; and, the U.S. 2022 *Nuclear Posture Review*. Book reviews in this issue include cogent assessments of diverse titles: *The Weaponization of Loneliness: How Tyrants Stoke Our Fear of Isolation to Silence, Divide, and Conquer,* by Stella Morabito; *The End of Victory: Prevailing in the Thermonuclear Age,* by Edward Kaplan; and, *Managing U.S. Nuclear Operations in the 21st Century*, edited by Charles Glaser, Austin Long, and Brian Radzinsky.

Under the heading "Documentation," this issue includes excerpts from important Congressional testimony provided by: Dr. John F. Plumb, Assistant Secretary of Defense for Space Policy; General Glen VanHerck, Commander, United States Northern Command and North American Aerospace Defense Command; General James H. Dickinson, Commander, United States Space Command; and, Greg Weaver, Senior Associate (Non-Resident), Project on Nuclear Issues, CSIS.

Finally, in recognition of the 40th anniversary of President Ronald Reagan's unprecedented call for the United States to be capable of defending against ballistic missile attack, the "From the Archive" feature of this issue provides the text of President Reagan's nationally televised, March 23, 1983 speech introducing his goal. It also includes a pertinent National Institute for Public Policy report written a decade later by two former Directors of the Strategic Defense Initiative Organization, James A. Abrahamson and Henry F. Cooper, entitled "What Did We Get For Our $300 Billion Investment in SDI/BMD?"

We strive to make each issue of the *Journal of Policy & Strategy* worthwhile and hope readers will find every article in every feature in this issue of the *Journal of Policy& Strategy* valuable.

ANALYSIS

NUCLEAR DISARMAMENT: THE CONTEMPORARY GREAT ILLUSION?*

Keith B. Payne

Introduction

In 1910, Sir Norman Angell first published a book entitled, *The Great Illusion: A Study of the Relation of Military Power to National Advantage*. With numerous illustrations and detailed evidence, Angell reached conclusions that the world was eager to hear, i.e., war and military preparations were of sharply declining value and could soon be a thing of the past. *The Great Illusion* was a sensation in much of Europe—particularly among the British intelligentsia. Angell was both knighted and awarded the 1933 Nobel Peace Prize for his powerful work.

The basic thesis of Sir Norman's work was that, given the economic advancement and interdependence of European nations, territorial control and military power no longer were the basis for economic advantage and national prosperity. Continuing to think otherwise was "the Great Illusion." Angell emphasized the point that wars waged for the purpose of territorial control and associated economic advantages would instead impoverish both winners and losers because war destroys the financial, economic and trade ties that create national wealth in an economically interdependent international system. War, he said, had become irrational because cooperative relations provide the potential for mutual prosperity; war destroys wealth for all. Correspondingly, cooperation, not war, is the only rational choice.

In short, Angell asserted that "the need for defence arises from the existence of a motive for attack,"[1] but the old wealth-based motives for attack no longer held. And, as leaders increasingly came to understand that warlike behaviors and preparations could not provide material benefit, *rational* citizens and leaders would retreat from supporting warlike behaviors and preparations. The motives for attack would abate, and the corresponding need for armaments to defend against attack would similarly decline.

The engine for this change, according to Sir Norman, was simply recognition of the basic facts of economic interdependence and rational national decision making. As broad communities within European states learned to appreciate the disastrous economic consequences of war for winner and loser alike, they would rationally seek cooperative transnational ties and move away from warlike patterns of behavior. This would increasingly mandate the striving for peaceful international relations, and the rejection of war and the need to prepare for war. Angell wrote that the "Law of Acceleration" could

* This article is adapted from *Chasing a Grand Illusion: Replacing Deterrence With Disarmament* (National Institute Press, 2023).

[1] Norman Angell, *The Great Illusion: A Study of the Relation of Military Power to National Advantage* (London: William Heinemann, 1912), p. 337.

rapidly drive more amicable and peaceful international relations, and prudent disarmament moves.[2]

Correspondingly, Angell suggested strongly at the time, i.e., shortly prior to World War I, that a general European war was increasingly improbable, and that, "The cessation of military conflict between powers like France and Germany, or Germany and England, or Russia and Germany...has come already. ... armed Europe is at present engaged in spending most of its time and energy rehearsing a performance which all concerned know is never likely to come off."[3] To help secure this peace, Sir Norman emphasized the need for the rule of international law and an international court to adjudicate conflicts peacefully.

The Great Illusion pointed to a coming transition in the international system toward a new order in which peaceful relations, the rule of law, and disarmament could prevail. Peoples' and their leaders' increasing recognition of the realities of economic interdependence and their rational response to those realities would drive growing opposition to war and the armaments necessary for war.

The actual history of the Twentieth Century demonstrated, without doubt, that much of Sir Norman's sanguine argument was deeply mistaken. In World Wars I and II, most winners and losers did indeed suffer enormous human and economic loss. But, in contrast to Angell's expectations, the prospect thereof had not deterred the paths to war. Indeed, had London taken Angell's predictions and disarmament recommendations more to heart, Britain would have been even less prepared to meet Hitler's existential challenge.

The Great Illusion Redux

Modern church-based and secular proposals for nuclear disarmament are similar to Norman Angell's *The Great Illusion* in many ways and are as favorably received. For example, in recent years, multiple Nobel Prizes have been awarded for nuclear disarmament advocacy.

In addition, advocacy for global nuclear disarmament, for all its variety, is substantively comparable to Sir Norman's thesis. For example, it virtually always identifies the need for, or presumes, a forthcoming cooperative transformation of international relations as the path to disarmament. For example:

> A security system without nuclear weapons, while not easy to realize, is not an unachievable dream…Such a regime would need to be coupled with a legal prohibition against nuclear weapons possession, deployment and use, as well as

[2] Ibid., pp. 119, 220.

[3] Michael Rühle, "The End of the 'Great Illusion': Norman Angell and the Founding of NATO," *NATO Review*, January 14, 2019, available at https://www.nato.int/docu/review/articles/2019/01/14/the-end-of-the-great-illusion-norman-angell-and-the-founding-of-nato/index.html.

with the policies, institutions, and capabilities necessary to implement, verify, and enforce such a prohibition.[4]

Nuclear disarmament, it is said, will "…require global cooperation. Anything short of global cooperation will doom the system to failure…The only way to do this is to insist that the war-centric system be transformed into a peace-centric system that embraces nonviolent geopolitics."[5] And, "To reach nuclear zero it is necessary to achieve…a state of political relations among nations in which there is no desire or need to possess nuclear weapons, where tensions and animosities that lead nations to fear their neighbors have declined to zero."[6] Nuclear disarmament proposals invariably project that this greater amity and cooperation among nations can move the international system to some form of benign but powerful global governance that mandates and enforces nuclear disarmament.

It is, of course, self-evident that unprecedented "global cooperation" could lead to the establishment of a new "peace-centric" international system, including nuclear disarmament. Disarmament advocates obviously are correct making this point—and often present it as if it were a profound breakthrough in thinking. But that point hardly is insightful or useful in advancing any understanding of how to get "from here to there."

Such a transition would first require unprecedented, enduring cooperation among nations. Pointing to it simply shifts the question from how does the international system achieve nuclear disarmament to another impenetrable question, i.e., how do international relations become so amicable and cooperative that nuclear disarmament can be the commonly preferred choice of the many national leaderships who now see nuclear arms and deterrence as critical for their national survival in a dangerous world? In short, what is the dynamic that leads to the cooperative transformation of international relations and to nuclear disarmament?

The Dynamics for International Transformation?

Akin to Angell's 1910 thesis, modern nuclear disarmament proposals attribute great power and effect to new dynamics in international relations that will lead to the transformation of the global order and nuclear disarmament. The desired enlightened and unprecedented global cooperation typically is presented as a natural continuation of an ongoing trend in human progress and reason—driven in this case by leadership decision making that responds *rationally* to global "nuclear dangers."[7]

---

[4] Joan Rohlfing, "The Myth of 'Just' Nuclear Deterrence: Time for a New Strategy to Protect Humanity from existential Nuclear Risk," *Ethics & International Affairs*, Vol. 37, No. 1 (2023), p. 47, available at https://doi.org/10.1017/S0892679423000023.

[5] David Krieger in, Richard Falk and David Krieger, *The Path to Zero* (Boulder, CO: Paradigm Publishers, 2012), p. 209.

[6] David Cortright and Raimo Väyrynen, *Towards Nuclear Zero* (New York: Routledge, 2010), p. 21.

[7] Examples of cooperation and progress can be enumerated: "…optimism is the most logical, sound, and defensible position to arrive at after a rigorous study of history. We do not live in a perfect world. *But we live in a perfectible one*.

Yet, unlike Sir Norman's elaborate and detailed work in *The Great Illusion*, nuclear disarmament advocates typically ignore the question of how to "get from here to there," or point to dynamics for transformation that are obscure, arcane, ambiguous, and/or transcendental. For example, the establishment of a new cooperative world order and nuclear disarmament, it is said, can be a "black swan phenomenon" that "consists of those parts of reality that shape historical change but are currently hidden from our perception or understanding…"[8] Momentum for disarmament, it is said, "calls on every person to disarm his or her own heart and to be a peacemaker everywhere….personal and communal conversion and change of heart."[9] And, "When it becomes possible, it will be as a result of the intervention in our history of some totally unanticipated happening: a shock of some sort to the system, a charismatic leader who mobilizes a new public consciousness, a new cultural turn toward spirituality and universal humanism, even a repudiation of war as a legitimate institution."[10]

In their highly acclaimed 1983 Pastoral Letter, American Catholic Bishops advanced the goal of cooperative global governance and corresponding nuclear disarmament. They identified the power of "public opinion" and "the genius of man" as dynamics for this transformation of the global order.[11] Others suggest that "revolutions of the mind," "rising powers in the non-West," and "countries that embrace soft power" can drive national "accountability" under "international law," "the needed nonviolent revolution," and thus a new "peace-centric system." These, it is said, can lead "toward peace" and the needed global transformation and disarmament.[12] The corresponding rejection of deterrence policies in favor of disarmament is said to be "rooted in morality, law, and a sense of the spiritual destiny and potential of the human species."[13]

Additional dynamics for global transformation and disarmament identified in recent decades are, "citizen movements that cry for peace so loudly that the world's leaders cannot ignore us,"[14] "a lot of courage, a lot of faith in the new order,"[15] "a sense of urgency," "human consciousness," and "action…grounded on a solid foundation of hope." These can lead to "change so profound that the status of man himself is drawn into question…"[16] Powerful

---

History shows that, over the long run, we collectively have made progress work." David Rothkopf, "The Case for Optimism," *Foreign Policy*, No. 221 (Nov.-Dec. 2016), p. 56. (Emphasis added).

[8] Falk in, Falk and Krieger, *The Path to Zero*, op. cit., pp. 200, 204.

[9] Peter Turkson, "Foreword," *A World Free from Nuclear Weapons: The Vatican Conference on Disarmament*, edited by Drew Christiansen and Carole Sargent (Washington, D.C.: Georgetown University Press, 2020), pp. x-xi.

[10] Falk in, Falk and Krieger, *The Path to Zero*, op. cit., p. 201.

[11] See the American Catholic Bishops' Pastoral Letter in, "The Challenge of Peace: God's Promise and Our Response," *Origins*, Vol. 13, No. 1 (May 19, 1983), p. 30.

[12] Falk and Krieger in, *The Path to Zero*, op. cit., pp. 208-209.

[13] Falk in, Ibid., p. 36.

[14] Ronald Sider and Richard Taylor, *Nuclear Holocaust & Christian Hope* (Downers Grove, IL: Intervarsity Press, 1982), pp. 227-228.

[15] Walter Cronkite, quoted in, "Cronkite Champions World Government," *Washington Times*, December 3, 1999, p. A2.

[16] Richard Falk, *This Endangered Planet* (New York: Vintage Books, 1971), pp. 292-293.

dynamics more recently identified include, "the normative force of the prohibition of acquiring nuclear weapons," the common desire for nuclear non-proliferation, existing treaty obligations under the Nuclear Non-Proliferation Treaty, and "unofficial advance work" done "by international experts."[17]

Perhaps pointing to these dynamics is prescient; perhaps "courage," "faith," "morality," "law," "communal conversion," a "sense of urgency," human "genius," "public opinion," a "charismatic leader," "a new public consciousness," "revolutions of the mind," and "advance work" by experts, *inter alia*, can lead to the creation of a much more cooperative international order and disarmament. But there is no denying that how and when these dynamics might do so, at best, is opaque and unpredictable on any anticipated time frame.

Rejecting Armaments to Advance Transformation

Just as Angell's *The Great Illusion* argued strongly *against* the military armaments of the day as increasingly unnecessary and contrary to the transition he projected, contemporary disarmament advocates are extremely critical of nuclear deterrence policies and capabilities. Sustaining nuclear deterrence policies and related forces, they believe, works against nuclear disarmament as the far safer and more effective alternative to policies of deterrence.

Consequently, proponents of nuclear disarmament often seek to "stigmatize" nuclear weapons and nuclear weapon states, and discredit policies of nuclear deterrence, so that leaders will recognize that the only rational choices are global cooperation and nuclear disarmament. The existing international order can then transition to a system governed by an orderer able to mandate rules and enforce disarmament. With this transition, national policies of deterrence can be replaced with reliable global nuclear disarmament. Efforts to so stigmatize nuclear weapons and discredit deterrence in the service of global transformation and disarmament have been ongoing for decades.[18]

A Contemporary "Great Illusion"?

Contemporary church-based and secular proposals for nuclear disarmament typically share Angell's premise of a global transition driven by unprecedented dynamics and rational decision making. Within three decades following the 1910 publication of *The Great Illusion,* it was abundantly clear that Angell had grievously misjudged his times and international relations—as he himself later recognized. Whether contemporary nuclear disarmament

---

[17] George Perkovich and James Acton, "Abolishing Nuclear Weapons," *Adelphi Papers*, No. 396 (London: International Institute for Strategic Studies, 2008), pp. 7-8, 13, 84.

[18] See for example, Sider and Taylor, *Nuclear Holocaust & Christian Hope*, op. cit., Chapter 3; more recently see, Rohlfing, "The Myth of 'Just' Nuclear Deterrence: Time for a New Strategy to Protect Humanity from existential Nuclear Risk," op. cit., pp. 42-45. See also the discussion in, Matthew Gault, "The Lawyer Working to Dismantle the World's Nuclear Weapons: Beatrice Fihn, executive director of the International Campaign to Abolish Nuclear Weapons, dreams of a world free from the threat of nuclear war," *Vice News* (Motherboard), December 16, 2020, available at https://www.vice.com/en/article/bvx7vv/the-lawyer-who-is-working-to-dismantle-the-worlds-nuclear-weapons.

proposals are prescient, or similarly misjudge international relations, is now the critical question. If prescient, they deserve greater acceptance and consideration as the basis for national policy decisions. If not, they should not be accorded policy priority or moral superiority over policies of nuclear deterrence; there is nothing laudable about chasing an out-of-reach illusion and the opportunity cost of doing so.

Three Reality Roadblocks

The conclusion here is that contemporary proposals for the cooperative creation of a new global order and disarmament are implausible, and thus an imprudent basis for serious security policy formulation. These proposals should be treated with appropriate disapprobation because, as the basis for policy decisions, they could easily undermine Western security. The enduring general reasons for this conclusion have long been understood by Realist scholars.[19] But their reasoning is largely ignored or preemptively dismissed in much contemporary commentary on the subject.

Is disarmament governed by a benign global orderer impossible? Perhaps not; but such a transition certainly appears implausible on any foreseeable timeline—hardly a basis for prudent national policy planning. Why implausible? Because at least three seemingly insoluble roadblocks exist, whether the nuclear disarmament proposals come from church-based or secular advocates. These three roadblocks follow from *separate but related dynamics at different levels of analysis*.[20]

A First Roadblock: "If angels were to govern men, neither external nor internal controls on government would be necessary." At the level of individuals, if all humans were cooperative pacifists, and reliably so, a new world would be at hand and the road to disarmament easily open. In 1788, James Madison observed in *The Federalist* No. 51, "If men were angels, no government would be necessary. If angels were to govern men, neither external nor internal controls on government would be necessary." Madison's point, of course, is that humans are *not* angels and *governing institutions are not led by angels*; they are led by humans with all too-well-known foibles.

Institutions and individuals obviously are different in many ways—the following does *not* suggest that individuals and institutions are fully analogous. But institutions, consisting of and led by humans, often reflect the frequently less admirable characteristics of their leaders and personnel, including willful deception, inconsistency, the lack of reliability and trustworthiness, and aggressive ambition, *inter alia*. As James Stoessinger concludes in his

---

[19] See, for example, Kenneth N. Waltz, *Man, the State and War* (New York: Columbia University Press, 1959); Edward Hallett Carr, *The Twenty Years' Crisis, 1919-1939* (New York: Harper and Row, 1964); Hans Morgenthau, *Politics Among Nations: The Struggle for Power and Peace* (New York: Alfred Knopf, 1962); Hedley Bull, *The Anarchical Society* (New York: Columbia University Press, 1977); and, William O'Brien, *The Conduct of Just and Limited War* (New York: Praeger, 1983).

[20] As in Waltz's classic three levels of analysis—the individual, the state and the international system. See, Waltz, *Man, the State and War*, op. cit., passim.

monumental historical survey of wars, "With regard to the problem of the outbreak of war, the case studies indicate the crucial importance of the personalities of leaders. I am less impressed by the role of abstract forces, such as nationalism, militarism, or alliance systems…. In all these cases, a leader's personality was of critical importance and may, in fact, have spelled the difference between the outbreak of war and the maintenance of peace."[21] This reality of institutional behaviors reflecting the choices of their leaders contributes to the *first* seemingly insoluble problems.

In addition, institutional decision-making processes can introduce their own wayward patterns of behavior that appear to parallel human imperfections, independent of any individual. These behaviors include a failure to abide by commitments, inattention to key developments, poorly informed decisions, deceptive practices, the squandering of resources, biased favoritism, the reckless use of force, and a general lack of trustworthiness, *inter alia*. For example, in any prospective global regime, the changing of administrations and personnel (planned or not) or disagreements among them could create considerable inconsistency in the conduct of the global orderer—rendering it unreliable and untrustworthy in carrying out its commitments for constituents.

Absent a transition of all humanity to Madison's angels and the attendant, reliably scrupulous and well-informed behavior of the global orderer, there is no reason to expect that any global regime could actually function to ensure that all prospective constituent members of the global body could be trusted to, or be compelled to, conform reliably to cooperative global norms and laws. Those constituent members with aggressive designs and intentions could seek to retain military capabilities covertly or prepare covertly for a breakout of capabilities after others had disarmed in whole or part. The latter more scrupulous nations could then be *highly vulnerable* to the former uncooperative nations, particularly during the perhaps lengthy period of establishing the global orderer's authority and necessary power to enforce rules.

This reality alone is likely to preclude the establishment of the envisaged global orderer. Why so? Because prior to willingly giving up sovereignty and power to the global orderer, national leaders would have to consider this risk of vulnerability and find it acceptable. For those great powers with well-armed and untrustworthy foes, this risk could easily outweigh the expected benefit of subordination to a global orderer. For these leaderships, deciding to retain sovereignty and national power for protection need not be ignorant or foolish; it could indeed be the most prudent choice.

Of course, if all individuals and national leaderships were reliably cooperative and trustworthy, this prospect would be no roadblock; there would be no such risk and nations could prudently lay down their sovereignty and arms. But, if all individuals and leaderships

---

[21] James Stoessinger, *Why Nations Go to War* (Belmont, CA: Thomas Wadsworth, 2008), pp. 390-392. Another monumental survey of historical case studies also illustrates the role of individual leadership characteristics in decisions for war. See, Donald Kagan, *On the Origins of War* (New York: Doubleday, 1995), pp. 8, 569. See also, Bert Park, M.D., *Ailing, Aged, Addicted* (Lexington, KY: University Press of Kentucky), passim; and, Richard Ned Lebow, *Between Peace and War* (Baltimore: Johns Hopkins University Press, 1981), pp. 220-231.

were reliably cooperative and trustworthy, there would be no need for a transition of the international system to facilitate disarmament. Cooperation and peace would reign without the need for a powerful global orderer.

There are two related problems under the rubric of this first roadblock that is pointed to by Madison. In addition to the risk that some, perhaps many, unscrupulous members of the global system could continue to pose security threats to their neighbors, prior to relinquishing sovereignty and power to an international orderer, national leaders would have to be confident that the prospective global orderer itself, led by humans and potentially having its own sources of institutional error and misbehavior, would *not* have aggressive ambitions, a lack of attention to its advertised mandates and goals, deceptive practices, and/or engage in the reckless use of force. That is, beyond the potential failure of the global regime to protect members reliably against the aggression of others through error or connivance, lies the risk that a powerful global orderer itself could become a threat to its constituents.

This prospect is the basis for the comment by renowned scholar and Nobel Laureate Thomas Schelling that a powerful global orderer could itself become the despotic source of repression and horrific violence, and thus the engine not of peace and cooperation but of rebellion and revolutions. As Schelling says, "some of us would have to turn around and start plotting civil war…"[22]

These are critical points because the question confronting national leaders when considering nuclear disarmament is not whether, in theory, a powerful and reliably scrupulous, well-informed global authority would be a far superior alternative to the existing anarchic system; that much is self-evident. The question is whether national leaders could ever have sufficient confidence in the operation of a new global order and its orderer, on a foreseeable timeline, to subordinate national sovereignty and relinquish the arms they see as needed for national security in the existing anarchic system. To do so, as would be necessary for the establishment of the global orderer, national leaders would need confidence that the global authority would, in fact, ensure protection against potential national outlaws, and not itself become the source of oppression and the misuse of force.

This is a wonderful vision, of course, but problematic because the global orderer envisioned would itself be run and staffed by individuals with human imperfections and foibles—again, unless they are Madison's "angels"—and likely have its own sources of failure. Past and existing institutions do not allow optimism in this regard. In the United Nations itself, the divisive effects of inconsistency, parochial nationalism, and competing personal and national interests and ambitions, are evident in virtually every aspect of its activities. The experience of all known history, including at the national level where some particular affinities tend to help hold peoples together, is that governments and human institutions of all varieties, once established, have engaged in behaviors to the extreme

[22] Thomas Schelling, "The Role of Deterrence in Total Disarmament," *Foreign Affairs*, Vol. 40, No. 3 (April 1962), p. 405.

disadvantage of at least some constituents—as is illustrated by the continuous lineage of political upheavals, rebellions, revolutions, and civil wars across the globe.

The prospect of a new global regime that is afflicted with imperfections and errors, as inevitably would be the case, is unlikely to inspire the needed confidence in national leaders on a universal and near-simultaneous basis. They could have no certainty that the new regime would reliably provide the necessary protection while also refraining from the unwarranted use of force—to the advantage of itself or favored constituents.

Why, now, should it be expected that any plausible form of global governance would *not* reflect occasional or frequent errors of inconsistency, ill-informed moves, aggressive ambition and pugnacity? Why should it be expected that, somehow, a new global orderer of some variety would be fully reliable and transcend seemingly enduring human and institutional foibles?

Disarmament advocates, understandably, have no answer to this fundamental question. Indeed, they typically avoid the question altogether, or, as noted, offer vague speculation regarding "some totally unanticipated happening," "a new cultural turn toward spirituality and universal humanism," a "black swan phenomenon," widespread "personal and communal conversion," or "one must first imagine it and desire it."[23] These, however, are unlikely to inspire the necessary confidence for the creation of a new global order.

For example, as noted above, a renowned proponent of a new global regime emphasized that a cooperative global transition would require "a lot of courage, a lot of faith in the new order…"[24] The question, of course, is faith and courage on the basis of what—the hope that, somehow, this new governing institution would reliably, consistently operate as no other has in history? Many leaders responsible for national security could instead understandably see basing national survival on hope for the realization of such an institution not as courageous and faithful, but as foolishly placing their nations at potentially even greater risk than otherwise would be the case. There could be no assurances whatsoever that they would be wrong in that expectation.

Those leaderships with aggressive ambitions *today,* including contemporary Russia, China, North Korea, and Iran, are least likely to transfer power and sovereignty to a prospectively strong global authority that would then be charged with thwarting their aggressive designs and would have the power to do so. National leaders with more benign intentions could have reasonable doubts that a new global orderer—subject to the same imperfections of seemingly all human institutions and interactions—would perform so reliably and judiciously as necessary, whether established in gradual steps or more rapidly.

Given these realities, establishing and sustaining the near-universal consensus needed for the creation and preservation of a high-functioning global orderer would seem unlikely in the extreme. Indeed, in those cases where national leaders appear to have demonstrated

---

[23] For the final item in this listing see, Rohlfing, "The Myth of 'Just' Nuclear Deterrence: Time for a New Strategy to Protect Humanity from existential Nuclear Risk," op. cit.," p. 47.

[24] "Cronkite Champions World Government," op. cit., p. A2.

an unusual willingness to subordinate national power to some conception of a greater good, foes and potential foes typically have looked on their moves with unbridled suspicion—*not* an unreasonable response in an anarchic international system with frequently untrustworthy, inconsistent national leaderships.

This suspicion certainly was apparent most recently in Russian and Chinese negative responses to the U.S. decade-long push for global nuclear disarmament and, similarly, in Russia's overwhelmingly skeptical response to Washington's repeated assurances that the United States would limit its missile defense capabilities in deference to notions of mutual deterrence "stability."[25] Even had Russian and Chinese leaders fully accepted the sincerity of a particular U.S. administration to so limit U.S. capabilities, they could have little confidence that subsequent U.S. governments would be similarly self-restrained. Again, the uncooperative Russian and Chinese responses to these U.S. initiatives were reasonable given an anarchic international system and U.S. leaderships that are subject to human and institutional foibles and imperfections, including inconsistency. Yet, it is these same reasonable suspicions and mistrust that would have to be overcome on an enduring basis for the establishment and sustainment of any global orderer that could mandate and enforce nuclear disarmament.

In short, the first seemingly insoluble roadblock to a new global order and disarmament is that—until all humans become Madison's angels and/or human institutions operate reliably as needed—national leaders understandably must be reluctant to abandon or hand over the critical means of national protection to a global regime that might then *not* provide adequate protection reliably against misbehaving members, and could itself become a grievous threat. This reluctance is not ignorant, ignoble or foolish.

Of course, if the seemingly enduring unscrupulous patterns of human and institutional behavior could be excised or reliably self-controlled, and cooperation and amity became the consistent norm—then national subordination to the envisaged global orderer would be prudent and plausible. In that case, however, as noted, a global institution to prevent war and enforce disarmament would hardly be needed. Ironically, a global orderer able to mandate and enforce disarmament would likely become feasible when it is no longer needed.

Until then, there seems little likelihood that all great powers will, essentially simultaneously, take the potentially great risk of giving up sovereignty and their national means of protection on the hope that other parties would reliably do the same, and that the world orderer thus created would escape history and human foibles, and reliably provide the protection they need when necessary. Nuclear disarmament advocates have little or nothing to say as to how and why the enigmatic dynamics they identify for the needed global transformation should be expected to overcome these hurdles—hardly a reasonable basis for national security planning.

---

[25] See for example, David Axe, "Why Does Russia Hate the THAAD Missile Defense System?," *The National Interest*, January 25, 2022, available at https://nationalinterest.org/blog/reboot/why-does-russia-hate-thaad-missile-defense-system-199715.

A Second Roadblock: Why Not a Powerful International Orderer? The *second* seemingly insoluble problem follows from the first. National leaders may well find some national or even altruistic value in relatively weak international institutions, such as the past League of Nations and the contemporary United Nations. Indeed, the great powers have found some value in global institutions, but understandably have refused to provide them with the combination of power and authority that might seriously challenge their own security requirements and ambitions.[26] That is, great powers may, for some purposes, welcome relatively *weak* global institutions that do not pose a threat to their own national power, security and existential goals. The problem, of course, is that while relatively weak global institutions cannot challenge the great powers' ambitions, and thus may be acceptable, they also are incapable of reliably mandating and enforcing global order, norms, and law—as has been demonstrated for over a century, first by the League of Nations and since by the United Nations.

In short, *weak* global institutions obviously are acceptable to great powers, witness the United Nations, but are incapable of the needed global enforcement of laws and norms. A global institution so powerful as to control and reliably protect all powers, great and small, *could* in principle provide global governance, but is not acceptable to great powers for that very reason. The reluctance of national leaders to embrace a high-powered global institution is not unreasonable; it is a rational response to the fact that, as discussed above, absent the prevalence of Madison's angels, there can be little confidence that a global orderer would reliably exercise its power for the adequate protection of all and to the disadvantage of none, and would not itself become an existential threat.

Some national leaderships could, in theory, accept the risks and take the great leap of faith needed to subordinate their national sovereignty and power in the hope for a grand outcome. But, as Professor Mearsheimer has observed, "It is unlikely that all the great powers will simultaneously undergo an epiphany…";[27] and, "there is little reason to think that change is in the offing."[28] Indeed, the available evidence is virtually entirely contrary to any expectation of such an "epiphany" and consequent great powers subordination to a powerful global orderer.

---

[26] As an illustration of this point, the United Nations itself is designed to provide the permanent members of the Security Council with veto power over prospective U.N. actions. Consequently, when members of the Security Council disagree, the U.N. is effectively prevented from actions necessary to defend a member state—as has been illustrated yet again by the U.N.'s wholly toothless response to Russia's ongoing, naked aggression against Ukraine. This power arrangement within the U.N. is not an accident. As Richard Gowan, a senior U.N. official reportedly has observed, "It was Franklin Roosevelt who wanted to set up an organization that would police the world…But the only way he could get Russia and the other powers to agree to that deal, was if they had the ability to block any actions against themselves." Quoted in, Ashley Semier, "Why Isn't the UN Doing More to Stop What's Happening in Ukraine?" *CNN*, April 15, 2022, available at https://www.cnn.com/2022/04/15/politics/united-nations-ukraine-russia/index.html.

[27] John J. Mearsheimer, "Realists as Idealists," *Security Studies*, Vol. 20, No. 3 (2011), p. 428.

[28] John J. Mearsheimer, *The Tragedy of Great Power Politics* (New York: W. W. Norton & Company, 2001), p. 362.

A Third Roadblock: The Suggested Solutions to International Anarchy Do Not Address the Problem. A *third* problem confronting the disarmament agenda is that the two interrelated roadblocks discussed above are not obviously subject to correction via the dynamics advocates generally identify as the basis for transformation, e.g., reason, human "genius," some new organizational structure, "rising powers in the non-West," "countries that embrace soft power," "action…grounded on a solid foundation of hope," or, "the normative force of the prohibition of acquiring nuclear weapons." These factors, powerful as they may be or become, are largely unrelated to the fundamental and often reasonable lack of confidence in the reliably cooperative behavior of humans and their institutions.

The supposedly powerful dynamics identified do not address the need because ignorance or a lack of reason are not the causes of international mistrust. Mistrust and fear of the prospective behavior of other nations (or an aspiring global orderer) may be fully informed and reasonable. These are the underlying reasons for insecurity and the corresponding need for national arms to deter and defend. The fundamental problem appears unlikely to yield to genius, reason, public opinion, imagination, or some new analytical or communication tools because insecurity and arms ultimately are symptoms of this much deeper cause, i.e., the suspicion and fears that flow from the combination of enduring, unfortunate patterns of human and institutional behavior, and the anarchic structure of the international system. These often compel fully informed, reasonable, even brilliant national leaderships to seek, and cling to, national power, including nuclear weapons, because nuclear deterrence *can contribute* to national security in an anarchic and conflict-laden international system.

This ongoing reality cannot be eliminated or concealed by soaring speculation about a new human consciousness, hope and courage, or by efforts to stigmatize nuclear weapons and shame nuclear states. Indeed, in the absence of a reliably cooperative or controlled world order, the more informed a leadership may be about the aggressive intentions and capabilities of powerful neighbors, the more reasonable is its likely desire to accumulate and retain power for national defense.

In short, the lack of reliable cooperation and amity often is not a matter of missing intellect or reason on the part of national leaders, but their recognition of the seemingly enduring human and structural realities that bound the behavior of all countries that prioritize survival in an anarchic system. In spite of impressive advances in technology, medicine, farming, etc.,[29] there is little, if any, apparent evidence that the root causes of international insecurity and mistrust are abating. In truth, evidence of the conflicting national interests, irreconcilable goals, and lawless behavior that drive mistrust and mutual suspicion is manifest on a daily basis.

Disarmament advocates "educating" national leaders that nuclear weapons are dangerous and lack value cannot somehow create the needed international trust and amity. Those leaders generally well understand that nuclear weapons are highly lethal and dangerous. They also understand that past and immediate history readily demonstrates to

[29] See Rothkopf, "The Case for Optimism," op. cit.

anyone paying attention that nations can be unpredictable, untrustworthy, aggressive, and violent—mistrust, suspicion and fears often are fully justified in international relations. To be sure, nuclear deterrence is only a palliative in this context, but for many leaderships facing well-armed and dangerous foes, the hope for a global orderer and nuclear disarmament does not provide a practicable alternative to deterrence on any workable timeframe.

In 2020, summarizing a lifetime of scholarly work on the subject, Professor Emeritus Colin Gray essentially repeated a prescient conclusion on the enduring need for prudent national defense efforts that he had made four decades earlier:

> To be blunt about it, the international political order just is what it is—an ultimately lawless "self-help" system. We cannot responsibly decline to pursue security because we do not like the available options. …Any rational person, one might think, should be able to design a very much more reasonable and safer global security system than we have today. I suspect that this is true but alas, entirely beside the historical point. Our current security and insecurity context is the unplanned, certainly unintended, product of centuries of political history… the best we can do is to make sensible use of our immense empirical experience. This will enable us to judge prudently what should, and what ought not be done as we strive, perhaps hopefully, to endure the darker possibilities of historical narrative.[30]

No Opposition to the Ideal, But Recognition of Seemingly Enduring Realities and the Cost of Chasing Illusions

This discussion should not be read as opposition to the ideal of a reliably cooperative world order. The existing anarchic system, dominated as it is by parochial ambitions, insecurity, mistrust, violence and corresponding competing quests for national power, works against the type of global cooperation that could help address global problems. That point, again, is self-evident.

However, it is unhelpful or worse for disarmament proponents to point to a new global orderer to mandate and enforce disarmament when the dynamics for transformation that they suggest will drive the creation of a global orderer and disarmament are vague, obscure, arcane, transcendental, and unclearly related to the root problems. Advocates typically focus on graphic descriptions of the effects of nuclear war and the need for change, perhaps rightly so. But they are effectively silent with regard to *how* the dynamics for transformation they suggest will overcome the fundamental roadblocks to the transition they advocate and render the realization of their vision *so apparent* that it can be the basis for prudent national policy planning. Pope Francis undoubtedly is correct when he observes that disarmament cannot be predicated on mutual nuclear deterrence strategies and that "true peace can only

[30] Colin S. Gray, "Foreword," in, Keith Payne, *Shadows on the Wall: Deterrence and Disarmament* (Fairfax, VA: National Institute Press, 2020), pp. xi-xii.

be built on mutual trust."[31] The remaining question is, what can the needed mutual trust be based on in an anarchic international system populated by imperfect humans and institutions? Universal governance by Madison's angels or by reliably scrupulous humans could solve the problem, but those sanguine scenarios are outside logical prediction.

In addition, nuclear disarmament advocates' frequent disparagement of deterrence and their corresponding efforts to "stigmatize" nuclear weapons threaten to undermine a tool *known* to provide limits on the prospect for nuclear aggression, at least on occasion (i.e., deterrence),[32] in pursuit of a vision unlikely to be realized in any foreseeable timeframe for fully understandable reasons. Indeed, renowned academic, Kenneth Waltz, contends that the disarmament narrative's emphasis on the horrors of nuclear war and the denigration of deterrence "has obscured the important benefits [nuclear weapons] promise to states trying to coexist in a self-help world,"[33] and that nuclear disarmament, in addition to being "fanciful," would "deny the peaceful benefits of nuclear weapons to those [states] who need them."[34]

A vision beset by seemingly insuperable roadblocks, unacknowledged potential regrets, and the complete failure to identify how to get "from here to there" is no real alternative and should not be considered the basis for rejecting the alternative known to provide a measure of limitation. Indeed, the ongoing campaign to so denounce nuclear weapons and deterrence is much more likely to have some restraining effect on Western democracies than on their authoritarian foes. This potential imbalance in the likely political effects of their advocacy may contain the seeds of future international crises and catastrophe; this serious caveat seems not to restrain such disarmament activism.

Summary and Conclusion

A century after the publication of *The Great Illusion*, Sir Norman's "great illusion" appears to have been replaced by a wholly different illusion. That new illusion is the contemporary proposition offered by many church-based and secular advocates that nuclear disarmament can replace the need for nuclear deterrence and should be the focus of national policies.

The common conclusion of these two distinct groups often is that the United States should reject both nuclear weapons and deterrence as too potentially risky and destructive. Energy and attention must be directed away from the maintenance of nuclear weapons and

---

[31] "Pope-'Pacem in Terris,' Disarmament," *National Catholic Reporter*, April 10, 2023, available at, https://www.ncronline.org/vatican/vatican-news/60th-anniversary-pacem-terris-pope-calls-disarmament.

[32] See, for example, the discussion in, Payne, *Shadows on the Wall: Deterrence and Disarmament*, pp. 30-32; see also the discussion in, Keith B. Payne and James Schlesinger, et al., *Minimum Deterrence: Examining the* Evidence (Fairfax, VA: National Institute Press, 2013), pp. 13-14.

[33] Waltz, "The Spread of Nuclear Weapons: More May be Better," *Adelphi Papers*, Number 171 (London: International Institute for Strategic Studies, 1981), available at https://www.mtholyoke.edu/acad/intrel/waltz1.htm.

[34] In Scott Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed* (New York: Norton and Co., 2003), p. 152.

deterrence, and toward the pursuit of global transformation and disarmament as the alternative to nuclear deterrence. Deterrence, if acceptable at all, is only so on an interim basis—pending the creation of a cooperative global order and orderer capable of governing a disarmament process. Even the suggestions of many church-based and secular nuclear disarmament advocates regarding the dynamics that supposedly can drive the transition to a new cooperative world order and establishment of a global orderer are similarly obscure, arcane, ambiguous, and/or transcendental.

The end of the Cold War brought widespread expectations that, somehow, international relations and human interactions had changed. President George H. W. Bush welcomed "a new world order," searched for by "a hundred generations," in which, "the rule of law supplants the rule of the jungle. A world in which nations recognize the shared responsibility for freedom and justice. A world where the strong respect the rights of the weak."[35] Nuclear disarmament was widely anticipated as this cooperative new world order replaced the constant episodes of great power warfare that had so characterized the past.

Fewer than three decades later, however, it was once again painfully obvious that the structural and behavioral conditions that underlie the reasons countries seek and need armaments, including the benefits of nuclear deterrence, are much more resilient than the naïve *Zeitgeist* that followed the end of the Cold War.

It seems that this general lesson must be relearned with every new generation. In 1954, the great American diplomat, George Kennan, pointed to the same dynamic and idealist *Zeitgeist* in his assessment of the earlier, ill-fated 1925-1935 disarmament discussions under the League of Nations:

> It had been pointed out by thoughtful people, many years before these discussions began, that armaments were a symptom rather than a cause, primarily the reflection of international relations, and only secondarily the source of them. I know of no sound reason why, even in 1925, anyone should have supposed that there was any likelihood that general disarmament could be brought about by multilateral agreement among a group of European powers whose mutual political differences and suspicions had been by no means resolved. The realities underlying the maintenance of national armaments generally were at that time no more difficult to perceive than they are today.[36]

Nuclear disarmament may, someday, be possible. But the beginning of wisdom in this regard is to understand that a manifest transformation of the global order must precede disarmament, and that some powerful dynamic that is now, at best, nebulous, will have to drive that transition. The realization of that vision would almost certainly have to wait until

---

[35] President George H. W. Bush to a joint session of Congress, quoted in, "Bush 'Out of These Troubled times…A New World Order,'" *The Washington Post*, September 12, 1990, available at, https://www.washingtonpost.com/archive/politics/1990/09/12/bush-out-of-these-troubled-times-a-new-world-order/b93b5cf1-e389-4e6a-84b0-85f71bf4c946/.

[36] George F. Kennan, *Realities of American Foreign Policy* (London: Oxford University Press, 1954), pp. 20-21.

that dynamic—whatever it may be—and resulting transition are so mature as to be fully apparent to leaders responsible for national security. The global orderer must be seen as capable of the task of mandating and enforcing disarmament *without* also itself being a potentially despotic threat. The need for this transformation is a high bar and not a trivial detail; it is the single most fundamental point. Yet, the dynamics for this transformation identified by disarmament proponents are, at best, of dubious power and effect.

To misunderstand the challenges to the realization of disarmament is to misunderstand the basic realities of international relations—that the existing anarchic international system is highly resistant to the type of structural transformation recognized by virtually all as necessary for disarmament, i.e., a cooperatively-created global orderer able to mandate and enforce disarmament. This resistance is not because national leaders typically are foolish in this regard. It is because they are responsible for national security in an often unpredictable, dangerous, and anarchic international system.

The disarmament alternative to policies of deterrence clearly is attractive. Following again in the pattern set by Sir Norman Angell in 1933, disarmament advocacy led to the 2009 and 2017 Noble Peace Prizes. As Yale professor Paul Bracken has observed, calling for the elimination of nuclear weapons, "shows that one's heart is in the right place."[37] A cooperative new world order and nuclear disarmament is a vision that clearly inspires rousing exhortations and noble-sounding sentiment. In contrast, as Oxford Professor Sir Lawrence Freedman has rightly observed, nuclear deterrence, "was never likely to inspire a popular following. Campaigners might march behind banners demanding peace and disarmament…but successful deterrence, marked by nothing much happening, is unlikely to get the pulse racing."[38]

However, a careful examination of the assumptions, evidence and logic of the proposed disarmament alternative to deterrence just as clearly demonstrates that it is unlikely to be practicable. This is *not* because leaderships reluctant to give up their national deterrents in favor of disarmament are ignorant, irrational or ignoble—and thus subject to remedial correction. It is because the anarchic structure of the international system and enduring patterns of human and state behavior combine to create roadblocks to transformation, i.e., security concerns that compel states toward the accumulation of power for national defense and survival.

Given historical experience, the prospect is very real that one or more nations would cheat on a multilateral nuclear disarmament agreement. All compliant nations would then be vulnerable to their less scrupulous foes. Consequently, a powerful global authority capable of monitoring and enforcing agreements is likely necessary for disarmament to be deemed a prudent choice. Yet, the establishment of such a global authority has consistently proven impossible given the enduring, sharp conflicts of interests among nations that often

---

[37] Paul Bracken, "Whatever Happened to Nuclear Abolition?," *The Hill*, March 19, 2019, available at https://thehill.com/opinion/national-security/434723-whatever-happened-to-nuclear-abolition.

[38] Lawrence Freedman, *Deterrence* (Malden, MA: Polity Press, 2004), p. 25.

lead to violence. How these are to end on any realistic, foreseeable time frame is the unanswered and seemingly insoluble question.

In addition, yielding sovereignty and power to the hypothetical global authority would demand that national leaders also first trust that the global authority itself would reliably act in a conscientious and pristine manner. Yet, unless all prospective leaders and agents of that global authority could be expected to shed seemingly enduring patterns of inconsistent and unscrupulous human behavior, it could immediately pose its own potential threat to its members. Rebellion and ongoing conflict would be likely.

Barring the fundamental transformation of humankind, and thus international relations, there appears to be little or no basis for trusting foes or a prospective global authority as necessary for disarmament. That trust has been absent in the past and shows no sign of emerging, and the dynamics for change identified by disarmament advocates shed no light on how to correct this seemingly enduring characteristic of international relations. It is in light of this harsh reality that leaderships now reliant on nuclear deterrence must weigh various church-based and secular proposals for disarmament. It seems unlikely that many ever will judge them to be prudent.

Some leaderships may elect to advance policies geared toward disarmament, but until a new world order emerges, or an alternative, new form of deterrence is at hand, when disarmament aspirations are incompatible with sustaining nuclear deterrence, as they inevitably must be, for many the prudent priority option almost certainly will remain deterrence. This reality is reflected in the fact that, in a rare display of unity, all permanent members of the U.N. Security Council joined in rejecting the U.N.'s Treaty on the Prohibition of Nuclear Weapons (TPNW) and, as yet, not a single state reliant on nuclear deterrence for its security has signed it, including those that have otherwise been very active in the nuclear disarmament movement. The Biden Administration emphatically rejected it with the wholly realist observation that, "The United States does not share the underlying assumption of the TPNW that the elimination of nuclear weapons can be achieved irrespective of the prevailing international security environment. Nor do we consider the TPNW to be an effective tool to resolve the underlying security conflicts that lead states to retain or seek nuclear weapons."[39]

Deterrence policies must, of course, be as safe, secure and non-provocative as possible, but disarmament as the alternative to nuclear deterrence appears implausible. Why so? Because, as Professor Kenneth Waltz concluded, "Nuclear weapons decisively change how some states provide for their own and possibly for others' security, but nuclear weapons have not altered the anarchic structure of the international political system."[40] In sharp contrast to prevalent church-based and secular calls for disarmament based on obscure dynamics and a wholly uncertain transformation of the international system, deterrence

[39] Department of Defense, *2022 Nuclear Posture Review*, October 2022, p. 19, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[40] Kenneth N. Waltz, "Structural Realism after the Cold War," *International Security*, Vol. 25, No. 1 (Summer 2000), p. 5.

policies have a demonstrated measure of effectiveness for preventing war and its escalation in the existing anarchic environment.

Deterrence is only a palliative with inherent risks and the possibility of failure; a practicable, safer alternative to nuclear deterrence would be a great and unalloyed good. However, achieving global disarmament is not about convincing an intelligentsia that is not responsible for its nation's security; that appears to be easy. The requirement is for a fundamental, global transformation in human patterns of thinking and international behavior. That is not a plausible alternative on any foreseeable time frame pertinent to policy planning for national leaderships.

This conclusion that the vision of a cooperative world order and nuclear disarmament is an illusion for planning purposes does not reflect any lack of appreciation for that vision. It does, however, reflect deep skepticism regarding its plausibility as envisaged, and thus comparable skepticism about the prudence of U.S. policies that would prioritize that vision over sustaining deterrence. For those leaders responsible for national survival and reliant on deterrence, moving to replace it with a vague and seemingly unattainable alternative, understandably and rightly, is unlikely to be judged a prudent policy choice.

The resilience of this truth and its significance for recurring hopes for a new world order and disarmament seemingly must be relearned by every new generation—at least in Western democracies. This need is illustrated by George Kennan's observation (quoted above) regarding the ill-fated disarmament conferences of the 1920s and 1930s, Sir Norman Angell's even earlier frustrated expectations, and the successive failures of the League of Nations and United Nations to meet expectations. Unfortunately, the elegance of disarmament advocacy and the unarguable beauty of the goal do not put it within reach, and there is nothing commendable about chasing an illusion or the cost of doing so. President John Adam's well-known observation fully applies here: "Facts are stubborn things; and whatever may be our wishes, our inclinations, or the dictates of our passions, they cannot alter the state of facts and evidence…"

Keith B. Payne is a co-founder of the National Institute for Public Policy, Professor Emeritus at the Graduate School of Defense and Strategic Studies, Missouri State University, a former Deputy Assistant Secretary of Defense and former Senior Advisor to the Office of the Secretary of Defense.

ANALYSIS

THE USE OF ECONOMIC TOOLS TO DETER CHINESE MILITARY AGGRESSION AGAINST TAIWAN*

David J. Trachtenberg

Introduction

In the wake of Russia's brutal aggression against Ukraine, much commentary has focused on the lessons China is drawing from the conflict and how best to deter Beijing from seeking to resolve the Taiwan issue by military force. This can only be done by convincing China that the risks and costs of military action against Taiwan would exceed the costs and risks of enduring the continuation of the status quo on Taiwan.

Given the lack of a formal U.S. defense relationship with Taiwan, deterring Chinese military aggression against Taiwan is a daunting task, especially in light of China's military buildup in conventional and nuclear forces, the Chinese leadership's declared goal of integrating Taiwan with the mainland by 2049, and Chinese threats—including nuclear threats—against states that stand in Beijing's way. An effective victory denial deterrence policy requires an integrated strategy, involving all elements of state power. This includes using economic tools, as appropriate, in a measured and deliberate manner to convey to Chinese authorities that any use of force against Taiwan will carry consequences beyond potential military responses, which—when taken together—will outweigh any conceivable benefit China hopes to achieve. Economic prosperity is one of the imperatives for the Chinese Communist Party (CCP) to maintain legitimacy. Therefore, economic tools can be valuable elements of an integrated approach that helps to restore America's dominant position in the bilateral relationship and, in so doing, strengthen deterrence.

The United States has a plethora of economic, financial, trade, and investment tools, including the use of sanctions, that can be used to apply pressure in those areas where China's economy is vulnerable and to penalize China for aggressive behavior. Often, the United States employs these tools in a reactive manner—in other words, after actions are taken that the United States sought to prevent. However, transitioning from a reactive to a proactive approach could yield important deterrence benefits, clearly communicating U.S. intentions in advance and imposing economic penalties on Beijing before China engages in aggression, rather than after the fact.[1]

---

* This article is excerpted and adapted from a 2022 National Institute study entitled, "Deterring China in the Taiwan Strait," published in the *Journal of Policy & Strategy*, Vol. 2, No. 2, available at https://nipp.org/wp-content/uploads/2022/05/Special-Issue-final.pdf, and an *Occasional Paper* entitled, *Deterring China in the Taiwan Strait: Potential Economic Tools for a Victory Denial Strategy*, published in December 2022 and available at https://nipp.org/papers/deterring-china-in-the-taiwan-strait-potential-economic-tools-for-a-victory-denial-strategy/.

[1] Russia's invasion of Ukraine sparked a debate over the utility of preemptive sanctions as a deterrent, with some arguing that the imposition of sanctions before the invasion could have prevented Russian aggression and the Biden Administration arguing that imposing sanctions preemptively could prompt Russia to invade. As Pentagon press secretary John Kirby stated, "If it's a deterrent and you use it before the aggression is made or the transgression is made,

The Impact of Sanctions

The utility of sanctions as a tool to deter or punish unwanted behavior remains controversial. While the imposition of sanctions against Russia has had some effect, the threat of sanctions did not prevent Russian President Putin from invading Ukraine, nor did their imposition impose costs on the Russian economy sufficient to compel Putin to withdraw. Unlike Russia, China's economy is stronger and more resilient. Consequently, for sanctions to have a biting effect on China's decision making, they would probably need to be in effect for a prolonged period of time, most likely years. This could lead to "sanctions fatigue" among the United States and its partners and a desire to avoid extensive economic disruptions by abandoning sanctions before they have full effect. However, China's leaders must be convinced of U.S. seriousness and must not perceive sanctions to be a transitory phenomenon that will be reassessed, eased, or lifted by subsequent U.S. administrations. If the Chinese believe they face an indefinitely long sanctions campaign, where the United States can adjust the supply chain away from China, China's leaders will need to weigh the long-term impacts to China's economic growth and prosperity. This may be difficult given the ease of sanctions waivers and Chinese perceptions of the United States as unwilling to absorb significant economic hardship over the long term.

Recognizing its potential vulnerabilities, China has made moves to insulate its economy from possible Western penalties. For example, China recognizes its dependency on the U.S. dollar and is attempting to overcome that by internationalizing the yuan, or Renminbi (RMB), China's official currency. China is also seeking to use digital currency to decouple its economy from the U.S. dollar, potentially giving China the ability to mitigate the impact of economic sanctions.[2] As one analysis noted, "the long-term potential of the digital yuan will be its ability to subvert the power of the American dollar by enabling countries sanctioned by the United States, such as Iran, North Korea and possibly Afghanistan, to conduct greater business with China."[3] However, China's digital currency will still depend on China's real economy, meaning the digital currency will still be just as weak as the Chinese RMB. As one analyst has argued, "the current low status of the RMB means that even a digitised version will find it difficult to budge the power of the mighty US greenback."[4] In addition, because

---

then you lose your deterrent effect. If you punish somebody for something that they haven't done yet, then they might as well just go ahead and do it." See Ronn Blitzer, "Pentagon spox says threat of Russia sanctions has 'deterrent effect', but admits invasion may be 'days away'," *Fox News*, February 13, 2022, available at https://www.foxnews.com/politics/pentagon-spox-kirby-us-not-considering-sanctions-against-russia. Some Members of Congress, however, challenged this view. For example, Rep. Mike Waltz (R-FL) argued that "promising tough action... after an invasion will do very little" to deter aggression. See "US lawmakers urge pre-emptive sanctions, Ukraine arms to deter Putin," *Agence France-Presse*, December 15, 2021, available at https://www.france24.com/en/live-news/20211214-us-lawmakers-urge-pre-emptive-sanctions-ukraine-arms-to-deter-putin.

[2] Alex J. Rouhandeh, "China Could Curb Reliance on U.S. Dollar, Avoid Sanctions Through Digital Currency Apps," *Newsweek*, January 5, 2022, available at https://www.newsweek.com/china-could-curb-reliance-us-dollar-avoid-sanctions-through-digital-currency-apps-1666116.

[3] Evan Freidin, "China's digital currency takes shape," *The Interpreter*, September 8, 2021, available at https://www.lowyinstitute.org/the-interpreter/china-s-digital-currency-takes-shape.

[4] Ibid.

the Chinese own so many assets in the United States, the United States still has credible options to impose hardship on the Chinese economy, despite the potential for Chinese retaliation.

The effect of sanctions on China's financial sector can also be increased through the imposition of so-called secondary sanctions. This involves imposing penalties not only on Chinese companies but on domestic and foreign entities that do business with China. However, the United States should be prepared for a negative international reaction if it embarks on a unilateral sanctions campaign. Secondary sanctions often affect many parties, and therefore may be seen by some as counterproductive if other countries that trade and do business with China, including U.S. allies and strategic partners, find their own economic health and prosperity at risk as a result of U.S. actions. This risk may be mitigated, however, by a U.S. policy that encourages greater trade and economic ties with other countries that currently have strong economic ties with China.

Unilateral Versus Multilateral Approaches

The use of economic tools to impose costs on China (or any opponent for that matter) can have significant consequences. Those consequences can be enhanced if economic tools like sanctions are applied multilaterally rather than unilaterally. This can also mitigate the potentially negative effects on other countries of secondary sanctions. However, the United States would need to coordinate actions with its strategic partners, with the level of coordination dependent on the scope of the sanctions. Achieving concurrence among Asian allies and strategic partners on a strong approach to sanctioning China is complicated by regional political and economic dynamics. Nevertheless, although the United States has the ability to implement sweeping sanctions on China unilaterally, the effect of sanctions will be magnified if more U.S. allies and partners join in this approach.

Although a multilateral approach to sanctions would be useful, unilateral sanctions imposed on China by the United States could be just as useful, if properly applied. China relies heavily on exports to the United States, and this dependency on the U.S. market should be leveraged as part of a coordinated strategy to restore American dominance and bolster deterrence.

The imposition of preemptive sanctions may lead China to retaliate against U.S. companies. For many U.S. technology companies, for example, the Chinese market is seen as irreplaceable. As the U.S.-China Economic and Security Review Commission concluded, "Despite ongoing political frictions and concerns about discriminatory treatment, many U.S. companies remain committed to the Chinese market."[5] Indeed, one estimate concludes that the level of U.S. investment in China likely exceeds $1 trillion.[6] Consequently, alternative

[5] *2021 Report to Congress of the U.S.-China Economic and Security Review Commission* (Washington, D.C.: U.S. Government Publishing Office, 2021, p. 120, available at https://www.uscc.gov/sites/default/files/2021-11/2021_Annual_Report_to_Congress.pdf.

[6] Derek Scissors, "American Funding of China Is Becoming Dangerous," American Enterprise Institute, December 2020, available at https://www.aei.org/research-products/report/american-funding-of-china-is-becoming-dangerous/.

approaches must be developed to satisfy U.S. importers and manufacturers so that the impact on U.S. industries from the loss of the Chinese market can be minimized to the greatest extent possible. However, should deterrence fail and China take military action against Taiwan, it should be expected that Beijing will seek to prevent or counter any U.S. response through a variety of actions, including taking actions to minimize its own economic vulnerabilities and denying the United States the option to use those tools in the long run and imposing costs on the U.S. economy by targeting U.S. companies that have strong economic ties to China. Therefore, the U.S. government—as part of an integrated strategy—should work with private sector entities in the United States and American companies operating abroad to mitigate in advance the impact of any Chinese retaliatory actions directed against U.S. economic interests. Doing so can help insulate the U.S. economy from the potential negative consequences of a Chinese reaction and, by minimizing U.S. economic vulnerabilities, can help strengthen the credibility of overall U.S. deterrent threats.

To have maximum deterrent effect, a sanctions campaign against China must target what the Chinese value. This may not be limited solely to traditional economic, financial, or trade entities but may also include key portions of the China's war-making enterprise, including China's nuclear, missile, space, cyber, and biotechnology sectors. Although the vulnerability of China's defense sector to outside pressure varies, such a comprehensive approach not only would demonstrate seriousness on the part of the United States but may be perceived by China as a more credible deterrent threat than military threats, particularly if sanctions are iron-clad, with no exemptions or waiver provisions.

Finance, investment, regulation, and trade are all areas where U.S. policies can be enacted in ways that degrade China's ability to attain its foreign policy goals and objectives. Trade and investment can be powerful near-term tools. The United States can limit U.S. investment in Chinese firms either through executive action or legislative mandate.

For example, in 2020, President Trump signed an Executive Order prohibiting U.S. investors from buying stock in dozens of Chinese companies that "directly support the

PRC's military, intelligence, and security apparatuses and aid in their development and modernization."[7] The Biden Administration expanded the list of Chinese entities and reportedly is considering additional restrictions on U.S. investments in China's technology sector, to include "high-end Chinese technologies that threaten U.S. national security," such as the cyber, 5G, quantum computing, and artificial intelligence sectors.[8]

---

[7] Executive Order 13959 of November 12, 2020, "Addressing the Threat From Securities Investments That Finance Communist Chinese Military Companies," available at https://www.govinfo.gov/content/pkg/CFR-2021-title3-vol1/pdf/CFR-2021-title3-vol1-eo13959.pdf. Also see Geoffrey Seavey, "Ban to US investments in firms linked to Chinese military," Mercer, (undated), available at https://www.mercer.com/our-thinking/wealth/ban-to-us-investments-in-firms-linked-to-chinese-military.html.

[8] Gavin Bade, "Key lawmaker: Biden mulling broad prohibitions on U.S. investments in Chinese tech," *Politico*, January 27, 2023, available at https://www.politico.com/news/2023/01/27/biden-mulling-broad-prohibitions-investments-chinese-tech-00079995. See also Nancy Marshall-Genzer, "Why the U.S. wants more limits on Americans' private investment in Chinese firms," Marketplace, February 28, 2023, available at https://www.marketplace.org/2023/02/28/us-wants-more-limits-on-private-investment-in-chinese-firms/.

China's financial stability is heavily dependent on foreign investment, which is a vulnerability that can be exploited by cultivating alternatives to the Chinese market. One area to consider is Chinese intrusion into the European automobile manufacturing industry. China owns significant portions of automobile companies such as Daimler-Benz (20 percent)[9] and is seeking to dominate the electric car sector. In fact, Mercedes-Benz has made China its "second home," has opened a major automotive technology and engineering center in Beijing, and has moved its design studio to Shanghai.[10] U.S. automotive companies have also invested in China, with Tesla opening a showroom in Urumqi, the capital of Xinjiang—where China has been conducting a campaign of persecution and genocide against the ethnic Uighur population.[11]

China's efforts to attract foreign investment as a means to accelerate its own economic growth can be countered through a sanctions strategy that provides disincentives for Western companies to invest in the Chinese market while offering prudent alternatives that cause greater economic discomfort to China than to Western companies. Canada, in particular, has sought to bolster its economic ties with Taiwan, with the country's International Trade Minister calling the island "a key trade and investment partner as Canada broadens its trade links and deepens its economic partnerships in the Indo-Pacific region."[12] Canadian Prime Minister Justin Trudeau accused China of "very cleverly playing us off each other in an open market competitive way," saying that China has sought to "play the angles and divide us, one against the other."[13] Bolstering trade ties with Taiwan would also send an important political message to China.[14]

China is still dependent on overseas sources for metals and fuel. The oil industry is another area where sanctions can prove effective in imposing significant costs on China's economy. Chinese industry relies on substantial imports of foreign oil and China has become the world's biggest importer of crude oil, importing more than 10 million barrels of oil per

---

[9] "Chinese carmakers may soon own a fifth of Daimler," *The Economist*, December 21, 2019, available at https://www.economist.com/business/2019/12/18/chinese-carmakers-may-soon-own-a-fifth-of-daimler.

[10] Norihiko Shirouzu, "Home from home: Mercedes-Benz doubles down on China," *Reuters*, October 11, 2021, available at https://www.reuters.com/business/autos-transportation/home-home-mercedes-benz-doubles-down-china-2021-10-10/.

[11] Liza Lin, "Tesla Opens Showroom in China's Xinjiang, Region at Center of U.S. Genocide Allegations," *The Wall Street Journal*, January 4, 2022, available at https://www.wsj.com/articles/tesla-opens-showroom-in-chinas-xinjiang-region-at-center-of-u-s-genocide-allegations-11641214630?mod=hp_lead_pos4&eType=EmailBlastContent&eId=97a41203-73d6-41f3-8094-ec5249c1a164. (paywall)

[12] Statement of International Trade Minister Mary Ng, cited in Star Editorial Board, "With Taiwan talks, Ottawa is finally pushing back against Beijing," *Toronto Star*, January 11, 2022, available at https://www.thestar.com/opinion/editorials/2022/01/11/with-taiwan-talks-ottawa-is-finally-pushing-back-against-beijing.html.

[13] Rachel Gilmore, "Canada working on new China strategy, Joly says as PM calls out Beijing's 'coercive diplomacy'," *Global News*, January 9, 2022, available at https://globalnews.ca/news/8496485/china-strategy-canada-joly-trudeau-beijing-coercive-diplomacy/.

[14] Kathleen C. Bailey, *Maintaining Taiwan's Democracy, Information Series No. 479* (Fairfax, VA: National Institute Press, February 11, 2021), available at https://nipp.org/wp-content/uploads/2021/03/IS-479.pdf.

day in 2019.[15] Most of China's oil imports—some 55 percent—come from the Organization of Petroleum Exporting Countries (OPEC) member countries, with Russia as the largest non-OPEC supplier, supplying roughly 15 percent of China's oil imports.[16] However, targeted sanctions against the Chinese oil industry, along with secondary sanctions that impose costs on supplier states, including Russia, may have economic consequences for China that could affect Beijing's deterrence calculus.

The Semiconductor Challenge

Because the United States currently relies heavily on semiconductor imports from China, and the imposition of strong sanctions would cause a major disruption to the semiconductor market, China may not take this potential U.S. threat seriously and may believe that China has greater retaliatory power over semiconductor imports from the United States. If China restricts semiconductor exports to the United States it would likely impact U.S. industry negatively. Moreover, a number of U.S. companies have reportedly been investing in China's semiconductor industry. A recent analysis indicates that "U.S. venture-capital firms, chip-industry giants and other private investors participated in 58 investment deals in China's semiconductor industry from 2017 through 2020, more than double the number from the prior four years."[17]

Working to stem the flow of U.S. investment in China could lead to retaliatory action by Beijing that may be directed against other U.S. technology sectors, as well as financial institutions that have assets in China. In fact, the Biden Administration recently imposed greater restrictions on the export of semiconductor technology to China, leading China to assert that, "It will not only damage the legitimate rights and interests of Chinese companies but also affect American companies' interests."[18] In addition, the CHIPS and Science Act of 2022 is intended to "boost American semiconductor research, development, and production, ensuring U.S. leadership in the technology that forms the foundation of everything from automobiles to household appliances to defense systems."[19] And in January 2023, the United States, Japan, and the Netherlands jointly agreed to limit the export to China of certain chip

[15] Jeff Barron, "China's crude oil imports surpassed 10 million barrels per day in 2019," U.S. Energy Information Administration, March 23, 2020, available at https://www.eia.gov/todayinenergy/detail.php?id=43216.

[16] Ibid.

[17] Kate O'Keeffe, Heather Somerville and Yang Jie, "U.S. Companies Aid China's Bid for Chip Dominance Despite Security Concerns," *The Wall Street Journal*, November 12, 2021, available at https://www.wsj.com/articles/u-s-firms-aid-chinas-bid-for-chip-dominance-despite-security-concerns-11636718400.

[18] Christopher Hutton, "China bashes Biden crackdown on chip tech exports as economic rivalry intensifies," Washington Examiner, October 10, 2022, available at https://www.washingtonexaminer.com/policy/foreign/china-slams-new-biden-chip-export-restrictions.

[19] The White House, "FACT SHEET: CHIPS and Science Act Will Lower Costs, Create Jobs, Strengthen Supply Chains, and Counter China," August 9, 2022, available at https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/09/fact-sheet-chips-and-science-act-will-lower-costs-create-jobs-strengthen-supply-chains-and-counter-china/.

manufacturing equipment.[20] However, Taiwan is also a lead manufacturer of semiconductor chips, producing more than 60 percent of the world's supply compared to only 16 percent supplied by China,[21] and expanded trade with Taiwan in this area could mitigate supply chain issues resulting from the loss of the Chinese chip market. As one analyst noted, "Democracy coupled with chips is a winning formula in Europe."[22] Moreover, Taiwan's largest semiconductor chip manufacturer, TSMC, which reportedly manufactures roughly half of the semiconductors in the world today and approximately 90 percent of the most advanced chips,[23] signed a deal to begin manufacturing advanced 5-nanometer chips in 2024 at a new $12 billion plant being built in Phoenix, Arizona.[24] In December 2021, the United States and Taiwan agreed to work together to "strengthen critical supply chains," including semiconductor supply chains.[25] As a U.S. defense official noted, "Indeed, our economy—like many others around the world—has come to count on Taiwan as a critical supplier of high-technology, including semiconductors."[26] Therefore, a Chinese takeover of Taiwan could have significant consequences for the United States.

The relationship between Taiwan's semiconductor industry and foreign economies has been referred to as a "silicon shield" that will help deter Chinese aggression against the island.[27] As TSMC's chairman Mark Liu stated, "the world all needs Taiwan's high-tech industry support. So, they will not let the war happen in this region because it goes against

---

[20] Jing Zhang, Tamer A. Soliman, Paulette Vander Schueren, Jennifer L. Parry, Ellen L. Aldin, and Dr. Dylan Geraets, "Japan and the Netherlands Agree to New Restrictions on Exports of Chip-Making Equipment to China," Mayer Brown, February 28, 2023, available at https://www.mayerbrown.com/en/perspectives-events/publications/2023/02/japan-and-the-netherlands-agree-to-new-restrictions-on-exports-of-chipmaking-equipment-to-china#:~:text=In%20a%20January%2027th%20meeting,China's%20access%20to%20advanced%20technologies.

[21] Caitlin McFall, "China could win 'trump card' over global economy by taking over Taiwan semiconductor manufacturing," *Fox News*, December 3, 2021, available at https://www.foxnews.com/politics/china-taiwan-semiconductor-manufacturing.

[22] Qin and Erlanger, op. cit.

[23] Charlie Campbell, "Inside the Taiwan Firm That Makes the World's Tech Run," *Time*, October 1, 2021, available at https://time.com/6102879/semiconductor-chip-shortage-tsmc/.

[24] See Katie Schoolov, "Inside TSMC, the Taiwanese chipmaking giant that's building a new plant in Phoenix," CNBC, October 16, 2021, available at https://www.cnbc.com/2021/10/16/tsmc-taiwanese-chipmaker-ramping-production-to-end-chip-shortage.html. Also see Yen Nee Lee, "2 charts show how much the world depends on Taiwan for semiconductors," *CNBC*, March 15, 2021, available at https://www.cnbc.com/2021/03/16/2-charts-show-how-much-the-world-depends-on-taiwan-for-semiconductors.html, and Caitlan McFall, op. cit.

[25] Department of Commerce Press Release, "Secretary of Commerce Gina M. Raimondo holds introductory call with the Taiwan Minister of Economic Affairs Mei-hua Wang," December 6, 2021, available at https://www.commerce.gov/news/press-releases/2021/12/secretary-commerce-gina-m-raimondo-holds-introductory-call-taiwan.

[26] Huileng Tan, "Taiwan, the world's biggest chip-maker, just set up a new trade framework with the US amid tensions with China," *Business Insider*, December 9, 2021, available at https://www.businessinsider.com/taiwan-sets-up-trade-framework-with-united-states-chip-maker-2021-12.

[27] The term "silicon shield" is first attributed to Craig Addison, who wrote in 2000 that Taiwan's growth in fueling the world's digital economy would be "a deterrent against possible Chinese aggression." See Joyce Huang, "Can Taiwan's Silicon Shield Protect It against China's Aggression?," Voice of America, May 10, 2021, available at https://www.voanews.com/a/east-asia-pacific_can-taiwans-silicon-shield-protect-it-against-chinas-aggression/6205660.html.

interest of every country in the world."[28] China itself relies heavily on semiconductor chips produced by TSMC and, despite efforts to increase domestic production, less than 6 percent of semiconductor chips used in China in 2020 were manufactured domestically.[29] Moreover, since 2005, China has imported more semiconductor chips that any country in the world and, according to its own data, spent more in 2020 on the importation of chips than on oil.[30] Hence, a Chinese desire to control the supply of Taiwanese chips—as well as to deny them to the West—could make an invasion scenario appear attractive to the Chinese leadership. This risk may be heightened due to a decline in the number of chips imported by China in early 2023 as a result of U.S. sanctions. According to Chinese customs data, the volume of Chinese chip imports declined by 27 percent in January and February of this year and the total value of these imports declined by more than 30 percent.[31] As part of a cost-imposition strategy to deter Chinese aggression against the island, Taiwan could threaten to destroy its own TSMC facilities if China attacks Taiwan, essentially immobilizing China's high-tech industries as part of what some analysts have referred to as a "broken nest" approach that would impose severe, long-term economic costs on China.[32]

Imposing Costs on China While Hedging Against Retaliatory Actions

While it is true that China is likely to retaliate against any U.S. penalties that negatively impact its economic development and growth, China still has significant dependencies on the United States. In addition, China's economic growth—once seen as a juggernaut of success—has been slowing, and its official Gross Domestic Product (GDP) has been in decline since 2007.[33] One recent analysis has highlighted China's economic vulnerabilities, including its significant debt burden.[34] Other analyses have cited the problems with Evergrande—a major

[28] Ibid.

[29] Wei Sheng, "China made 6% of chips it used in 2020: report," *TechNode*, February 19, 2021, available at https://technode.com/2021/02/19/china-made-6-of-chips-it-used-in-2020-report/.

[30] Wei Sheng, "China spends more importing semiconductors than oil," *TechNode*, April 29, 2021, available at https://technode.com/2021/04/29/china-spends-more-importing-semiconductors-than-oil/.

[31] Ann Cao, "Tech war: China's chip imports slump 27 per cent in the first 2 months of 2023 as US sanctions bite," *South China Morning Post*, March 7, 2023, available at https://www.scmp.com/tech/big-tech/article/3212677/tech-war-chinas-chip-imports-slump-27-cent-first-two-months-2023-us-sanctions-bite.

[32] Jared M. McKinney and Peter Harris, "Broken Nest: Deterring China from Invading Taiwan," *Parameters*, vol. 51, no. 4 (Winter 2021-22), pp. 30-31, available at https://press.armywarcollege.edu/cgi/viewcontent.cgi?article=3086&context=parameters. Former U.S. National Security Advisor Robert O'Brien has suggested that the United States and its allies might destroy Taiwan's chip-making facilities in the event of a Chinese invasion of the island, stating, "The United States and its allies are never going to let those factories fall into Chinese hands." If China got control of TSMC, he stated, "they'd be the new OPEC of silicon chips and control the world economy." See Robert O'Brien interview with Steve Clemons of Semafore, posted at https://twitter.com/SCClemons/status/1635310566884376576?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Etweet.

[33] Derek Scissors, "Chinas Growth Spurt Ends. What's Next?," American Enterprise Institute, November 2021, available at https://www.aei.org/research-products/report/chinas-growth-spurt-ends-whats-next/.

[34] Ibid.

Chinese real estate developer that has been declared in default and is facing collapse under a crushing debt of $300 billion—as indicative of larger economic challenges.[35] These problems may make economic pressure on China much more effective and useful as a deterrent. Although China may seek to insulate itself from similar downward economic trends in the future, exploiting China's vulnerability here might help shift China's focus away from Taiwan.

China's economic weaknesses reportedly have been exacerbated by the policies implemented by Xi Jinping. Though not a universally shared view, one analyst has noted, "an economic meltdown is a potential threat to the implicit social compact in China between authoritarian rulers and a quiescent population."[36]

Assessing China's Economic Resilience

Despite the economic difficulties China faces, Beijing is making extensive efforts to insulate the country's domestic economy from the potentially negative effects of sanctions and penalties that could disrupt China's supply of needed foreign goods. From foodstuffs to technology to energy production, China is seeking to become more self-sufficient and less dependent on foreign sources of supply. As President Xi reportedly stated, "The Chinese people's rice bowl must be firmly held in their own hands at all times, and the rice bowl must mainly contain Chinese grain."[37] More recently, Xi reiterated this sentiment, telling the National People's Congress, "China should work to achieve greater self-reliance and strength in science and technology, promote industrial transformation."[38] Nevertheless, despite China's extensive moves to decouple its economy from the West, there are indications that China's efforts are falling short. As one analysis suggested, "China is likely to be the biggest loser from the technological and economic decoupling under way" between it and the United States. In half a dozen critical areas—including mRNA vaccines, semiconductors, civil

[35] See, for example, Weizhen Tan, "China's embattled developer Evergrande is on the brink of default. Here's why it matters," *CNBC*, September 16, 2021, available at https://www.cnbc.com/2021/09/17/china-developer-evergrande-debt-crisis-bond-default-and-investor-risks.html. Also see Andrew Galbraith and Clare Jim, "Evergrande teeters on edge of default as $148 mln payment falls due," *Reuters*, November 10, 2021, available at https://www.reuters.com/business/investors-await-evergrandes-overdue-148-mln-payment-amid-contagion-fears-2021-11-09/; Alexandra Stevenson and Cao Li, "China Evergrande Defaults on Its Debt. Now What?," *The New York Times*, December 9, 2021, available at https://www.nytimes.com/2021/12/09/business/china-evergrande-default.html.

[36] Thomas J. Duesterberg, "The Slow Meltdown of the Chinese Economy," *The Wall Street Journal*, December 20, 2021, available at https://www.wsj.com/articles/slow-meltdown-of-china-economy-evergrande-property-market-collapse-downturn-xi-cewc-11640032283. (paywall)

[37] Lingling Wei, "China Looks to Secure Supplies as Strains With U.S. and Its Allies Grow," The Wall Street Journal, January 13, 2022, available at https://www.wsj.com/articles/china-looks-to-secure-supplies-as-strains-with-u-s-and-its-allies-grow-11642075381. (paywall)

[38] CK Tan, "Xi urges China to advance tech self-reliance, Taiwan unification," *Nikkei Asia*, March 13, 2023, available at https://asia.nikkei.com/Politics/China-People-s-Congress/Xi-urges-China-to-advance-tech-self-reliance-Taiwan-unification.

aerospace, computer operating systems, agrochemicals, and payments networks—"self-reliance is some way off."[39]

China may be able to retaliate against American economic pressure, but in ways that would be detrimental to China as well. Although retaliatory actions by China would not cause devastating or permanent economic damage to the United States, a sound U.S. economic strategy would nevertheless seek to cushion the impact of such retaliatory measures and act as a buffer by encouraging the development of alternate supply chains that reduce dependence on Chinese sources.[40]

China is involved in numerous supply chains beyond the semiconductor industry that affect U.S. companies and the American consumer. China is now the dominant supplier of solar panels and is looking to duplicate its success in the clean hydrogen energy market.[41] Another area is lithium, and China is the world's largest producer of lithium batteries, which are key components in electric vehicles. As sales of electric vehicles increase due to a growing desire to transition from fossil fuels, as well as U.S. and European policies that seek to increase the use of electric vehicles,[42] China occupies an advantageous position as the world's main supplier of relatively low-cost lithium batteries.[43] However, Australia, Chile,

---

[39] "China wants to insulate itself against Western sanctions," *The Economist*, February 26, 2022, available at https://www.economist.com/business/china-wants-to-insulate-itself-against-western-sanctions/21807805?giftId=d6059b83-4163-4186-a290-0a572855ab94. (paywall)

[40] One expert has noted that "Beijing derives so much leverage from this dependency, which in some case borders on addiction, that supply chain diversification, selective de-coupling, and a consistent demand for real reciprocity in market access must become a clarion call." See Heino Klinck, Deterring The Dragon – What China's Neighbors Can Do To Hem In Its Adventurism And Aggression," *MEMRI*, January 12, 2022, available at https://www.memri.org/reports/deterring-dragon-%E2%80%93-what-chinas-neighbors-can-do-hem-its-adventurism-and-aggression. Nevertheless, the Biden Administration has rejected calls to decouple the U.S. economy from China. For example, Treasury Secretary Janet Yellen stated that the United States is not seeking to stifle China's economic progress or to decouple America's economy from China's and that doing so would be "disastrous for both countries" and "destabilizing for the rest of the world." See "U.S. Doesn't Want to Decouple from China but Will Still Pursue Friendshoring, Yellen Says," Sandler, Travis & Rosenberg *Trade Report*, April 26, 2023, available at https://www.strtrade.com/trade-news-resources/str-trade-report/trade-report/april/u-s-doesn-t-want-to-decouple-from-china-but-will-still-pursue-friendshoring-yellen-says. In addition, U.S. National Security Advisor Jake Sullivan has declared that "we are for de-risking and diversifying, not decoupling." See The White House, "Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership at the Brookings Institution," April 27, 2023, available at https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/04/27/remarks-by-national-security-advisor-jake-sullivan-on-renewing-american-economic-leadership-at-the-brookings-institution/. Also see Christina Lu, "Washington Doesn't Want You to Call It Decoupling," *Foreign Policy*, April 27, 2023, available at https://foreignpolicy.com/2023/04/27/us-china-economy-technology-sullivan-yellen/.

[41] "China's Solar Giants Make a Bid to Dominate Hydrogen Power," *Bloomberg News*, December 12, 2021, available at https://www.bloomberg.com/news/articles/2021-12-12/china-s-solar-giants-make-a-bid-to-dominate-hydrogen-power.

[42] For example, President Biden has stated that "we have hundreds — we have thousands and thousands of vehicles in the federal fleet. They're going to all go electric — all of them — down the road, supporting electric transit systems, electric school buses." See Blog Post, "2021 Congressional Activity & Anticipated 2022 Action," *Amentum*, December 7, 2021, available at https://www.amentum.com/blog/2021-congressional-activity-anticipated-2022-action/. Also see The White House, "FACT SHEET: The Biden-Harris Electric Vehicle Charging Action Plan," December 13, 2021, available at https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/13/fact-sheet-the-biden-harris-electric-vehicle-charging-action-plan/.

[43] Amrith Ramkumar, "Lithium prices soar, turbocharged by electric-vehicle demand and scant supply," *The Wall Street Journal*, December 13, 2021, available at https://www.wsj.com/articles/lithium-prices-soar-turbocharged-by-electric-

and Argentina are the world's largest suppliers of lithium[44] and restricting the supply of lithium to China could provide useful leverage as part of an overall economic strategy to bolster deterrence, although Chinese economic investment in Australia and South America could complicate this strategy.[45]

In addition, China has a near-monopoly in rare earth minerals such as dysprosium and neodymium, which are key components of electric vehicle motors.[46] Rare earth minerals are also critical elements in consumer electronics like smartphones as well as military equipment, including missile defense systems.[47] In February 2021, the Biden Administration issued an Executive Order requiring the Secretary of Defense to report on supply chain risks for rare earth elements and how to mitigate them.[48] The report was submitted in February 2022 and notes that "For those supply chains that are critical for national defense, the U.S. is committed to ensuring reliable production access within the defense industrial base, both domestic and allied."[49] A White House report in June 2021 noted that China's policies, including massive subsidies to producers, have created "a distorted supply chain landscape" and noted, "Given the similar history of Chinese non-market intervention in the solar and rare earth industries… there is cause for concern that, without a proactive response from the United States, this growing field will face those same challenges."[50] Consequently, the report recommended that the United States "increase the resilience of strategic and critical material supply chains."[51] China has hinted that it may retaliate if the United States takes

vehicle-demand-and-scant-supply-11639334956?reflink=share_mobilewebshare (paywall) and https://www.foxbusiness.com/markets/lithium-prices-soar-turbocharged-by-electric-vehicle-demand-and-scant-supply.

[44] Emmanuel Latham and Ben Kilbey, "Lithium supply is set to triple by 2025. Will it be enough?," S&P Global, October 24, 2019, available at https://www.spglobal.com/en/research-insights/articles/lithium-supply-is-set-to-triple-by-2025-will-it-be-enough.

[45] For example, China operates a lithium plant in western Australia and China's Tianqi Lithium Corporation recently recorded record quarterly profits as a result of high lithium prices. See "China's Tianqi Lithium posts best profit in almost 3 yrs," *Reuters*, October 29, 2021, available at https://www.reuters.com/world/china/chinas-tianqi-lithium-posts-best-profit-almost-3-yrs-2021-10-29/. Also see Ibid. Chinese companies have also invested approximately $4.5 billion in lithium ventures in Mexico and South America over the past three years. See Clifford Krauss, "Green-Energy Race Draws an American Underdog to Bolivia's Lithium," *The New York Times*, December 16, 2021, available at https://www.nytimes.com/2021/12/16/business/energy-environment/bolivia-lithium-electric-cars.html.

[46] Robert Bryce, "The Electric-Vehicle Push Empowers China," The Wall Street Journal, December 23, 2021, available at https://www.wsj.com/articles/the-electric-vehicle-push-empowers-china-rare-earths-mining-motors-rivals-11640290395. (paywall)

[47] Keith Zhai, "China Set to Create New State-Owned Rare-Earths Giant," The Wall Street Journal, December 3, 2021, available at https://www.wsj.com/articles/china-set-to-create-new-state-owned-rare-earths-giant-11638545586. (paywall)

[48] The White House, "Executive Order on America's Supply Chains," February 24, 2021, available at https://www.whitehouse.gov/briefing-room/presidential-actions/2021/02/24/executive-order-on-americas-supply-chains/.

[49] Department of Defense, *Securing Defense-Critical Supply Chains: An action plan developed in response to President Biden's Executive Order 14017*, February 2022, p. 3, available at https://media.defense.gov/2022/Feb/24/2002944158/-1/-1/1/DOD-EO-14017-REPORT-SECURING-DEFENSE-CRITICAL-SUPPLY-CHAINS.PDF.

[50] The White House, *Building Resilient Supply Chains, Revitalizing American Manufacturing, and Fostering Broad-Based Growth*, June 2021, pp. 92-93, available at https://www.whitehouse.gov/wp-content/uploads/2021/06/100-day-supply-chain-review-report.pdf.

[51] Ibid.

actions that "hurt China's interests,"[52] threatening that "if China is severely hurt, its powerful revenge will be inevitable."[53]

Pharmaceuticals is another major area of concern. Even if the medications themselves are manufactured outside of China, the Chinese supply the precursor ingredients needed to manufacture them. Animal feed is similar case in point, and Chinese actions could disrupt the U.S. agriculture industry, at least until alternative sources of supply are procured. Although Chinese actions would not be detrimental to the U.S. economy as a whole—which remains hugely productive and robust despite the impact of a global pandemic[54]—prolonged supply shortages that affect Americans personally could occur.

In the interim, shortages may impact the American consumer due to supply chain vulnerabilities. Given the American penchant for instant gratification and consumer satisfaction, such disruptions may trigger greater near-term hardship to the American consumer than to the Chinese population and may be seen by Americans as unacceptable. Tariffs on Chinese imports will also affect consumer prices. In certain areas, U.S. policies are creating greater dependencies on China. But the United States should take action in advance to prepare for such disruptions and to convince China's leaders that such market disruptions will be more painful for Beijing than for Washington. Some of these actions could include the use of legislative tools like the Defense Production Act and the Trade Expansion Act of 1962 that could be useful in restricting the amount of Chinese content in imported products, including those used by the U.S. military.[55]

Conclusion

The use of economic tools can augment the other tools of statecraft—military, political, and diplomatic—to enhance the prospects for success of a victory denial deterrent. The United States has a plethora of economic, financial, trade, and investment tools, including the use of export controls and sanctions, that can be used to apply pressure in those areas where the Chinese economy is vulnerable and to penalize China for aggressive behavior. A proactive rather than reactive approach to these tools could yield important deterrence benefits.

In sum, the United States must think in terms of making the consequences of Chinese aggression towards Taiwan more intolerable than enduring a continuation of the political status quo on Taiwan. In other words, it should be possible to make Chinese behavior the United States seeks to deter more fraught with greater risk and cost than continuation of the

---

[52] GT Staff Reporters, "China not targeting US in rare-earth exports, but option remains," *Global Times*, February 17, 2021, available at https://www.globaltimes.cn/page/202102/1215758.shtml.

[53] Hu Xijin, "Whether China plays 'rare-earth card', there will be no winner in China-US decoupling," *Global Times*, February 17, 2021, available at https://www.globaltimes.cn/page/202102/1215748.shtml.

[54] Martin Crutsinger and the Associated Press, "U.S. economy is bigger than it was pre-COVID after quarter of booming consumer spending," *Fortune*, July 29, 2021, available at https://fortune.com/2021/07/29/us-economy-bigger-than-pre-covid-quarter-booming-consumer-spending/.

[55] Derek Scissors, "Partial Decoupling from China: A Brief Guide," American Enterprise Institute, July 2020, p. 4, available at https://www.aei.org/wp-content/uploads/2020/07/Partial-decoupling-from-China.pdf?x91208.

status quo. In addition to the measures mentioned above, the United States could impose harsher penalties on China for its theft of intellectual property and restrict the influx of Chinese students to American universities. Mapping the economic interests of those who are part of the Chinese leadership and tailoring sanctions and economic tools to those individuals and their personal economic interests may also lead to pressure on President Xi to avoid actions that could be detrimental to China's elite. As one former U.S. State Department official stated, "The most powerful weapon America has to reverse Xi Jinping's march to global domination is economic."[56]

Above all, the United States must formulate an approach that capitalizes on the strength and resiliency of the U.S. economy, which remains a more productive engine of economic, technological, and social progress than that of China. An economic strategy that combines the various measures discussed above with elements of an integrated approach to deterrence may prove valuable in restoring the U.S. deterrence position and thereby preventing Chinese military action against Taiwan.

David J. Trachtenberg is Vice President of the National Institute for Public Policy. Previously, he served as Deputy Under Secretary of Defense for Policy from 2017-2019.

[56] Khodorkovsky, quoted in Gordon G. Chang, op. cit.

ANALYSIS

WHY THE DEEP NUCLEAR REDUCTIONS MOVEMENT SHOULD FOCUS ON RUSSIA AND CHINA

Matthew R. Costlow

Introduction

Russia's and China's revisionist military strategies, supported by their rapidly expanding nuclear arsenals, are reversing a decades-long decline in the overall number of nuclear weapons in the world. Only 15 years ago, four eminent U.S. statesmen wrote an article titled "A World Free of Nuclear Weapons" that called on states abandon nuclear weapons for deterrence purposes.[1] Then, two years later, activists' hopes rose even higher as U.S. President Barack Obama was awarded the Nobel Peace Prize for his "vision of a world free of nuclear weapons."[2] President Obama's 2009 "Prague Speech" and 2010 signing of the New START arms control treaty brought hopes of steep nuclear reductions to a crescendo. Since then, however, stock in nuclear reductions has mirrored the experience of a character in Ernest Hemingway's *The Sun Also Rises*, who, when asked how he went bankrupt responded, "Gradually, then suddenly."

As Russia and China are primarily responsible for the sudden and dramatic reversal in the hopes of nuclear reduction proponents, one would expect that they would focus their criticisms on Moscow and Beijing—and yet, that is not the case. Instead, their statements continue to accuse all nuclear-weapons powers equally, or perhaps Russia and the United States especially as the largest nuclear powers, of actively working against their obligations to reduce their nuclear stockpiles.

Yet, if advocates for deep nuclear reductions hope to ever reach their goal, then they must adapt their strategy to focus their criticism on those states that are most placing the prospect of nuclear reductions at risk: Russia and China. Specifically, this article contends that nuclear reduction proponents should concentrate their efforts on creating the political and diplomatic conditions in Russia and China that would necessarily precede any attempts of broader nuclear disarmament—a departure from their current strategy of advocating for nuclear reductions regardless of political realities.

In short, proponents of nuclear reductions and realists both agree that a fundamental, and perhaps systematic, change in the political environment toward enduring and benign ends is a necessary precondition for nuclear disarmament. Realists part ways by deprecating the goal of nuclear disarmament, and certainly think its likelihood is out of reach, but can

[1] George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "A World Free of Nuclear Weapons," *The Wall Street Journal*, January 4, 2007, available at https://www.wsj.com/articles/SB116787515251566636.

[2] "The Nobel Peace Prize 2009" *NobelPrize.org*, 2009, available at https://www.nobelprize.org/prizes/peace/2009/summary/.

applaud attempts to encourage positive changes towards peaceful ends in Russia's and China's political systems, values, and policies.[3]

This article proceeds by first explaining why fundamental political changes are a prerequisite to steep nuclear reductions. By extension, nuclear reductions in and of themselves do not cause peace or reduce political tensions. Thus, if proponents of deep nuclear reductions hope to achieve their goal, they must focus on transforming the destructive political aims of the states that most endanger the hopes of nuclear reductions at this time. The article concludes by expounding on the many ways that, if one adopts the perspective of a nuclear reductions proponent, no two states have done more in the past decade to increase nuclear risks and decimate chances for nuclear reductions than Russia and China. The conclusion is obvious, revisionist political systems like Russia and China will continue frustrating the hopes of major nuclear reductions, and justifying the retention of nuclear arsenals by status quo powers, unless and until the internal and external political incentive structures change for the better in Moscow and Beijing. On this point, nuclear reduction proponents and realists should agree, but given the deep-seated strategic cultures of Russia and China, it is unknown whether that agreement would be enough to induce the necessary political transformation.

The Primacy of Politics

One of the few areas of agreement between proponents of major nuclear reductions and realists is their belief that there must be a fundamental transformation of political relations in the world before states can achieve nuclear disarmament. Although nuclear disarmament proponents often prefer to set aside the more difficult political questions of sovereignty, authority, and enforcement, in favor of more achievable technical questions of feasibility (safeguards, portal monitoring, etc.), even their writings acknowledge the necessity of changed political dynamics. For example, Stephen Young of the Union of Concerned Scientists wrote recently, "… the world needs to eliminate nuclear weapons. It will not happen quickly, and the *world would have to develop a new, truly stabilizing security regime* to replace the current system built upon nuclear deterrence, but that effort should be the focus of international efforts moving forward."[4] (Emphasis added)

Or, as George Perkovich and James Acton of the Carnegie Endowment for International Peace wrote, "[Nuclear-armed states] will not be able to collectively envisage a prohibition of nuclear weapons until conflicts centring [sic] on Taiwan, Kashmir, Palestine and (perhaps) the Russian periphery are resolved, or at least durably stabilized. These are questions of unsettled sovereignty involving states that regard them as essentially internal disputes and which retain nuclear weapons, at least in part, to prevent them from being settled by force

[3] For more on the realist and utopian divide in nuclear strategy, see Keith B. Payne, *Shadows on the Wall: Deterrence and Disarmament* (Fairfax, VA: National Institute Press, 2020).

[4] Stephen Young, "The Age of Predatory Nuclear-Weapon States Has Arrived," *Politico*, September 30, 2022, available at https://www.politico.com/news/magazine/2022/09/30/putins-nuclear-threats-towards-ukraine-00059571.

against their interests."[5] Stated more explicitly, the process of nuclear abolition depends on countries with essentially irreconcilable political goals resolving their disputes on an enduring basis. This fundamental problem extends even into a world where political disputes have been resolved, but the potential for future disputes and nuclear breakout looms. Perkovich and Acton conclude, "… enforcement would essentially depend on relations among major powers."[6] Again, constructive and non-revisionist political aims are the key to steep nuclear reductions.

On this point, most realists would agree. The bipartisan Congressionally-mandated Strategic Posture Commission wrote in its final report in 2009: "The conditions that might make the elimination of nuclear weapons possible are not present today and establishing such conditions would require a fundamental transformation of the world political order."[7] Former Secretary of Defense and Chairman of the Strategic Posture Commission, William J. Perry, further emphasized this point in his preface for the report, stating: "All of the commission members believe that reaching the ultimate goal of global nuclear elimination would require a fundamental change in geopolitics. Indeed, if the vision of nuclear elimination is thought of as the 'top of the mountain,' it is clear that it cannot be seen at this time."[8]

Yet, even while nuclear disarmament proponents and realists agree that a fundamental political transformation is necessary for disarmament, they are split in their views on whether and how that transformation can occur. Perkovich and Acton cite approvingly a concept by U.K. professor William Walker called a "co-evolutionary" process, in which smaller steps on the dual tracks of nuclear reductions and political reconciliation aid and reinforce each other.[9] According to this line of thinking, nuclear weapons reductions are both the cause and effect of decreased political tensions, and vice versa.

Realists, by contrast, are more likely to believe that nuclear weapons reductions are more likely to be the result of decreased political tensions or reconciliation, not their cause.[10]

---

[5] George Perkovich and James M. Acton, *Abolishing Nuclear Weapons* (London: International Institute for Strategic Studies, 2008), *Adelphi Paper* # 396, pp. 27-28.

[6] Ibid., p. 93.

[7] William J. Perry and James R. Schlesinger, Chairman and Vice-Chairman, *America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States* (Washington, D.C.: United States Institute of Peace Press, 2009), p. 17, available at https://www.usip.org/sites/default/files/America's_Strategic_Posture_Auth_Ed.pdf.

[8] William J. Perry, "Chairman's Preface," as seen in, William J. Perry and James R. Schlesinger, Chairman and Vice-Chairman, *America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States* (Washington, D.C.: United States Institute of Peace Press, 2009), p. xi, available at https://www.usip.org/sites/default/files/America's_Strategic_Posture_Auth_Ed.pdf.

[9] Perkovich and Acton, *Abolishing Nuclear Weapons*, op. cit., p. 17.

[10] For the sake of the completeness of the discussion, it should be noted that the U.K. "food-for-thought" paper for the 2020 NPT Review Conference does not choose between political reconciliation preceding or happening in conjunction with nuclear disarmament, only noting that both are possibilities. See, United Kingdom of Great Britain and Northern Ireland, *Getting to a World Without Nuclear Weapons: A Food-for-Thought Paper* (New York: United Nations, December 10, 2021), p. 3, available at https://documents-dds-ny.un.org/doc/UNDOC/GEN/N21/387/95/PDF/N2138795.pdf?OpenElement.

Winston Churchill summarized realist thought on this topic with his pithy observation, "It is the greatest mistake to mix up disarmament with peace. When you have peace you will have disarmament."[11] According to the realist view, therefore, the broader political context is a better indicator for the prospects of nuclear reductions than a period of reduced political tensions which often is followed by a period of renewed tensions.

Even a cursory review of the history of nuclear arms control indicates that the realist perspective hews closest to reality. For instance, when Richard Nixon became president, he and Henry Kissinger pursued a strategy of relaxing tensions with the Soviet Union, a policy later termed "détente," though they generally tried initially to avoid using the word.[12] Out of détente arose the Strategic Arms Limitation Talks (SALT) interim agreement and the Anti-Ballistic Missile (ABM) Treaty in 1972. But while improved political relations created the conditions necessary for SALT, the Soviet invasion of Afghanistan helped scuttle the prospects of the Strategic Arms Limitation Talks II (SALT II) in 1979. Additionally, Mikhail Gorbachev, who explicitly sought improved relations with the United States, rose to head the Soviet Union in 1985 and aided the negotiation of the Intermediate-Range Nuclear Forces (INF) Treaty, signed in 1987. And, as a final example of the prerequisite for improved political relations preceding nuclear reductions, the current Russian escalation of its war against Ukraine has caused the United States to cease its arms control discussions with Russia.

Additionally, some historical examples act as a counterpoint to the belief that nuclear reductions and improved political relations are likely to work together. In short, entering into nuclear arms control agreements is not necessarily indicative of improved political relationships. For instance, President Reagan sought arms control negotiations with the Soviet Union during his first term, even as he condemned severely the Soviet political model and policies. Or, to broaden the point beyond nuclear arms control, entering into conventional arms control treaties does not guarantee the participants are necessarily seeking political reconciliation—as demonstrated by an example from the 1921-1922 Washington Naval Conference, which limited capital ship tonnage. As the foremost historian of the 20th century Japanese navy, Sadao Asada, has written, "A supreme irony of the Washington treaty was that Japan's National Defense Policy adopted the idea of inevitable war [with the United States] precisely when that treaty had reduced the Japanese and American navies so that neither could conduct offensive operations."[13] In this instance, Japan used arms control to improve its military prospects against its political rival, the United States.

---

[11] Winston Churchill, "Foreign Office," *Parliament.UK*, July 13, 1934, available at https://api.parliament.uk/historic-hansard/commons/1934/jul/13/foreignoffice#S5CV0292P0_19340713_HOC_68.

[12] H. W. Brands, "The World in a Word: The Rise and Fall of Détente," *Rhetoric and Public Affairs*, Vol. 1, No. 1 (Spring 1998), pp. 48-50.

[13] Sadao Asada, *From Mahan to Pearl Harbor: The Imperial Japanese Navy and the United States* (Annapolis, MD: Naval Institute Press, 2006), p. 102.

Why Should Proponents of Steep Nuclear Reductions Focus on Russia and China?

Having established that improved political relations is the most likely catalyst for nuclear weapons reductions, and setting aside quite formidable realist doubts about the feasibility of the goal at this point in time, the question becomes: how should proponents of steep nuclear reductions react? If improved political relations are the prerequisite for major nuclear reductions, then how should that change their current strategy? Presently, nuclear reduction proponents issue blanket condemnations of all nuclear weapon-possessing states—often placing special onus on the United States and Russia as the two largest nuclear powers and, thus, the states with the greatest obligation to lead on disarmament.[14]

The obvious downside to this strategy is that categorizing states as "nuclear haves" and "nuclear have-nots" essentially erases the fundamental differences between the nuclear policies and practices of the United States and Russia, and the United States and China. From the perspective of non-nuclear states, this categorization appears on its face to be appealing—but, based on history, the far more salient categorization for nuclear reductions is the divide between revisionist and status quo powers. States with revisionist political aims are more likely to cause fears among status quo powers about potential conflict, thus justifying their retention of nuclear weapons as a deterrent. Or, revisionist states may engage in conflict with status quo states, causing the prospects for major nuclear reductions to decline as well. If a stable and benign political environment is the prerequisite for major nuclear reductions, then it stands to reason that the greatest threat to major nuclear reductions are those states that most threaten a stable and benign political environment.

And, today, which states pose the greatest threat to a stable and benign political environment? Russia and China. In fact, there are four ways Russia and China have caused the greatest harm to the prospects for major nuclear reductions, each of which is examined in more detail below. First, China has harmed the prospects for steep nuclear reductions by refusing to participate in any meaningful dialogue with the United States on nuclear issues. Second, Russia has violated multiple arms control treaties, including those focused on nuclear weapons. Third, Russia and China have maintained revisionist political aims against their neighbors and engage in violence or threats of violence to achieve those aims. Fourth, Russia and China have rapidly increased their nuclear arsenals at a time when the general worldwide trend bent towards decreasing nuclear arsenals.

To begin, China has not engaged in any substantive discussions with the United States about even the most fundamental topics concerning its nuclear weapons policy or doctrine. Despite repeated U.S. invitations to begin such talks, Chinese officials have closely followed their preferred policy of opacity regarding issues like the size of their nuclear weapons

[14] See, for example the recent joint statement of 37 non-government entities: *The Necessity of a Meaningful Action Plan on Article VI of the NPT* (New York: Reaching Critical Will, August 5, 2022), available at https://reachingcriticalwill.org/images/documents/Disarmament-fora/npt/revcon2022/statements/5Aug_ArticleVI_joint.pdf.

stockpile, nuclear employment principles, and modernization goals. China's refusal to discuss these and other issues has grown even more consequential in recent years as public evidence of China's stunning nuclear expansion continues to mount.[15] Proponents of steep nuclear reductions should be especially concerned about China's long-standing practice of refusing to engage with the United States on basic issues concerning nuclear weapons because there appears to be little international pressure on China to change its actions—thus risking, from the perspective of a proponent of nuclear reductions, a prevailing notion that intransigence on nuclear reductions has no costs.

Russia, for its part, threatens the prospects for major nuclear reductions, such as they are, with its inveterate compulsion to violate arms control agreements, including those focused on restricting nuclear arsenal sizes. For instance, Russia violated the Intermediate-Range Nuclear Forces (INF) Treaty and refused to return to compliance, resulting in the termination of the INF Treaty.[16] The United States also has concerns about Russia's adherence to a number of other nuclear and non-nuclear related agreements, including the Presidential Nuclear Initiatives, the nuclear testing moratoria, the Chemical Weapons Convention, the Biological Weapons Convention, the Vienna Document, and the Conventional Armed Forces in Europe Treaty.[17] Among the most recent concerning developments is Russia's refusal to allow New START Treaty inspections to resume.[18] These actions are especially detrimental to the cause of major nuclear reductions because the nature of Russia's violations and non-adherence to agreements is often connected with its pursuit of its revisionist political aims in Europe and elsewhere.

Russia and China also damage the prospects for major nuclear reductions by committing themselves to revisionist political and military policies, especially concerning neighboring states. Russia, in just the past two decades, has invaded Georgia in 2008, invaded Ukraine in 2014, and more recently, greatly expanded its invasion of Ukraine in 2022. China, for its part, has not renounced the use of force against Taiwan and regularly states that any Taiwan-related issue is an internal affair that precludes outside intervention. China also claims "sovereignty" over much of the South China Sea, generating conflicting claims with Brunei,

---

[15] For more on China and the NPT, see Thomas D. Grant, *China's Nuclear Buildup and Article VI NPT: Legal Text and Strategic Challenge* (Fairfax, VA: National Institute for Public Policy), *Occasional Paper*, Vol 1, No. 11, November 2021, available at https://nipp.org/wp-content/uploads/2021/11/Grant-OP-for-web.pdf.

[16] U.S. Department of State, *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments* (Washington, D.C.: U.S. Department of State, August 2019), pp. 11-20, available at https://2017-2021.state.gov/wp-content/uploads/2019/08/Compliance-Report-2019-August-19-Unclassified-Final.pdf.

[17] Ibid., pp. 8-52, and, U.S. Department of State, *Compliance with the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on their Destruction, Condition (10)(c) Report* (Washington, D.C.: U.S. Department of State, April 2022), pp. 16-22, available at https://www.state.gov/wp-content/uploads/2022/04/Condition-10-c-Report.pdf.

[18] "Russia Suspends START Arms Inspections over U.S. Travel Curbs," *Reuters*, August 8, 2022, available at https://www.reuters.com/world/russia-tells-us-it-is-suspending-inspections-under-start-weapons-treaty-2022-08-08/. For analysis on the significance of this action, see Mark Schneider, *Trust Without Verification: The Wrong Approach to Arms Control* (Fairfax, VA: National Institute for Public Policy, September 1, 2022), *Information Series* #532, available at https://nipp.org/wp-content/uploads/2022/08/IS-532.pdf.

the Philippines, Malaysia, and Vietnam.[19] These conflicting claims are in addition to the ongoing Sino-Indian tensions, and occasional fighting, over their disputed borders. To restate the obvious, Russia's and China's revisionist political and military policies, some of which are aimed at nuclear-armed states or their allies, are wholly detrimental to the cause of steep nuclear reductions because they perpetuate the perception (or reality, according to realists) that Russia and China pose existential threats to others, thus justifying the retention of nuclear weapons.

Finally, although not discussed, it is worth noting that Russia's and China's expansive nuclear buildups began at a time when, according to proponents of major nuclear reductions, the world was the closest it has been to global zero numerically since the 1950s.[20] In other words, Russia and China started their nuclear expansions in earnest just when worldwide stockpiles of nuclear weapons had reached their lowest point in over 60 years. When combined with Russia's and China's other actions described above, it should be clear that the greatest threats to major nuclear reductions—as perceived by its proponents—should not be all nuclear-weapon possessing states without distinction, but rather, those states whose policies and practices are most inimical to political stability and peace: Russia and China.

Conclusion

U.N. Secretary General António Guterres may have spoken better than he knew when he said recently, "Nuclear weapons are a global scourge. A deadly reminder of countries' inability to solve problems through dialogue and collaboration."[21] Guterres meant for this remark to chastise nuclear weapon states into doing something he believes is possible, solving problems through "dialogue and collaboration." But Guterres inadvertently revealed that nuclear weapons themselves are not the problem, rather, incompatible political aims are the problem, and nuclear weapons continuing to exist is simply another manifestation of enduring political rivalries.

On this point, the contemporary divide between proponents of major nuclear reductions and realists is clear, the former believes incompatible political aims are a problem that can be solved, on an enduring basis while realists agree with the eminent strategist Colin S. Gray, that, "… Americans imbued culturally with a determination not to tolerate unsolved problems can have severe difficulty distinguishing among problems which can be solved,

---

[19] U.S. Department of Defense, *Military and Security Developments Involving the People's Republic of China 2021* (Washington, D.C.: Department of Defense, November 2021), p. 15, available at https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF.

[20] For the underlying data on worldwide nuclear stockpile totals, see, Hans M. Kristensen and Robert S. Norris, "Global Nuclear Weapons Inventories, 1945-2013," *Bulletin of the Atomic Scientists*, Vol. 69, No. 5 (2013), p. 78.

[21] António Guterres, "Secretary-General's video message to the Opening of the First Meeting of States Parties to the Treaty on the Prohibition of Nuclear Weapons," *United Nations*, June 21, 2022, available at https://www.un.org/sg/en/content/sg/statement/2022-06-21/secretary-general%E2%80%99s-video-message-the-opening-of-the-first-meeting-of-states-parties-the-treaty-the-prohibition-of-nuclear-weapons.

[and] problems which really are conditions and hence cannot be solved soon (if ever)…"[22] The fundamental disagreement between proponents of steep nuclear reductions and realists, therefore, is whether incompatible political aims are a problem to be solved or a condition to be mitigated.

This article began with the observation that both proponents of major nuclear reductions and realists can agree that a fundamental transformation of the political system is necessary for nuclear disarmament, even if realists believe that goal of nuclear disarmament is infeasible and would be imprudent. Where both sides part ways is on the question of whether the political transformation can happen in conjunction with major nuclear reductions, or whether the political transformation must precede major nuclear reductions. History, however, indicates that the political context is a controlling factor in whether states consider negotiated reductions in nuclear weapons feasible and desirable—thus supporting the realist position.

With this in mind, proponents of major nuclear reductions should cease their current strategy of issuing blanket condemnations of all nuclear weapon possessing states without distinctions, and instead focus on those states that most harm the prospects for major nuclear reductions, that is, those states that most upset the prospects for political stability and peace, namely, Russia and China. This is not to say that proponents of major nuclear reductions should never discuss the United States, the United Kingdom, or France, only that such discussion (particularly the constant criticism of U.S. nuclear policy) distracts from the actual core problem facing the prospect of major nuclear reductions: revisionist great powers armed with expanding nuclear arsenals. Although realists will see the goal of major nuclear reductions as folly in the contemporary political environment, they can at least applaud a shift in the strategy of proponents of nuclear reduction proponents towards focusing their efforts on calling out the revisionist political aims of Russia and China and pressing them towards more benign ends. Only the future can record whether such a strategy will bear more fruit than current efforts, but at least such endeavors will proceed based on political realities, instead of, as former Secretary of Defense James Schlesinger wrote, "indulging in pieties."[23]

Matthew R. Costlow is a Senior Analyst at the National Institute for Public Policy. He formerly served as a Special Assistant in the Office of the Secretary of Defense and on staff for the National Defense Strategy Commission.

[22] Colin S. Gray, *War, Peace, and Victory* (New York: Simon & Schuster, 1990), pp. 48-49.

[23] James R. Schlesinger, *Arms Interactions and Arms Control* (Santa Monica, CA: The RAND Corporation, September 1968), p. 21, available at https://www.rand.org/pubs/papers/P3881.html.

ANALYSIS

GOLD, GUNS, AND WHALE OIL: THREE IMPEDIMENTS TO GLOBAL NUCLEAR ZERO

John Mark Mattox

Introduction

In the current popular and academic press, one cannot escape discussions about the circumstances, if any, under which Ukraine's nuclear-armed invader might resort to the employment of nuclear weapons—and if it did, what that might portend for the world going forward. These are not insignificant questions, and the fact that questions of this kind are being asked in earnest is hardly surprising—even if the most thoughtful observers, or even the invader itself, does not know their precise answer. Some especially astute observers might find themselves asking still more foundational questions, such as why it seems to be so hard to rid the world of nuclear weapons in the first instance. This is, of course, a question that has been present since the dawn of the nuclear age itself.[1] It was given especially prominent attention in 2007 by four luminaries of nuclear nonproliferation (former secretaries of State Henry Kissinger and George Shultz, former Secretary of Defense William Perry and former Senator Sam Nunn[2])—the so-called "four horsemen of the nuclear apocalypse,"[3] and more recently in the United Nations' 2017 Treaty on the Prohibition of Nuclear Weapons (TPNW), which, in accordance with its internal, self-adjudicating mechanism, entered into force in 2021.[4]

Unfortunately, facile prescriptions like those in the "four horsemen's" 2007 commentary and the United Nations' 2017 treaty belie the complexity of the task to which they point. While—thankfully—the grim 1960 prediction by presidential candidate John F. Kennedy that "10, 15, or 20 nations will have a nuclear capacity . . . by the end of the Presidential office in 1964"[5] has yet to be realized more than half a century later, there likewise exists no reason to believe that nuclear weapons will cease to exist any time in the foreseeable future. Why is this root problem, of which the problem of nuclear weapon employment in Ukraine is but a symptom, apparently so intractable?

---

[1] Declaration on Atomic Bomb by President Truman and Prime Ministers Attlee and King, Washington, November 15, 1945, https://carnegieendowment.org/2005/11/01/nonproliferation-turns-60-pub-17664, accessed November 10, 2022.

[2] See the famous Op-Ed by these four authors, "A World Free of Nuclear Weapons," *The Wall Street Journal*, January 4, 2007, https://www.wsj.com/articles/SB116787515251566636, accessed November 9, 2022.

[3] Eben Harrell, "The Four Horsemen of the Nuclear Apocalypse," *Time*, March 10, 2011, https://science.time.com/2011/03/10/the-four-horsemen-of-the-nuclear-apocolypse/, accessed November 9, 2022.

[4] Treaty on the Prohibition of Nuclear Weapons, https://www.un.org/disarmament/wmd/nuclear/tpnw/, accessed 10 November 2022.

[5] John F. Kennedy, from the Third Nixon-Kennedy Presidential Debate, October 13, 1960, in "JFK on Nuclear Weapons and Non-Proliferation" Carnegie Endowment for International Peace, https://carnegieendowment.org/2003/11/17/jfk-on-nuclear-weapons-and-non-proliferation-pub-14652, accessed November 9, 2022.

Understanding the issues that underlie the question is aided by an appreciation of the complex Cold War circumstances that first gave rise and then unavoidable prominence to nuclear weapons in the first instance. Although first-hand, societal acquaintance with these circumstances is now receding into increasingly distant memory, nuclear weapons remain—and the arsenals which they constitute are modernizing and, in some cases, growing. Moreover, some states that formerly anathematized nuclear weapons are now considering whether present and predicted geopolitical conditions might not warrant (or require) them to become nuclear weapons possessors themselves.

While much uncertainty attends the trajectory of the nuclear future, this much seems clear: Nuclear weapons are not going away for the foreseeable future, all protestations to the contrary notwithstanding. "Why," some nuclear abolitionists wonder, "can all involved simply not agree to give them up?" Would that the matter was anywhere nearly so simple. Nuclear weapons did not simply flare into existence in a vacuum. They came into being because (1) those seeking them considered that their possession would be valuable to them, or (2) because the security environment seemed to demand them, or (3) because no adequate substitute could be found for them—or for some combination of these reasons. Excising the world of nuclear weapons requires exactly the reverse conditions: Those now in possession of them must conclude that their possession is no longer valuable, that the security environment no longer demands them, and that some better means can be found for accomplishing the purposes for which nuclear weapon presently exist. To produce those conditions is a tall order indeed, and perhaps the following three vignettes may aid in explaining, by analogy, why this is so.

Devaluing the Valuable

States possess nuclear weapons because they consider their possession to be valuable. If they were somehow bereft of perceived value, then, so the logic goes, the desirability of their possession would similarly disappear. However, this experiment has been tried before, at least as a mind experiment. In 1518, Sir Thomas More published *Utopia*, one of the canonical works of Western social and political philosophy. In the society that More describes, every effort is made to devalue gold and silver so that no right-thinking person would want them. For the Utopians, gold and silver lack desirability because they lack utility: "Anyone can see that iron is far superior to either [gold or silver]; men could not live without iron, by heaven, any more than without fire or water. But gold and silver have, by nature, no function that we cannot easily dispense with."[6] Conceding that this assessment occurs centuries before the advent of transistors, microchips, and the like, for which gold and silver clearly have demonstrable utility, the experience of the Utopians is still instructive for the present, for it represents a case in which a society sought to take a commodity to which a high value had been assigned and to reduce the value of the commodity to zero. The Utopians sought to

[6] Sir Thomas More, *Utopia*, 2nd ed., trans. Robert M. Adams (New York: W. W. Norton and Company, 1992), p. 46.

accomplish this devaluation by using gold, not as an adornment or as a medium of exchange, but rather for such objects as children's toys, which the children discarded as they grew up and realized that mature persons have no use for toys. "Their parents don't have to say anything, they simply put these trifles away out of a shamefaced sense that they're no longer suitable" for adults.[7] Likewise, the Utopians reserved gold for identification of criminals—"golden rings on their ears, golden bands on their fingers, golden chains around their necks, and even golden crowns on their heads,"[8] as well as for the "fetters of slaves."[9] They even used it to fashion the most ordinary objects such as chamber pots and stools.[10] "As a result, when they ha[d] to part with these metals, which other nations give up with as much agony as if they were being disemboweled, the Utopians fe[lt] it no more than the loss of a penny."[11] Moreover, the Utopians could readily demonstrate to any non-Utopian that gold was something of no value and not in the least to be desired. For example, when visiting ambassadors to Utopia, unaware of local mores, processed through the streets as part of a state visit, they drew the laughter of children and the scorn of adults, who mistook the principals of the entourage—all of whom were ostentatiously adorned with gold— for the lowest, most menial servants accompanying the official delegation. Others among the Utopians were left to wonder why diplomats from a foreign royal court would array themselves as if they were criminals and slaves! Thus, by More's account, the Utopians succeeded in standing the valuation of gold completely on its head such that it held no appeal whatsoever for the citizens of Utopia.

The question may be fairly asked, "What prevents modern, nuclear weapons-possessing states from doing the same thing to nuclear weapons that Utopia did with gold, such that nuclear weapons lose all their appeal?" Unfortunately, even if a nuclear weapon state were, for itself, able to succeed in devalue nuclear weapons, just as the Utopians devalued gold, that does not imply that other nuclear weapons states would follow suit. Indeed, as evidenced by the visit of the foreign ambassadors to Utopia, other states continued to place a very high premium on gold even if the Utopians did not. In point of fact, the Utopians did not, all protestations to the contrary notwithstanding, consider gold to be valueless to *everyone;* they only considered it valueless in their own domestic political context. When it came to international politics, the story was quite different. The Utopians amassed vast reserves of gold, which they kept in store—not for use by their own people, but for the express purpose of obtaining leverage in the international sphere where they knew that gold continued to be held in high value. In this sphere, they Utopians spent gold with whatever profligacy they deemed necessary to achieve their political aims: "When they [the Utopians] promise their resources to help in a war, they send money very freely. . .. Since they keep

[7] Ibid., p. 47.
[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Ibid.

their gold and silver for the purpose of war alone, they spend it without hesitation."[12] And why not? After all the Utopians, who place no value on gold for themselves, "will continue to live just as well even if they waste the whole sum"[13] as bargaining currency in the international security sphere. Indeed, the Utopians are willing to purchase virtually any outcome that suits their security needs in that sphere: "Besides the wealth they have at home, they have a vast treasure abroad since many nations owe them money. So they hire mercenary soldiers from all sides."[14] "Because the Utopians are willing to give higher pay" in gold and silver "than anyone else," mercenaries "are ready to serve them against any enemy whatever."[15] Moreover, the Utopians have no scruples against hiring "the worst possible men" for "improper uses,"[16] i.e., the dirty jobs of international conflict that the Utopians consider either beneath their dignity or outside the scope of moral bounds to perform—but which, since Utopia exists as only one polity in the larger, anarchic international sphere—and the Utopians know it, they are willing to underwrite warfare by non-Utopians as they perceive the occasion to demand. In short, an ostensibly ideal society that convinces its domestic audience to abhor a thing that it has successfully devalued to practically nothing still understands that its own abhorrence of the thing does not mean that others external to it feel the same way. It is hardly the case, therefore, that the Utopians have really devalued gold at all! They might distain its use among themselves, and they may scorn its use by others; but at the same time, they have hardly eliminated—*and understand that they cannot eliminate*—this thing that they claim to despise.

Nuclear weapons are far more like Utopian gold than the "four horsemen" or advocates of the TPNW may wish to admit: contemporary disarmament advocates might hate the thought that nuclear weapons were ever conceived, and might wish to devalue them to zero, but none can deny the reality that gold, in the case of the Utopians, and nuclear weapons, in the case of modern nuclear weapon states, continue to affect the political calculi of others external to themselves. It is comparatively easy, in theory, to foreswear or even eschew the prospect of nuclear weapon employment, even to the point of eliminating an entire stockpile; but that act of self-denial in no way implies that external actors will follow suit—with attendant risk for the self-denier. Nor does it imply that the self-denier can interact with the rest of the world as though the rest of the world shared the self-denier's mores and thus could be expected to follow suite. (In a similar, more general vein, it is equally interesting to note that even the Utopians do not resolve the problem of interstate conflict. "They despise war as an activity fit only for beasts, yet practiced more by man than any other creature."[17] Nevertheless, when avoidance of war—which the Utopians are keen to do—is not possible,

[12] Ibid., p. 68.
[13] Ibid.
[14] Ibid.
[15] Ibid., p. 69.
[16] Ibid., p. 69.
[17] Ibid., p. 66.

they wage it with such ferocity and vigor that one might at least wonder whether, *in extremis*, they might be willing to resort to nuclear weapons, if they had them.)

In sum, it is little wonder that Thomas More coined for his fictitious account a new word: "utopia"—a modern Latin form from the Greek *ou*, "not" + *topos*, "place," literally "no-place." So, even if the vision of a world without avaricious desire for either gold or nuclear weapons might be highly desirable, it is also "utopian." Hence, until the *Weltanschauung* of no-place becomes the *Weltanschauung* of every place, one need not expect much that devaluating nuclear weapons in the eyes of any domestic audience will produce global nuclear zero.

Fundamentally Changing the Security Environment

States possess nuclear weapons because they perceive that the security environment requires it. Hence, if the security environment no longer required it, the perceived necessity of nuclear weapons would, in theory, disappear. However, a case study of this very claim is possible, by analogy, with another kind of weapon: privately owned firearms.

The United States is not the only country in the world to claim a special affinity for guns, but it certainly is one of them. (It shares that distinction with, for example, Mexico and Guatemala—the only other nations in the world with a constitutionally enshrined right to bear arms[18]). According to one international study:

- There were approximately 857 million civilian-held firearms in the world at the end of 2017.
- Roughly 100 million civilian firearms were reported as registered, accounting for some 12 per cent of the global total.
- National ownership rates vary from about 120.5 firearms for every 100 residents in the United States to less than 1 firearm for every 100 residents in countries like Indonesia, Japan, Malawi, and several Pacific Island states.[19]

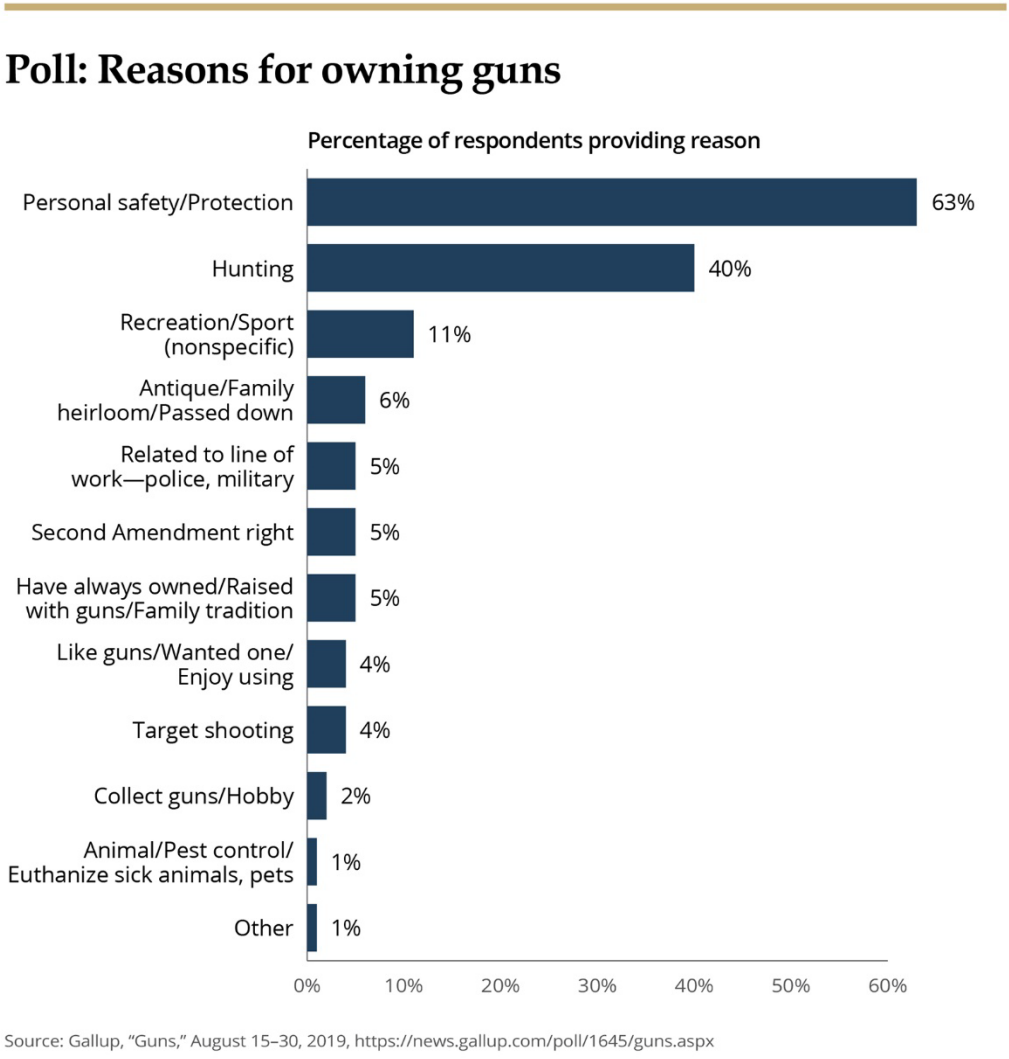
Given the extraordinarily high emotion that attends the U.S. domestic gun debate, no study and no set of data is without its energetic critics. However, regardless of how one views the issue of gun possession, it is still possible to ask, "What would it take to persuade all American civilians to surrender their weapons so that no one would have them?"

A 2019 Gallup survey posed the following open-ended question to gun owners in the United States: "There are many reasons why some people choose to own guns and others do

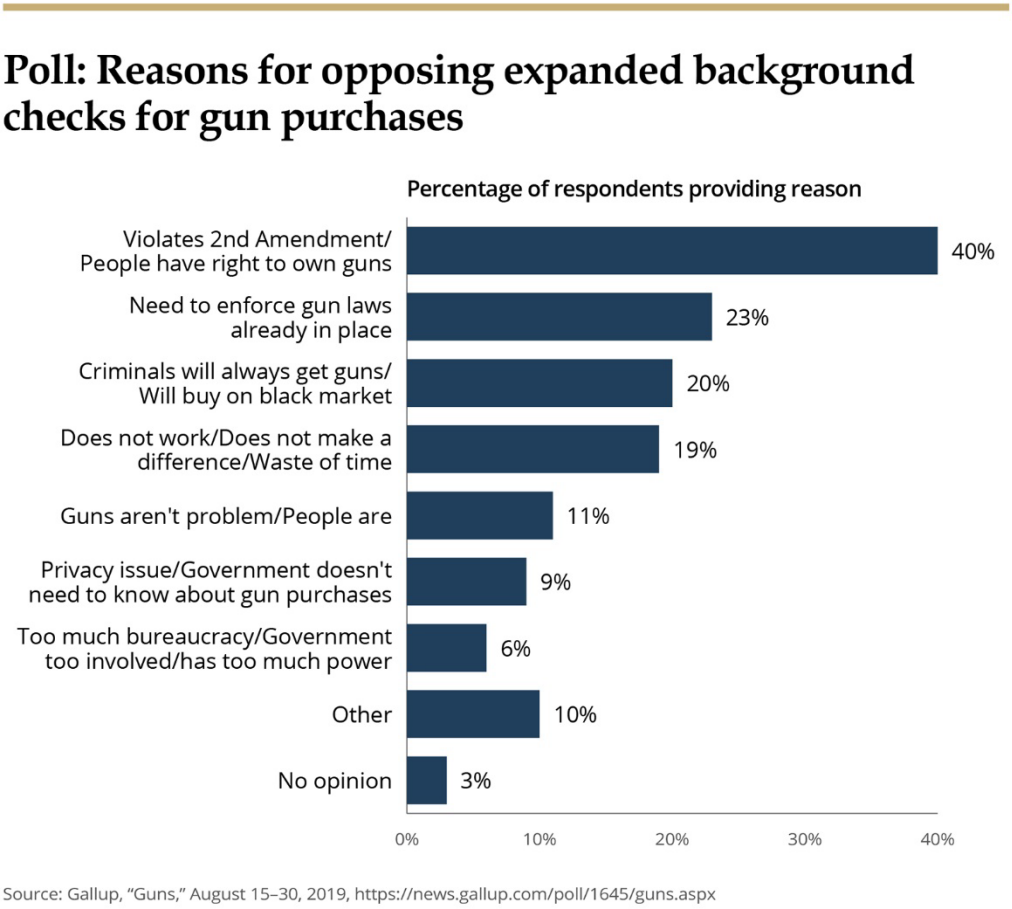
[18] Brennan Weiss, James Pasley, and Azmi Haroun, "Only 3 countries in the world protect the right to bear arms in their constitutions: the US, Mexico, and Guatemala", https://www.businessinsider.com/2nd-amendment-countries-constitutional-right-bear-arms-2017-10#:~:text=Only%20three%20countries%20in%20the,ve%20since%20repealed%20those%20laws, accessed December 7, 2022.

[19] Aaron Karp, "Estimating Global Civilian-Held Firearms Numbers, Australian Government Department of Foreign Affairs and Trade, June 2018, p. 3, https://www.smallarmssurvey.org/database/global-firearms-holdings, accessed November 10, 2022.

not. What are some of the reasons why you own a gun?" Their responses were summarized as follows:



The same Gallup report, citing a 2013 survey, of persons who did not want the U.S. Senate to pass a bill to expand background checks, responded thus to the open-ended question, "What are some of the reasons you did not want the Senate to pass expanded background checks for gun purchases?"



Source: Gallup, "Guns," August 15–30, 2019, https://news.gallup.com/poll/1645/guns.aspx

Even with the acknowledged margin of error, these results serve to highlight the relevant question: What would it take for gun owners no longer to desire to own guns? For present purposes, one can discount all substantive reasons with less than a 10 percent response rate and observe the following regarding the debate over firearms possession in the United States—each proposition having an important analog with the global nuclear zero debate:

- *Gun owners would have to feel that their personal safety was no longer threatened in a way that made them feel gun ownership to be imperative.* Similarly, nuclear weapon states would have to be persuaded that their security needs could, in fact, be met without nuclear weapon possession and the deterrent threat that their possession implies.
- *The activities for other than personal protection (such as hunting or other recreational or sporting uses) would have to lose their appeal.* Similarly, nuclear weapon states would have to come to regard as unappealing the multiple reasons for why they might possess nuclear weapon for reasons other than maintaining security, to wit: to demonstrate power and influence as a regional or global political leader; to enhance

national prestige by being a member of the "nuclear club"; to demonstrate scientific and technical prowess; to lower conventional defense budgets; etc.

- *Gun owners would have to feel that their "right" to own a gun was not being infringed upon.* Similarly, nuclear weapon states would have to be persuaded that the "grand bargain" enshrined in the Nuclear Nonproliferation Treaty, which establishes a clear divide between the nuclear "haves" and "have nots" was not, in fact, an infringement on states' rights.
- *Gun owners would have to feel that gun laws currently in place were both enforceable and were being enforced.* Similarly, nuclear weapon states would have to have growing, not waning, confidence in the nuclear non-proliferation regime—a tall order, as the regime arguably is currently under greater stress than at any time in the nuclear age.
- *Gun owners would have to believe that criminals would not have access to the very thing that they, as law-abiding citizens were willing to give up.* Similarly, nuclear weapon states would have to be brought to believe that giving up nuclear weapons would not simply leave lawless pariah states or non-state actors with free reign to wield nuclear threats. In a similar vein, they would have to be persuaded that the fates of states like Libya or Iraq, which lost their nuclear weapons programs—even if theirs was nothing more than the pretense of a program—would be visited upon them as well.
- *Gun owners would have to be persuaded that problems associated with the misuse of guns were essentially existential and not merely behavioral such that, if guns ceased to be available, the problems currently associated with guns would disappear.* (Recall the famous slogan: "Guns don't kill people; people kill people.") Similarly, nuclear weapon states would have to come to view nuclear weapons in the same way.

In short, just as U.S. civilian gun owners would have to be made to believe that they were at least as well off, if not better off, without owning guns, the same can be said, by analogy, of states possessing nuclear weapons with respect to their decision to give them up—and that can only happen if the security environment itself were to change so fundamentally as to yield the generally held conclusion that nuclear weapons had no meaningful place in that environment.

Finding a Suitable Replacement

In his third and final address to a joint session of Congress in 1952, Sir Winston Churchill famously warned, "[B]e careful above all things, therefore, not to let go of the atomic weapon until you are sure and more than sure that other means of preserving peace are in your hands."[20] Churchill understood that, in the absence of nuclear weapons, something else must be found to accomplish the same purpose. Nothing is new on this account. The entire history

[20] "Text of the Address by Prime Minister Churchill to Congress", *The New York Times*, January 18, 1952, p. 4.

of technology is the history of replacing things once deemed irreplaceable by something more adequate to the purpose. An excellent illustration of this point comes from the history of whale oil.

In 1622, William Bradford, Governor of Plymouth Plantation, enthusiastically reported, "Cape Cod was like to be a place of good fishing, for we saw daily great whales of the best kind for oil."[21] Indeed, he had observed, while still aboard the *Mayflower*, that

> every day we saw whales playing hard by us, of which in that place, if we had instruments and means to take them, we might have made a very rich return, which to our great grief we wanted. Our master and his mate, and others experienced in fishing, professed we might have made three or four thousand pounds worth of oil; they preferred it before Greenland whale-fishing, and purpose the next winter to fish for whale here.[22]

Thus, even at this early stage of the settlement of America, whale oil was prized such that its valuation outweighed the enormous risks associated with harvesting it.[23] Whale oil was, by all estimations, the preferred oil for light sources and, with the emergence of the Industrial Revolution, the preferred lubricant for machinery. Over the next two centuries, the whaling industry expanded such that

> In the year 1835 commenced that period of whaling which might be termed its Golden Age, for during the next decade the whale-fishery assumed its greatest importance and reached the zenith of its commercial value. . . . From this period the fleet rapidly augmented in size to the year 1846, when there belonged to the various ports of the United States 678 ships and barks, 35 brigs, and 22 schooners, with an aggregate capacity of 233,189 tons, and valued at $21,075,000[24]

—or, adjusted for inflation, $722,862,920 as of this writing.[25]

Naturally, the relentless harvest of whales not only induced scarcity, requiring whaling fleets to sail farther and farther, but some species of whale were hunted almost to extinction. Viewed from the vantage point of the 21st century, one might naively conclude, therefore, that current notions like environmental consciousness or animal rights led to the demise of the whale industry. However, nothing could be further from the truth. The far more proximate cause was "the birth of the American petroleum industry in 1859 in Titusville,

---

[21] Edward Winslow, et al., *A Relation or Journal of The Proceedings of the Plantation Settled at Plymouth in New England*, The Plymouth Colony Archive Project, http://www.histarch.illinois.edu/plymouth/mourt1.html, accessed December 6, 2022.

[22] Edward Winslow, et al., *Mourt's Relation: A Journal of the Pilgrims at Plymouth, 1622, Part I*, The Plymouth Colony Archive Project, http://www.histarch.illinois.edu/plymouth/mourt1.html, accessed December 6, 2022.

[23] See, for example, United States Commission of Fish and Fisheries, Part IV, *Report of the Commissioner for 1875–1876* (Washington: Government Printing Office, 1878), pp. 114, 131 ff., available at http://whalesite.org/anthology/starbuck.htm, accessed December 6, 2022.

[24] Ibid., p. 98.

[25] CPI Inflation Calculator, https://www.officialdata.org/us/inflation/1835?amount=21075000, accessed April 14, 2023.

[Pennsylvania],",which "allowed kerosene to supplant whale oil before the electric light replaced both of them."[26] Indeed, by 1882, Thomas Edison began providing electric lighting commercially to New York City—a world-changing event so underappreciated at the time that, the following day, *The New York Times* acknowledged what had occurred merely by including an unnamed reporter's eyewitness account of the inauguration of this technology in the inauspicious "Miscellaneous City News" section.[27] This inauspicious beginning of a technological revolution notwithstanding, no one today could reasonably pine away with nostalgic feelings for the grand era of illumination by whale oil. A combination of the gradually widening price differential between whale oil and kerosine and later electricity, the relative ease with which each was produced, and the uncontestable contrast between the efficiency of the former and the latter meant that kerosine and, as soon as it could become widely available, electricity, was bound to supplant whale oil. In short, something that performed the function better rendered the former means obsolete.

As for whale oil, so for nuclear weapons. Hearkening again to Churchill's 1952 address to Congress, he called nuclear weapons the "supreme deterrents against a third world war and the most effective guarantee of victory in it." He regarded this "guarantee"—perhaps wishfully—as an essential stop-gap until "strong enough forces can be assembled in Europe under united command" and "our security can be seen to reside in valiant, resolute, and well-armed manhood, rather than in the awful secrets which science has wrestled from nature."[28] In other words, large, standing armies that could achieve the same purpose were necessary before any serious thought could be given to relinquishing nuclear weapons. In truth, whether the most suitable substitution was large, standing armies or something else, may be left as an open question. The fundamental point remains the same: A capability regarded as adequate—whether whale oil, or nuclear weapons, or anything else perceived to perform an essential purpose—cannot reasonably be, *and will not be*, relinquished willingly until something else at least as adequate, if not more, is available to replace it.

Conclusion

Indeed, one can only look with great concern upon the possibility of nuclear weapon employment in Ukraine and with grave concern upon the possibility of escalation to a more general war with nuclear dimensions. That concern gives renewed and understandable rise to the call to abolish nuclear weapons altogether—as if nuclear abolition as such would simultaneously abolish the conditions that gave rise to them in the first instance. However, as this essay has sought to illustrate by analogy, unless (1) those seeking nuclear weapons first consider their possession to be no longer valuable to them, or (2) that the security

[26] Peter Appelbome, "They Used to Say Whale Oil Was Indispensable, Too", *The New York Times*, August 3, 2008, https://www.nytimes.com/2008/08/03/nyregion/03towns.html, accessed December 7, 2022.

[27] Carl Sulzberger, "Thomas Edison's 1882 Pearl Street Generating Station", Engineering and Technology History Wiki, https://ethw.org/Milestones:Pearl_Street_Station,_1882, accessed December 7, 2022.

[28] "Text of the Address by Prime Minister Churchill to Congress," *The New York Times*, January 18, 1952, p. 4.

environment which gave rise to nuclear weapons has fundamentally changed such that they are no longer necessary, or (3) that an adequate substitute can be found for nuclear weapons, or some combination of these states of affairs obtains, no rational basis exists for expecting that nuclear weapons will be eliminated from the world for the foreseeable future. That does not mean that nuclear weapons represent a moral good or that they are not morally or otherwise problematic. It merely means that nuclear weapons, like gold or guns or whale oil, exist, not in a vacuum, but in a geo-political context that first must change. With respect to a replacement technology, a caution is in order: One should consider that change merely for change's sake cannot be guaranteed to produce a better state of affairs. For, even if changing circumstances were to enable the disappearance of nuclear weapons today, there is also no rational basis for assuming that their replacement would be any less dreadful than the status quo, and, perhaps, would be more so.

John Mark Mattox is an Associate Professor of Strategy and Policy at the National War College, National Defense University, and the College's inaugural Chair in Leadership, Character, and Ethics.

INTERVIEWS

As part of its continuing effort to provide readers with unique perspectives on critical national security issues, National Institute has conducted a series of interviews with key subject matter experts on a variety of contemporary defense and national security topics. In this issue of National Institute's *Journal of Policy & Strategy*, we present two interviews: one with General Kevin Chilton, (USAF, Ret.), former Commander of U.S. Strategic Command; and another with Thomas Kent, former President and CEO of Radio Free Europe/Radio Liberty. The interviews were conducted by David Trachtenberg, Vice President of the National Institute for Public Policy.

General Chilton discusses the Biden Administration's nuclear policies, the threats posed by China and Russia, and the importance of having a credible nuclear deterrent in a dynamic international strategic environment. He argues that in light of Russian and Chinese nuclear developments the United States should "absolutely not" reduce its own reliance on nuclear weapons for deterrence, criticizes the "minimalist approach to the recapitalization of our nuclear weapons production capability," and notes that the United States today is "ill prepared to defend [the homeland] should deterrence fail at any level." Mr. Kent looks at the impact of Russian propaganda and disinformation and offers suggestions on how the West can effectively counter it. He argues that "no one seems to be coordinating all the different agencies across the government that have a role in combating malign information operations" and calls for a "unified, government-wide strategy" to counter adversary disinformation.

These interviews provide insightful context on some of the most significant national security issues of our time. In today's increasingly uncertain and volatile global security environment, the views of these experts add important perspective to the current debate on the serious military and political challenges the United States faces from both China and Russia and how this nation can best prepare to address those challenges successfully.

An Interview with
General Kevin Chilton, (USAF, Ret.),
former Commander, U.S. Strategic Command

Gen. Chilton addresses the Biden Administration's nuclear policies, the threats posed by China and Russia, and the importance of having a credible nuclear deterrent in a dynamic international strategic environment.

Q. The Biden Administration's Nuclear Posture Review (NPR) did not adopt many of the policies advocated by supporters of nuclear disarmament, including eliminating the land-based ICBM leg of the U.S. strategic Triad and adopting a "No First Use" policy. How do you assess the NPR?

A. The strengths of this NPR lie mostly in what it was silent on, to include declarations of "no first use" and "sole purpose" policies (which would have been detrimental if not destructive to U.S. non-proliferation efforts), and any backing away from the recapitalization of all three legs of the nuclear triad (which would have weakened strategic stability). On the proactive side, the NPR supports continued investments in the National Nuclear Security Administration's (NNSA's) efforts to reconstitute the ability of the United States to produce nuclear weapons as opposed to merely sustaining the current stockpile, which will of course eventually age out and become useless. On the other hand its shortcoming include: 1) the failure to commit to a plutonium pit production rate and weapons production infrastructure writ large that will hedge against what has now become a certain, as opposed to an "uncertain" future, given the rapid buildup of China's arsenal, and one that will do more than just sustain the current U.S. deployed stockpile; 2) the failure to support a new nuclear armed Sea-Launched Cruise Missile (again critical to non-proliferation as well as to deterring Chinese aggression in the Western Pacific); and 3) the failure to articulate a strategy that counters the imbalance in theater weapons vis-à-vis the Russian stockpile. All are critical shortcomings in the document.

Q. On balance, does it properly reflect the current international strategic environment and are its recommendations for U.S. policy appropriate to the threats we face?

A. In short, no to both.

Q. The NPR acknowledges that Russia and China have both increased their reliance on nuclear weapons but proposes that the United States seek ways to reduce its reliance on nuclear weapons in U.S. national security strategy. Specifically, it calls for terminating the nuclear sea-launched cruise missile (SLCM-N) program and eliminating the B83-1 gravity bomb. In your view, is this a proper approach?

A. With regard to reducing U.S. reliance on nuclear weapons, absolutely not. Power, particularly the power wielded by dictatorial and imperialistic regimes such as Russia and China, only respects power. These regimes thrive on the weakness of their adversaries. This NPR continues to reflect the folly of both the "mirror imaging" of our adversaries (i.e., the notion that China and Russia must surely hold the same values and risk tolerances that we do), as well as the notion that they will follow our lead in any matter that is not aligned with their own national interests. Because of these differences, uncertainties exist and as a result it is prudent to address them with a more robust vice less robust inventory of deterrent options. Weapon systems like the SLCM-N not only support our non-proliferation policies (particularly in the Western Pacific), they provide future presidents with credible options that are well short of a homeland-vs-homeland exchange, which would appear to be China's intent to threaten should the United States intervene to defend Taiwan from a Chinese military incursion. With regard to the elimination of the B-83 gravity bomb, this may make sense if the NPR articulated how we intend to replace the capability it provides to hold the

hard and deeply buried targets of our adversaries (such as Russian and Chinese nuclear command and control facilities and Iranian and North Korean nuclear weapon production facilities) at risk. Again, we send a signal of weakness if we eliminate this capability without committing to develop adequate alternatives.

Q. Consistent with all previous NPRs, the 2022 NPR supports maintaining the strategic Triad and reiterates the need to modernize all three "legs." Yet, some critics believe the NPR did not go far enough in making changes to the longstanding bipartisan support for the Triad by recommending significant reductions in, or elimination of, land-based ICBMs. What do you believe is the value of the ICBM leg of the Triad in today's strategic environment?

A. The ICBM leg of the Triad provides the most "strategic stability" of any leg for two reasons. One, without this leg, an adversary could be tempted to conduct a first strike that with less than 10 weapons could eliminate the bomber leg of our deterrent, over 50 percent of the submarine leg, our entire stockpile of weapons, our nuclear weapon labs and the entire infrastructure that supports the development and production of our stockpile. Because of their numbers, dispersion, and hardness, an adversary would be required to use a significant number of weapons to mitigate the retaliatory threat the ICBM forces pose. And, because of our ability to launch them on warning, any first strike attempt by an adversary might very well fall on empty silos. Removing this leg or changing its alert posture would be very destabilizing as it would lower the threshold for an adversary's consideration of a first strike.

Q. Russia's ongoing military invasion of Ukraine has led to growing concerns that Moscow may use so-called tactical nuclear weapons to avoid defeat in the conflict. Do you believe this is a likely possibility?

A. Anything is possible. The question for the United States and indeed the civilized world is, how best do we make this decision by Moscow an unthinkable option?

Q. How should the United States and the West respond in such an event?

A. The United States should use every element of national power across the DIME (Diplomatic, Information, Military, and Economic) to isolate Russia from the rest of the world and insure that crossing this threshold does not result in a Russian victory in Ukraine. Failing to do the latter would embolden Russia and other nuclear armed adversaries to use (or threaten the use of) nuclear weapons as tools to support their imperialistic goals.

Q. The viability of the U.S. nuclear deterrent depends on the existence of a reliable and secure command, control, and communications (NC3) network. How do you assess the robustness and resiliency of the existing NC3 network, and are there any specific changes that should be made to improve its efficacy in the face of cyber and other threats?

A. I do not have enough current information to assess the current robustness and resiliency of the existing NC3 network. However, what I do know is that the NC3 network is essential to the credibility of the deterrent. Indeed, if the deterrent could be envisioned as a 3-legged stool with the legs being the SLBM, bomber and ICBM forces, the seat of the stool that all three legs are attached to contains the NC3 element of the deterrent. Remove any leg and the stool ceases to function as a stool. Remove the seat, and the legs become worthless.

Q. As a former Commander of U.S. Strategic Command, do you believe that STRATCOM has sufficient resources to successfully carry out the missions it has been given?

A. No. I am concerned that there is insufficient hedging capability being provided or even considered for what is no longer an "uncertain future" but one that is quite predictable. Supporting a deterrent that is essential to the future existence of the United States as well as to the maintenance of the current world order is not well served by "just in time" recapitalization of the Triad nor by a minimalist approach to the recapitalization of our nuclear weapons production capability. Both should have margin built in to their construct because the day may come when we will need more, not less capability to deter multiple threats to our sovereignty.

Q. Multiple administrations have referred to defense of the U.S. homeland as DoD's top priority. Given the increase in adversary investments and capabilities in hypersonics, cruise missiles, and other exotic technologies, can the United States adequately deter and defend against these threats?

A. I question what we mean by defense of the U.S. homeland. Do we mean the DoD has a responsibility beyond just deterring attack? What is DoD's responsibility should deterrence fail? If the expectation is that, should deterrence fail, the DoD should be prepared to defend the homeland then we are poorly postured to do so. Fielding defenses that give the adversary doubt as to whether or not their offensive weapons would be effective certainly strengthens deterrence and increases strategic stability. The question we should be considering is how much defense should be fielded, not whether or not we should field defenses. Today, we seem to spend more time on the latter and as a result are ill prepared to defend should deterrence fail at any level. One must also consider that although we cannot defend against the hypersonic/cruise missile/FOB (Fractional Orbital Bombardment)/"super torpedo" threats we see being fielded today by our adversaries, neither can we defend against an "old fashioned" ballistic missile attack, simply because we have chosen not to do so by policy.

Q. What more, if anything, should the United States do to stay ahead of growing threats to U.S. security?

A. We must convince our adversaries that the use of nuclear weapons, either in a theater or strategic conflict, would not achieve the end states they desire. We can do this through investments in the fielding/posturing and production capacity of our nuclear deterrent infrastructure along with prudent consideration and fielding of defensive capabilities for fielded forces as well as the homeland. Consideration of this balance should include reflection and thoughtful debate on our tolerance for being coerced by our adversaries into failing to pursue our current and future vital national security interests.

Q. China is considered the "pacing threat" for U.S. defense investments and programs. However, there is concern that China is outpacing the United States in various elements of military power, including, for example, in hypersonics. What does the United States need to do to keep pace with China's extensive military modernization program?

A. Nuclear weapons delivered by hypersonic vehicles, be they boost glide or boost cruise, are no more lethal to the U.S. homeland than ballistic weapons since, by choice only, we cannot defend the homeland against the latter either. In a theater conflict this is not true, as systems like Patriot and Thaad can defend against a ballistic threat. I think it is most important to field defenses for the theater scenarios. With respect to deterring attack on the homeland, the issue at hand is: given the investments Russia (and perhaps China as well) is making in missile defense systems designed to defeat ballistic missile attacks on its homeland, will a purely ballistic-weapon-armed U.S. deterrent force be adequate to maintain strategic stability in the future? I think not, and therefore it would be prudent to field some amount of hypersonic, nuclear-armed, intercontinental systems that would counter Russian (and Chinese) defensive systems to ensure our ballistic weapons can effectively penetrate their defenses.

Q. Former STRATCOM Commander ADM Richard has referred to China's expansive nuclear program, including the building of some 350 new ICBM silos, as "breathtaking." Why do you believe China is undertaking such a massive nuclear buildup?

A. I believe this is part of a coercive strategy that seeks to neutralize U.S. will to come to the defense of not just Taiwan but also of our allies in the Western Pacific.

Q. What does this say about China's previously declared "minimum deterrent" policy?

A. I believe they have turned away from this policy and seek to build a credible first strike capability to support a coercive strategy.

Q. Last year, Presidents Putin and Xi signed a pact pledging a friendship with "no limits." Since then, China and Russia have engaged in multiple joint military exercises and closer military coordination, and have made nuclear threats against NATO and U.S. allies in the Pacific. How likely is the possibility, in your view, that the United States may confront military challenges by two nuclear peer adversaries in two theaters simultaneously?

A. The likelihood is unknown. But failing to consider the possibility and building the necessary deterrence capabilities to address this possibility could be disastrous.

Q. Is the United States prepared to deal with such a contingency?

A. Not today.

* * * * * * * * * *

An Interview with Thomas Kent, former President and CEO of Radio Free Europe/Radio Liberty

Mr. Kent looks at the impact of Russian propaganda and disinformation and offers suggestions on how the West can effectively counter it.

Q. Russia appears to be employing Soviet-style propaganda and disinformation tactics to justify its war against Ukraine. How effective do you think Russia's tactics have been in influencing the general Russian population?

A. It depends on what part of the Russian population you're talking about. Clearly there are many citizens who have a real problem with Russia killing thousands of people in Ukraine who, in Vladimir Putin's rhetoric, are the same people as Russians. Others are alarmed over the damage the war has done to Russia's economy and international standing. State propaganda can't blot out these people's concerns. But they know the dangers of protesting.

A second group of Russians either believe the official propaganda, and even derive some thrill from Russia being an international Voldemort that has transfixed the world's attention. Foreign Minister Lavrov has said that Russia is not squeaky clean; it is what it is, and is not ashamed.[1] Comments like this, just like hate speech about Ukrainians on state television talk shows, set the tone for many people not to care at all about the destruction the Kremlin is raining down on a neighboring country.

[1] Steve Rosenberg, "Lavrov: Russia is not squeaky clean and not ashamed," *BBC News*, June 17, 2022, available at https://www.bbc.com/news/world-europe-61825525.

A third group—perhaps the majority—just try not to think about the war. If you don't personally know someone who was killed, it's still possible to live in Russia today and feel the war is quite far from you. In any country there's a natural instinct to trust your leaders, or at least to think there's not much you can do to change things. For many people, the war is just something in the background—not a daily factor in their lives. It's not something they're going to go into the streets about, for or against.

Q. What do you believe are the most effective methods the United States can use to combat the deliberate spread of misinformation about the war in Ukraine?

A. The United States and its allies have been pretty successful recently with "prebunking"–anticipating, and publicly warning about, actions that Russia may take. When the Kremlin was vociferously denying that it intended to invade Ukraine, the United States declared that they would—and predicted the timing almost to the day. This tactic often requires declassifying information obtained from sensitive sources—and though it may not force a change in an opponent's behavior if that opponent is bent on conquest, it's worth it in terms of the information effect.

I'm also a big believer in the potential of local non-government groups who actively combat disinformation and campaign for democracy in at-risk countries.[2] Some of these activists are out on social networks, punching it out on social networks, punching it out with trolls and bots. Others run media literacy classes, or focus on reaching elderly people who are often vulnerable to disinformation. They develop software to unmask troll and bot networks so social platforms can take them down. They campaign for advertisers to boycott disinformation sites.

They are extremely courageous. Their members often work at significant personal risk in countries where political violence is common.

These authentic local actors have more credibility than any messaging by a foreign country. But they need financial support, training and contacts with peers in other nations. This is a need Western governments, citizens' groups and foundations can fill.

Pro-democracy groups can't be speaking just to educated elites. In many countries, the people most vulnerable to disinformation are less-educated people, often in the countryside. These people need to be addressed in their own way of speaking, with a focus on their own concerns. They're much more likely to respond to reporting about how government corruption affects their own region, than to general exhortations about democracy or human rights.

In fact, one can argue that the D-word—"democracy"—isn't that useful at all. It has been so dented by adversary attacks, and Western democracies have had so many difficulties of their own, that in some countries the word has lost the impact it had. Better to speak simply

[2] Thomas Kent, "In the global meme wars, it's time to side with the elves against the trolls," *The Washington Post*, November 16, 2022, available at https://www.washingtonpost.com/opinions/2022/11/16/support-elves-trolls-disinformation-wars/.

about the right to criticize your government without being arrested, or to have a genuine choice of candidates in an election. Those are concepts that people can easily understand and support.

It's also important to support investigative journalists who expose the machinations of authoritarian leaders and hold corrupt officials accountable. But the news products these journalists produce need to be attractive to, and readable by, everyone in their countries.

Q. How effective is the State Department's Global Engagement Center (GEC) in countering Russian propaganda and disinformation? What additional steps, if any, should the United States take to counter the spread of Russian disinformation?

A. To its credit, the GEC has always recognized the importance of non-government actors. Its mother ship at State, the Bureau of Global Public Affairs, has been active in exposing Russian disinformation and even sending messages to the population of Russia itself—such as its "To the people of Russia" video in January.[3] However, no one seems to be coordinating all the different agencies across the government that have a role in combating malign information operations. These include multiple offices at the State Department, public diplomacy officers at embassies, USAID, the military, and the intelligence community.

And even if someone does take on a coordinating role, there needs to be a clear goal that the United States wants to achieve. Does the United States want Putin to be forced from power, on the theory that whoever succeeds him will be an improvement? Do we want to inspire big anti-war demonstrations, recognizing the risks that protesters would face? Are we sure that messaging from the United States would have a positive effect, rather than spurring a backlash against us? It's hard to run an information campaign if you don't know what effect you're trying to produce.

People who worry about the United States getting more active in the information space often jump to the conclusion that effective information strategies mean doing disinformation of our own—sometimes described as "descending to their level" or "getting down in the mud." In my view, we should always tell the truth—but we should do so much more assertively, through a variety of well-thought-out channels, in a coordinated fashion.

We need to think carefully about the tone of our messages. The "To the people of Russia" video was not hostile, at least toward the Russian population as a whole. It simply recapped past friendship between the United States and Moscow, and then showed the horrors of Ukraine. It ended with "We do not believe this is who you are," followed by the sound of Russian demonstrators chanting "No to war."

Of course, any Western messaging to Russia's population alarms the country's leadership, which fantasizes that the United States really does have a finely honed information operation aimed at its people. Reacting to the January video, Deputy Security Council chief Dmitry Medvedev said that it demonstrates "extreme cynicism in the best

[3] Available at https://www.youtube.com/watch?v=ca6xYhruqR8.

traditions of the Nazis. Yes, indeed, the sons of bitches bringing such nonsense are the real heirs of the Reich Minister of Propaganda Joseph Goebbels."[4]

Q. During the Cold War, the United States Information Agency (USIA) was generally seen as an effective tool to counter adversary disinformation. Do you believe there is a need to recreate an agency such as USIA for this purpose?

A. The legislative effort and bureaucratic battles involved in such an attempt would take forever, and paralyze U.S. information operations in the meantime. But the fundamental need in fighting disinformation is not a new organizational chart. It's a unified, government-wide strategy.

What could make an enormous difference is a small office at, say, the level of the NSC to determine the U.S. government's (USG's) overall goals in the information war, decide which of our existing agencies will do what, and—importantly—provide high-level approval for the projects and messages involved. USG officials can be very risk-averse. There needs to be someone authoritative to tell them, "Yes, it's OK to do that," and who will defend them if something goes wrong.

Information operations are always an experiment, requiring constant evaluation of the messages you're sending and frequent course corrections. Inevitably there will be missteps. As one USG official told me, "The number of successes you have is a function of the number of things you try." Russian information operations are effective because they have learned from years of live-fire exercises against Western populations.

Q. Do you believe the United States has the necessary tools in place successfully to challenge Russian narratives? Is it a case of poor execution on the part of the U.S. government or are more fundamental structural changes needed?

A. If you look across all the agencies dealing with this problem set, the tools are there—or can be quickly acquired. We're talking here about systems to monitor the information environment, conduct online campaigns, measure the effect and so forth. There's no rocket science here. What's not really in place is a big-enough cadre of experts within the USG who devote their whole professional lives to information operations. Diplomats and military officers cycle in and out of information-related assignments, which is very disruptive for a specialty that depends greatly on accumulating experience through experimentation. USG components have been bringing in more contractors with that experience for a few months or years at a time. But U.S. agencies need more of their own career experts, especially at policy levels, to keep our efforts on the right strategic course.

[4] Dmitry Medvedev, Telegram post, January 5, 2023, available at https://t.me/medvedev_telegram/241.

Q. As a former head of Radio Free Europe/Radio Liberty (RFE/RL), how do you assess the effectiveness of the types of media used to convey factual information to the Russian people? What challenges have been posed by the migration away from the use of shortwave radio broadcasts to more contemporary technologies such as satellite, digital transmissions, and the internet?

A. By law, U.S. government broadcasters like RFE/RL and the Voice of America have independent editorial operations. They are not the voice of the government. This adds to their credibility; more than 400 million people worldwide look to them for news and information.[5]

The five networks moved long ago to transfer most of their work from radio to the digital and video realm. Their videos scored nearly a half-billion views last year on the web and social networks. In addition, their 24-hour Russian-language TV news network, *Current Time*, has had major impact. (Older technologies such as shortwave still retain their value and should be used more in a situation like Ukraine.[6])

That said, the broadcasters should not be the USG's only resource to reach foreign populations, especially at moments of crisis. Since they expressly are not government mouthpieces, U.S. officials cannot give them orders on what to put out. Some situations call for intense, non-stop messaging in a format quite different from what of an ordinary news service would provide.

In a crisis, there may be a need to flood the internet with hundreds of posts in just a few hours, using all the targeting techniques that our adversaries use. There may be a need to punch through internet blocks, broadcast jamming and other tactics our opponents may deploy. (The five broadcast networks have experience with that already.) We might even want to disrupt the sources of disinformation themselves. What capabilities currently exist in the USG to respond like that in a crisis? Which USG components have the skills, and how practiced are they in working together? How have we simulated such operations, perhaps just with innocuous posts, to make sure we know how to flood the zone? These are good questions to resolve before a crisis suddenly hits.

Q. There are reports that Russia is winning the narrative war in places like Africa and Latin America. Is this accurate? If so, why do you believe Russia is scoring propaganda successes?

A. Russia has a few advantages in its information operations in the Global South. One is that most people know fairly little about Russia, except perhaps for its hosting of the 2018 FIFA World Cup. Russian statements don't necessarily evoke suspicion. So when they say the war

[5] U.S. Agency for Global Media, "Audience and Impact OVERVIEW FOR 2022," available at https://www.usagm.gov/wp-content/uploads/2023/01/USAGM_Audience_and_Impact_Report_2022.pdf.

[6] Tom Kent, "Radio to Russia: Can Old Technologies Make a Dent in Putin's Information Blockade?," Information Professionals Association, June 21, 2022, available at https://information-professionals.org/radio-to-russia-can-old-technologies-make-a-dent-in-putins-information-blockade/.

with Ukraine is just a territorial dispute, or a reaction to genocide by Ukrainians, no automatic warning light goes off. (People know even less about Ukraine than about Russia.)

What people do care about is food shortages and inflation. Russia argues that these come not from Russia's invasion, but from Western sanctions. It is not hard to stir up suspicion of the West in Global South countries, where resentments endure from European colonialism, U.S. support of Latin American dictators, and Western policy on issues like Libya, the Palestinians and Iraq. Russia even claims it is fighting against colonialism by keeping NATO from seizing the agricultural riches of Ukraine.

Still, Russia still has a tough job cutting a heroic image in developing nations, especially when its extreme brutality in Ukraine is becoming well known worldwide. And the West still has its attraction. Whatever people think of U.S. and European foreign policy, there's no shortage of people desperate to migrate to Western countries. Anyone who travels the world finds their taxi driver inevitably has a brother in Brooklyn—who presumably tells the people back home that he intends to stay there. Almost no one dreams of settling down in a little cottage in Russia.

Russia's strategy, however, doesn't need to be about winning a public popularity contest in the Global South. It only needs to ingratiate itself with individual countries' political elites. Russia can be useful to these elites by helping to shore up shaky regimes, and by giving them a "Russia card" to play to get better trade and aid deals from Western countries. In return, Russia can win those countries' support (or at least abstentions) at the UN, have somewhere to export its goods, and avoid total international isolation.

PROCEEDINGS

ALLIED ASSURANCE AND EXTENDED DETERRENCE IN A MULTIPOLAR WORLD

The remarks below were delivered at a symposium on "Allied Assurance and Extended Deterrence in a Multipolar World" hosted by the National Institute for Public Policy on September 22, 2022. The symposium highlighted the results from a recent study on the topic, discussing the special responsibilities the United States has to assure allies and deter adversaries through its extended nuclear deterrence commitments—its "nuclear umbrella"—and whether U.S. extended deterrence and assurance requirements must be reevaluated to ensure their continued credibility and viability.

David J Trachtenberg
David J. Trachtenberg is Vice President of the National Institute for Public Policy and served as Deputy Under Secretary of Defense for Policy from 2017-2019.

Before turning the microphone over to our speakers, I would like to note that today is an anniversary for us, of sorts. Exactly two years ago to the day—September 22, 2020—the National Institute for Public Policy conducted its very first webinar, a symposium in honor of Colin S. Gray, an eminent strategist and co-founder of the National Institute. In fact, some of our panelists today participated in that symposium.

Colin's insights and strategic analyses have stood the test of time. In connection with today's discussion of extended deterrence and assurance, the perspectives he offered years ago are, not surprisingly, relevant today. He understood that the U.S. ability to extend deterrence to allies depends on the overall viability and credibility of the U.S. strategic nuclear arsenal. In fact, this has been recognized by NATO throughout its history and, most recently, in its new *Strategic Concept*, which clearly states: "The strategic nuclear forces of the Alliance, particularly those of the United States, are the supreme guarantee of the security of the Alliance."[1]

In commenting on "what would deter a Soviet leadership?", Colin noted, "U.S. and NATO defense planners are obliged to provide an answer and to build forces that could give adequate expression to the threats required by the strategy so identified." In other words, Colin recognized the need for a tailored extended deterrence strategy and forces that are designed specifically to support that strategy.

Moreover, he noted that the existence of alliances and coalitions of democracies are not guarantees of permanent success, noting that "Once-perceived threats that have been long-deterred may be forgotten…. coalitions which cohere well enough to wage war successfully will necessarily lose much of the incentive to continue to cooperate as the common danger,

[1] See *NATO 2022 Strategic Concept*, June 2022, available at https://www.nato.int/strategic-concept/.

though still actively in the field, plainly becomes less menacing than are one or two coalition partners."[2]

Alliances must be nurtured, especially as the conditions which led to their creation evolve. As threats change, assurances of support by others may also gain or lose credibility. Arguably, this is even more relevant today in a world in which two nuclear peer adversaries of the United States—Russia and China—seek to displace American power and overturn the existing world order.

As I noted in the invitation to this event, the United States has special responsibilities for assuring allies and deterring adversaries through its extended nuclear deterrence commitments—its nuclear umbrella. More than 30 countries around the world, including 29 North Atlantic Treaty Organization (NATO) members, Australia, Japan, and South Korea are currently protected under this umbrella.

Yet regional trends, including the resurgence of a belligerent Russia, the rise of China as a nuclear peer, and North Korea's developing nuclear weapons capabilities, have heightened doubts and concerns about the willingness of the United States to come to the active defense of its allies—especially if the possibility of doing so may escalate any conflict to the nuclear level. Consequently, the question is whether U.S. extended deterrence and assurance requirements must be reevaluated to ensure their continued credibility and viability and whether the forces supporting those requirements are up to the task.

Whether or not the United States today has an adequate deterrence strategy and the forces necessary not only to extend deterrence but to credibly assure allies is the focus of today's discussion, which also keys off of a study my colleague Michaela Dodge has been leading. So let me now turn the floor over to Michaela.

* * * * * * * * * *

Michaela Dodge
Michaela Dodge is a Research Scholar at the National Institute for Public Policy.

Thank you to Dave for an excellent introduction and for hosting this forum. Thank you to my co-panelists for participating. And my sincerest thanks to those watching, and especially those of you who agreed to be interviewed for the study.

Challenges to U.S. extended deterrence and allied assurance are not new. But the current environment places both under significant and perhaps even unprecedented strain.

The rise of revisionist nuclear powers warrants a reassessment of U.S. nuclear posture. Pundits sometimes call changes to U.S. nuclear forces that are not reductions or qualitative freezes destabilizing or escalatory. This is just not so. Secretary Schlesinger's Limited Nuclear Options were a U.S. answer to the Soviets reaching nuclear parity with the United States. The Soviets having such a capacity undermined the credibility of U.S. extended

[2] Colin S. Gray, *War, Peace and Victory: Strategy and Statecraft for the Next Century* (New York, NY: Simon & Shuster, 1990), p. 255.

deterrence and assurance. Rather than being destabilizing, Limited Nuclear Options helped to assure allies and extend deterrence.

What do select regional experts think about U.S. assurances and extended deterrence given the rise of other revisionist nuclear powers? It seems to me we have good news and bad news.

The good news is that interviewed experts from allied countries, in Europe or Asia, generally perceive the U.S. commitment to their country's security as credible and strong. In the short to medium term, most of them do not feel that the United States needs significantly different nuclear and missile defense capabilities, other than those currently funded by Congress.

For assurance, allies in Europe primarily seek NATO's conventional presence, particularly allies closer to Russia's border. Speaking of Russia, the outcome of its war in Ukraine will shape future allied assurance requirements. They could increase or decrease, but demands on the United States will not go away entirely. And of course, allies in the Indo-Pacific region are paying attention to the conflict, too.

Another piece of good news is that the United States did not fundamentally change its declaratory policy in the upcoming *Nuclear Posture Review*. I think allied governments were quite relieved by this development.

The bad news is that ruptures and cracks in U.S. assurance and extended deterrence are appearing and could grow more serious if not properly tended to.

Allies (and adversaries) see that the United States would have an extremely hard time handling two simultaneous conflicts with near peers in different theaters. Allies worry about U.S. attention to one operational theater taking resources away from the other. Although there is a growing recognition that allies in one region need to cooperate with allies in the other region, the competitive element remains. Given our defense budgets, while it is not quite a zero-sum game, it is not a free for all either.

Russia's invasion of Ukraine makes war more real and concerns over military capabilities more pressing. A related challenge is the West's inability to support an industrial-scale war. Weapon stocks and ammunition are being depleted, and it will be a while before our industrial base catches up. In a direct conflict with a peer or near peer adversary, would we have the necessary time to mobilize like we did during the First and Second World Wars? How much would we have to pay for delays? We know it would be very difficult to mobilize in the nuclear sphere where our infrastructure atrophied. And U.S. inferiority in short- and intermediate-range nuclear weapons potentially makes nuclear escalation a more attractive option for our adversaries.

Some capabilities in development that allied experts consider important for extended deterrence and assurance are subject to the vagaries of the U.S. political process—for example, the nuclear-armed sea-launched cruise missile. Americans appear to underappreciate the importance of consistency for allied assurance. On the other hand, there is no virtue in consistency should a matter be on the wrong track. Regardless, more generally, allied experts worry about the implications of political polarization on the U.S. ability to

spend blood and treasure on behalf of allied countries. Rhetorical scars left by some of President Trump's statements on alliances run deep.

Regarding the U.S. response to Russia's invasion of Ukraine, some experts were unnerved by the initial slow rate of the U.S. response to Ukrainian pleas for help. They interpreted it as the United States being self-deterred from providing help to the Ukrainians. The Biden Administration's statements on what the United States won't do in response to Russia's invasion were rather unhelpful from an assurance perspective. The message for some was—if you fold fast, you are on your own. Admittedly, allies building up their own capacities to resist would not be an entirely bad thing and it would make our job in Washington, DC a little easier. But I'm not sure that us giving allies a message to resist long enough or be on your own is really the one we want to project.

In Europe, we can observe a dynamic that should worry us in the long run. Mistrust is growing among European leaders. We have those who continue to talk to Putin and even call the conversation "friendly" and those who go above and beyond to defeat him. The dynamic undermines European security integration. It means requirements for U.S. assurances will not diminish anytime soon. It also bodes poorly for what promises to be a more challenging conflict with China.

I think I ended up giving you more bad news than good news. But perhaps I will be more pleasantly surprised than otherwise. And we could all use some pleasant surprises because winter is coming.

* * * * * * * * * *

Stephan Frühling
Stephan Frühling is a Professor at the Strategic and Defence Studies Centre at The Australian National University in Canberra.

Thank you for the opportunity to speak to you from the middle of the night here in Kyoto.

This is an important topic at an important time. Calling the strategic environment uncertain and complex has become a trope, but I think there are today more short-term uncertainties that will have long-term consequences for deterrence and reassurance than we have seen in a long time, including the ultimate outcome of the war in Ukraine, the economic and political future of China after Xi's appointment to his unprecedented third term, and the outcome of the U.S. mid-term elections and what they will portend about the future of U.S. domestic politics.

As a start, I'd like to offer some views on how U.S. deterrence and reassurance look from Australia and how these factors impact our defence debate—which is somewhat different than NATO as a collective, Japan or South Korea. For the fundamental condition of Australia is geographic distance from allies as well as threats, and for most of the time since the second World War, that was a source of security not insecurity for us.

Unlike U.S. allies in Eastern Europe, Japan or South Korea, we are thus not (yet) a frontline state. I'll get to that 'yet' a bit later, but first want to draw out a few deep-seated consequences of this situation.

First, it is true that at a fundamental level, the U.S. alliance addresses Australia's trauma of 1942, when Australia was left in the lurch by Britain with the failure of the "Singapore Strategy." In recent months my colleagues and I have spoken to about 200 Australians from all walks of life to draw out what they see in the alliance, and 1942 is almost the only frame through which the military relevance of the alliance is conceived in the Australian public.

But for the last 70 years that level of threat wasn't credible. So, the basic logic for Australia was that if the United States remained engaged in Asia, we wouldn't have to face an existential threat—or put in different terms, if we faced an existential threat it would only be because the alliance was not reliable any more.

This means that conflict would come to Australia because the United States is in conflict in Asia, rather than the other way around.

Hence, deterrence/reassurance is not that useful a lens to take to Australian views of alliance. Rather, Australia's concerns are more about entrapment and the political and other cost of supporting U.S. strategic engagement further north in the Indo-Pacific. If deterrence is relevant, it is in relation to Australia's interest in deterrence of conflict in the Indo-Pacific in general, and reassurance more on U.S. general policy in the Indo-Pacific in general, not about U.S. action in relation to any specific Australian interest or threat to Australia in particular.

Second, the lack of a direct existential threat means that historically and even today, there is little engagement amongst policymakers or analysts regarding the more operational and capability aspects of U.S. nuclear posture and strategy. There is no nuclear threat to Australia that doesn't arise from our support to the United States in the first place, which explains why there's no need for reassurance on that specific front.

Traditionally, Australians have thus been looking at U.S. nuclear policy through the lens of the nuclear or international order and what it says about U.S. commitments in general—so like other capitals, Canberra was concerned about the possibility of No First Use being adopted by the Obama, and then Biden Administrations. But the 2018 *Nuclear Posture Review* and its nuances about limited use options had little resonance here.

You will struggle to find many in Canberra who has a view on the relevance of the sea launched SLBM, or integration of conventional–nuclear targeting, for Australia's security, although both could be quite consequential for conflicts that we might become engaged in. Certainly, there is nothing like the concern about stability-instability dynamics arising from Chinese and U.S. nuclear force levels that one can see in Japan for example. This doesn't mean questions of nuclear strategy aren't relevant for Australian policy, for example for the U.S. long-range bomber deployments that are now finally starting up in a more regular way in Northern Australia, but these aspects are not really on the Australian policy radar yet in the way they are in other allied capitals.

Third, entrapment rather than abandonment remains the main Australian concern, which you can see in regular polling conducted by the Lowy Institute for International Policy.

The Australian public debate about Indo-Pacific security has moved on from the "choice between Washington and Beijing" in which it was framed 10 years ago. Perception of China as a threat has doubled since 2018, so that 75 percent of Australians now consider it very or somewhat likely that China will become a military threat to Australia in the next 20 years. But at the same time the increase of support for basing U.S. forces in Australia has been much smaller, to 63 percent in 2022. Support for the ANZUS alliance has recovered from the Trump slump to what it was under Obama, but 77 percent—more than ever—agree that the alliance makes it more likely that Australia will be drawn into a conflict in Asia that is not in Australia's interests.[3] In general, proponents as well as opponents of the alliance in Australia share a fundamentally transactional, cost-benefit approach to the thinking about cooperation in the Alliance that is quite distinct.

Now what does this mean for Australian policy today under the new Albanese government? First, the government is broadly comfortable with the rather more sober depiction of the strategic environment of the 2020 Defence Strategic Update, so there is continuity there and congruence with U.S. and Japanese views. It has launched a force structure review, as the main concern is whether we are moving fast enough to address this, and essentially everyone in Canberra agrees we're not.

I think there are signs that, at least in a force structure context, Australia might be moving closer to adopting a conflict over Taiwan as an explicit pacing threat scenario—and Defence Minister Marles has spoken about the need to contribute more to regional deterrence.

Does this mean everything is fine and well in relation to U.S. deterrence and reassurance of Australia? I think that Australia was quite relieved about the withdrawal from Afghanistan, however messy, and Washington's global leadership for support to Ukraine does reassure insofar as it points to enduring U.S. military and diplomatic strengths. But I think there are also challenges, which also stem from the fact that in a multipolar world, the credibility of U.S. deterrence and reassurance will have to rest not just on U.S. military capability and credibility, but also its ability to provide leadership for effective coalitions and alliances.

The first challenge, and one that the current administration could in principle address, is the lack of a shared strategic framework for deterrence in the Indo-Pacific. For Australia, that's a problem if one wants to start shifting some of those deep-seated public concerns I mentioned before. But it's also a problem for the ability to strengthen deterrence itself. At the political-strategy level, strategic ambiguity over Taiwan makes it really hard for allied defence policy to coalesce around a shared understanding of the most challenging threat. And also at the operational–force structure level, it is clear that there are debates in the United States about the balance of stand-in forces vs long-range strike. Often those acknowledge allied equities in passing, but they're not debates that genuinely include the allies.

Partly this is probably due to the United States not being certain about its own preferences and the depth of its own commitment, but I think it also points to some deep-

[3] For Lowy Institute Polling results, see https://poll.lowyinstitute.org/.

seated and longstanding gaps in the political-military alliance infrastructure in the Indo-Pacific, that I don't think is fit for purpose for a world where successful deterrence and reassurance has to rest on political-military allied integration. I think that from an Australian perspective, the creation of a substantial Chinese military base in the Solomon Islands, which is now a real possibility, could very much turbo-charge this as a problem. The Obama Pivot took pains not to frame China as a threat, then we had Trump, and I'm not sure that we see enough movement on this alliance-institutional front under the Biden administration to really reassure about the depth of U.S. commitment to the region on the one hand, or that Washington is taking into account allied perspectives on the risks of escalation on the other.

The second challenge, and more problematic one that is even harder to address, is about the reliability of the United States as an ally when a substantial part of the U.S. population continues to support Trump as the leader of the Republican party, and internal politics in that party seem to be a competition in the uglier aspects of "America First." At the policy level, I don't think this concern necessarily has put a cap on the level of integration in the Alliance—but it is certainly now creeping into force structure debates, including in the context of the current Australian review, as a fundamental issue. It is hard to work out what the practical implications might be for a country as small as Australia, but it does reinforce the importance of looking after our own patch of the world first and foremost. And amongst the public, when asked about whether Australia should develop its own nuclear weapons, 36 percent of Australians in the Lowy Poll this year were at least somewhat in favour—twice as much as in 2010. So, while geographic remoteness continues to mute security concerns for Australia, and Australians are perhaps less acutely concerned about U.S. deterrence and reassurance in the short term, the confidence that this will remain so in the longer term is definitely waning as well.

* * * * * * * * * *

David Lonsdale
David Lonsdale is Senior Fellow at the School of Politics and International Studies at the University of Hull in the UK.

Lessons from the Cold War

As we grapple with the challenges of extended deterrence in the third decade of the 21st Century, I propose that it will prove profitable to return to some ideas and concepts developed during the Cold War. I do so, conscious of the fact that there has been a deliberate attempt in some influential quarters to consign Cold War ideas to the dustbin of history. Perhaps most notably, President Obama publicly stated that he wanted "to put an end to Cold War thinking." This attitude is problematic because the core challenges of extended deterrence were worked through during the first nuclear age. The hard intellectual graft was done as the world first tried to make strategic sense of nuclear weapons.

Indeed, it was partially in response to the challenges of extended deterrence that U.S. nuclear strategy developed from the relative simplicity of Massive Retaliation (first enunciated in 1954). If we track the trajectory of U.S. nuclear strategy during the Cold War, we see an ever-growing quest for flexibility, credibility, and strategic utility. From the early days of Massive Retaliation, U.S. nuclear strategy developed along the lines of limited nuclear options (LNOs), Flexible Response, countervailing, and finally culminating in escalation control in the early 1980s. All these developments required an increase in nuclear operational capability.

Declining Credibility

Unfortunately, much of the good work in nuclear strategy has been lost in recent years. To cite Galadriel in *The Fellowship of the Ring*, "some things that should not have been forgotten were lost." This was especially evident during the Obama administration. In an effort to reignite the disarmament agenda, the 2010 *Nuclear Posture Review* (NPR) sought to reduce the role of nuclear weapons in U.S. national security policy. And, although the Obama administration did not ultimately adopt the sole purpose criterion, they came close. Ultimately, this left the United States with a far less flexible declared nuclear policy. Moreover, with such a negative attitude to these weapons, the United States was left looking like a reluctant nuclear power. Taken together, these developments potentially undermined the credibility of U.S. nuclear deterrence, especially when faced with complex extended deterrence security challenges.

Thankfully, some of the damage done under Obama was rectified during the Trump administration. In this respect, the 2018 NPR was a significant step in the right direction. Perhaps with an eye to the communication aspect of credible deterrence, the 2018 NPR signaled an increased emphasis on nuclear weapons in national security, "there is no higher priority for national defense." Allied to an enhanced modernization program and discussion of post-deterrence operations, the tenor of the Trump Administration was far more robust in terms of nuclear strategy. There was, however, one glaring problem with the 2018 NPR: the explicit insistence that the review "is not intended to enable, nor does it enable, nuclear war-fighting." As a strategic theorist, my response to such a statement is "why not?". As will be argued below, prudent operational nuclear planning is in tune with the nature of strategy, enhances the credibility of deterrence, provides essential options should deterrence fail, and fulfils a moral obligation under the Just War rubric.

As might be expected, especially in light of recent geostrategic events, the newly released 2022 NPR takes a middle ground between the 2010 and 2018 variants. Whilst still advancing the aim of reducing the role of nuclear weapons in U.S. strategy and seeking to bolster arms control efforts, the new review acknowledges the increased threat environment and its implications for extended deterrence. In particular, it is noteworthy that the 2022 review emphasizes the importance of flexibility and even discusses "achieving objectives" as a role for nuclear weapons in the event of deterrence failure. The review offers no real details on what operational objectives could be sought in nuclear conflict. It does, however, include the

reasonably robust statement that "the United States would seek to end any conflict at the lowest level of damage possible on the best achievable terms." Still, despite containing this rather 2018-esque statement about nuclear use, the 2022 NPR also spends quite a bit of time discussing arms control, crisis stability, managing escalation risk, and the desire to work towards a sole purpose declaration. One is left with the impression that the Biden Administration is a nuclear sceptic reluctantly coming to terms with the harsh realities of the contemporary geostrategic world.

The Need for Prudent Operational Planning

Before I provide a rationale for the United States to readopt a robust operational planning stance on nuclear strategy, I would like to acknowledge the work of Keith Payne and our late friend and colleague, Colin Gray. Keith and Colin led the debate on what was then called "nuclear warfighting" in the '70s and '80s, and in doing so helped lay the intellectual groundwork for this important development in nuclear strategy.

As already noted, there are four main drivers for prudent operational planning. First, it chimes with the nature of war and strategy. As clearly indicated by the master theorist of war, Carl Von Clausewitz, "it is inherent in the very concept of war that everything that occurs *must originally derive from combat*." Clausewitz recognized that even when battle does not occur (including, we might say, in a deterrence relationship), the outcome is premised on calculations of what would happen should battle have been fought. In this sense, it is a conceptual anathema to decouple deterrence from credible operational capabilities. If anyone is thinking that Clausewitz's theory, written in the 19th Century, does not relate to nuclear weapons, it is worth noting that Bernard Brodie, the father of the nuclear age, described Clausewitz's book, *On War*, as the greatest book ever written on the subject. The nature of strategy is universal, encompassing all forms of military power, including nuclear weapons.

Second, flexible operational capabilities likely enhance credibility. If all you have on the table is annihilation or surrender, an adversary may reasonably assume that you will not choose the former on an issue that is less than vital to your national security interests (often evident in extended deterrence). In more ambivalent security scenarios, one requires the ability to wage controlled, limited, survivable forms of nuclear war. In this way, a flexible operational posture gives deterrence more substance, the underpinning threat becomes more tangible. To somewhat labour the point, with more concrete options in play, one's resort to nuclear weapons looks more plausible, and therefore more credible.

Third, to put it bluntly, deterrence may fail. As much as we may desire to live in a world in which deterrence holds and aggression does not occur, it is strategically irresponsible to ignore the possibility of deterrence failure. Consequently, the United States must be prepared for nuclear war to the extent feasible. As noted, to their credit the 2018 and 2022 NPRs ventured into post-deterrence possibilities. Whilst a welcome development, this was a limited foray that seemed not to go beyond the confines of damage limitation, intrawar deterrence, and a somewhat vague reference to positive war termination. Beyond these

admirable goals, the United States must have the capability to positively manage escalation and seek to achieve policy objectives in nuclear conflict. Without the conscious pursuit of policy objectives, strategy ceases to function as a rational instrument of politics. To be clear, the United States must have a theory of engagement for nuclear war. By a theory of engagement, I mean *successful engagement with enemy forces to attain military objectives in the pursuit of policy goals*. Precisely what that attainment would look like is entirely dependent on the specific scenario faced, most especially the nature of the enemy and the policy objectives sought. On the general point, Bernard Brodie is compelling when he wrote, "So long as there is a finite chance of war, we have to be interested in outcomes; and although all outcomes would be bad, some would be very much worse than others."[4]

Finally, it can be argued that prudent planning for flexible response options is a moral requirement under the Just War tradition. Amongst other criteria, for a war to be considered just there must be a reasonable prospect for success. Surely, the latter requires a theory of engagement. Moreover, for the *jus in bello* criteria of proportionality and discrimination to be fulfilled, it is axiomatic that nuclear war be fought in a controlled and competent fashion.

Concluding Thoughts

I do not claim that the lessons of the Cold War can be simply mapped onto the current security environment without adaptation. Every security challenge is unique and must be approached with an eye to the particular. Nor is it claimed that the unique characteristics of nuclear weapons can be ignored. Their enormous destructive potential must be respected and clearly taken into account. Nonetheless, the nature of strategy is universal, and much of the code of extended deterrence was decrypted in the first nuclear age. As we engage with an ever more complex security environment in the 21st century, it is vital that we retain that which should not be forgotten. In particular, we should respect the lineage of flexibility, credibility and strategic utility. Most evidently, this requires serious operational planning and flexible response options. To cite Herman Kahn, who taught us to think about the unthinkable, when faced with the strategic challenge of nuclear weapons there has to be an alternative beyond annihilation and surrender. A mature and confident operational capability oriented around flexible response options provides such an alternative. God willing, it would provide the credibility required to ensure a robust deterrence posture; and in the face of deterrence failure would help support the continuation of strategy and the prospect for protecting our way of life.

[4] Bernard Brodie, *Strategy in the Missile Age* (Princeton, NJ: Princeton University Press, January 15, 1959), p. 278, available at https://www.rand.org/pubs/commercial_books/CB137-1.html.

PROCEEDINGS

THE BENEFITS OF STRENGTHENED HOMELAND MISSILE DEFENSE

The remarks below were delivered at a symposium on "The Benefits of Strengthened Homeland Missile Defense" hosted by the National Institute for Public Policy on October 25, 2022. The symposium highlighted a recent National Institute Occasional Paper *by Matthew Costlow entitled,* Vulnerability is No Virtue and Defense is No Vice: The Strategic Benefits of Expanded U.S. Homeland Missile Defense*, and which is available on National Institute's website.*

David J. Trachtenberg
David J. Trachtenberg is Vice President of the National Institute for Public Policy. Previously, he served as Deputy Under Secretary of Defense for Policy from 2017-2019.

For many years, the United States has refused—as a matter of policy—to build and deploy active defenses against the strategic missile forces of either Russia or China under the theory that such defenses would be destabilizing and upset the "balance of terror" created by a situation of mutual societal vulnerability. The potential consequences of a failure of deterrence were seen as so horrific that neither side would be foolish enough to launch a nuclear attack and, therefore, deterrence would be preserved.

Today, with both Russia and China making brazen nuclear threats against states that dare to challenge Moscow's aggression against Ukraine and Beijing's claim to Taiwan, the issue of whether an expanded homeland missile defense capability now makes sense is again subject to debate.

This raises two fundamental questions: 1) Is the vulnerability of the U.S. homeland to large-scale missile strikes an immutable fact of life that—much like the laws of physics—cannot be overturned; and, if not, 2) Is it prudent to try to do so?

There are those who argue that it is technologically impossible to defend the entire country against the strategic arsenals of either Russia or China…that the numbers and sophistication of their respective arsenals makes effective homeland defense impossible. Indeed, as one recent analysis argued, "…the United States should acknowledge mutual vulnerability as a fact and necessary policy…. there is no technological escape from this condition."[1]

However, I would argue that our current inability to defend against large-scale missile attacks is due—at least in part—to policy decisions made years ago that precluded more aggressive defensive efforts to protect the nation. In other words, the lack of investment in and support for robust homeland missile defenses helped to codify our current vulnerability.

[1] George Perkovich, "Engaging China on Strategic Stability and Mutual Vulnerability," Carnegie Endowment for International Peace, October 12, 2022, available at https://carnegieendowment.org/2022/10/12/engaging-china-on-strategic-stability-and-mutual-vulnerability-pub-88142.

Moreover, I am reminded of those skeptics whose predictions—presumably based on a wealth of scientific knowledge—turned out to be wildly in error. For example, as Adm. William Leahy told President Truman, "The atomic bomb will never go off, and I speak as an expert in explosives."[2] And there are those who thought it impossible to develop a hit-to-kill missile defense system because that would be like "hitting a bullet with a bullet"—which, of course, is exactly what we can now do.

As Yogi Berra said, "It's tough to make predictions, especially about the future."

Importantly, however, the benefits of a missile defense system go beyond simply providing a measure of protection against the failure of deterrence. It also bolsters deterrence by complicating the attack plans of a potential aggressor such that the odds of a successful attack are minimized and the potential costs to the aggressor of conducting an attack are prohibitive.

Moreover, the expansion in both Russia's and China's strategic arsenals, coupled with a growing chorus of threats against the United States and its allies—including possible nuclear employment—suggest a growing reliance by Moscow and Beijing on coercive nuclear threats to achieve their goals. In the face of continued U.S. societal vulnerability, such coercive threats may be difficult to defeat given the potential consequences. Indeed, strengthening U.S. homeland missile defense capabilities can hedge against the coercive effects of greater military cooperation between Beijing and Moscow as well as a potential failure of deterrence.

That said, I am skeptical that the benefits of expanding U.S. homeland missile defense are appreciated by the current administration. Indeed, the "Fact Sheet" released in March on the Nuclear Posture Review and Missile Defense Review openly declared the administration's intent to emphasize "strategic stability"—an intellectual-sounding euphemism for continued societal vulnerability—and its recently released National Security Strategy does not even mention missile defense, making only a single vague reference to "missile defeat capabilities."

Just last week, the administration expressed its strong opposition to improvements in the U.S. homeland missile defense posture contained in the Senate Armed Services Committee version of the annual National Defense Authorization Act, including a provision that would more than triple the number of planned Next Generation interceptors, which the administration said would be "inconsistent with both the 2022 NDS and 2022 Missile Defense Review"—neither of which, of course, have yet been publicly released. In addition, the administration opposes efforts to increase funding for hypersonic defense and homeland cruise missile defense programs because they are inconsistent with current DoD plans.

---

[2] Cited in Louis Morton, "The Decision to Use the Atomic Bomb," *Foreign Affairs* (Vol. 35, No. 2, January 1957), p. 339.

If defense of the homeland is, in fact, "Job #1," as multiple administrations on a bipartisan basis have stated, then shouldn't the programs designed to defend the homeland be commensurate with the threats we face?

* * * * * * * * * *

Matthew Costlow
Matthew Costlow is a Senior Analyst at the National Institute for Public Policy. Previously, he served as Special Assistant in the Office of Nuclear and Missile Defense Policy at the Department of Defense.

Thank you, Dave for the great introduction and to all my fellow panelists for their participation in this webinar. I have learned a great deal from them in my career and I am sure you will benefit from their insight as I always have.

Today I want to focus my remarks on how expanded and improved U.S. homeland missile defenses can play important roles in the emerging threat environment—specifically as counters to Russia's and China's military theories of victory.

My remarks are drawn from my recently-published report that Dave mentioned—and I wrote this report because I saw a gap in how analysts in and out of government were talking about approaching the problem of Russia's and China's growing nuclear arsenals.

That gap, to be clear, is perhaps better described as a barren gorge—a near complete lack of thought being given to how U.S. homeland missile defenses can contribute to deterrence, damage limitation, and other missions—with a notable exception being some of the reports out of CSIS.

So, I set out to read every policy-oriented product I could on missile defenses, from the Cold War to the present, and compile all the strategic benefits in this report. While the United States during the Cold War did not face the security environment of today, the great thing about how defenses writ large can contribute to deterrence is that its lessons are essentially timeless. I wanted to pull all the great insights of the past into one document for the benefit of others, and the broader debate.

So if you listen to my talk and think, "Hey, that sounds like something Kahn, or Wohlstetter, or Gray, or even Keith Payne said"—you are likely right. The whole point of the report was to take their wisdom—written for and during another time—and see how it might apply to today.

But before I dive into the strategic benefits of expanded and improved homeland missile defense, let me say a word about why I think missile defense is uniquely relevant to the emerging threat environment.

I think General VanHerck, Commander of U.S. Northern Command, has been the most articulate of U.S. military officials in explaining the problem of Russia's and China's military

theories of victory. Speaking on Russia specifically, he stated, "In crisis or conflict, we should expect Russia to employ its broad range of advanced capabilities—nonkinetic, conventional, and nuclear—to threaten our critical infrastructure in an attempt to limit our ability to project forces and to attempt to compel de-escalation."[3]

General VanHerck also describes China's military theory of victory similarly, and describes the military arsenals each state is building to give credible expression to their strategies. I commend his testimonies to you all.

Why is this a problem? Well, the United States RELIES on its ability to project forces abroad to defend allies and achieve U.S. objectives. That ability, in fact, is the main pillar of U.S. defense strategy.

Where does this leave us? A U.S. homeland that can deter major nuclear attack with its nuclear arsenal, but cannot defend against lesser attacks, leaves a gap that potentially invites aggression.

Now, how does the United States today deal with the problem of coercive missile strikes against the United States? One could be forgiven if a ready answer is not at hand, other than, threaten punishment. With a ballistic missile defense primarily aimed at the rogue state ballistic threat, a National Capital Region cruise missile defense, and an aging northern warning system, one of the only things the United State CAN do right now is threaten punishment for deterrence purposes via a variety of means.

In my opinion, deterrence threats of punishment are necessary, but not sufficient. But an adversary that is willing to strike the U.S. homeland has likely already considered the potential U.S. reply and calculated that the benefits of attacking outweigh the risks and costs of the likely U.S. response.

Adding more and more varied ways of punishing the adversary may improve deterrence prospects up to a point, but if the primary reason that deterrence failed was a lack of perceived U.S. will, then deterrence threats of punishment (which depend on will) may be less likely to work.

The problem of a lack of U.S. political will (both actual and perceived) potentially extends even past the point of the initial deterrence failure. That is, should the adversary strike the U.S. homeland, whichever response U.S. political leaders choose, they must take into account the continued vulnerability of the U.S. homeland to the adversary's response to U.S. action.

In short, a vulnerable U.S. homeland potentially restricts U.S. freedom of action in times of crisis or conflict. Russia and China know this and have developed the military policies and requisite capabilities to exploit this fact.

---

[3] Gen. Glen VanHerck, "NORAD–USNORTHCOM Commander's House Armed Services Committee Statement," October 25, 2021, available at https://www.960cyber.afrc.af.mil/News/Article-Display/Article/2821381/noradusnorthcom-commanders-house-armed-services-committee-statement/.

This is where, I believe, the United States can considerably improve its deterrence prospects by expanding and improving U.S. homeland missile defenses—both cruise and ballistic, and, in the future, maneuvering hypersonic threats.

I propose a change in U.S. missile defense policy, that the United States will develop and deploy missile defense systems for the U.S. homeland to deter, and if necessary, defeat coercive attacks from Russia and China while staying ahead of the rogue state threat.

Much hinges on the word "coercive" admittedly, exactly what constitutes a "coercive" missile attack from Russia or China is something that would need to be worked out at a classified level with the intelligence community. But, for the purposes of this discussion, suffice it to say that defending against coercive attacks should be distinguished from a policy of defeating all missile attacks, no matter the size. Currently, such a policy is technologically infeasible, and thus, not credible—whereas a defense against coercive attacks is more manageable and with significant deterrence benefits.

I will end by quickly running through some of the deterrence benefits that an improved and expanded U.S. homeland missile defense set of systems could provide. I elaborate more on each in my report, and I am sure my other panelists will expand on my cursory remarks here with their own insights.

First, and perhaps most importantly, improved and expanded U.S. homeland missile defenses would help deny Russia's and China's military theories of victory by removing the "cheap shot" temptation and raising the "entry price" for attacking the U.S. homeland.

In essence, a Russian or Chinese strike on the U.S. homeland would already be potentially politically fraught and leaders in Moscow and Beijing would likely seek a high chance for success before approving such a strike.

The United States can use this desire for certainty against them by greatly complicating their attack plans—raising the frightening prospect that Russia or China might not only fail to achieve their attack objectives, but also face an overwhelming and unexpected response. In short, an "all pain and no gain" scenario.

Another important benefit of improved and expanded U.S. homeland defenses would be the ability to limit damage without resorting, necessarily, to offensive strikes. Trying to re-establish deterrence while limiting damage with the only tools available being offensive forces is a fraught and risky process to say the least. Yet, limiting damage through homeland missile defenses is far less potentially "escalatory" than offensive strikes, whose effects are difficult to predict. Additionally, the U.S. ability to limit damage to critical targets could enable the United States to recover more quickly, thus making the attack a failure and perhaps contributing to deterring further attempts.

Another important benefit of expanded and improved U.S. homeland missile defenses is that it can help confer some level of credibility and resolve to U.S. political leaders simply because it is inherently credible that the United States would employ missile defenses to defend itself from attack.

While there will always be some level of doubt that the United States would employ nuclear weapons to defend its interests, that same uncertainty does not apply to homeland missile defenses.

To use the words of Herman Kahn in this regard, "To put it another way, the side with some kind of defense has an excuse for being firm or arguing that it will stand firm. The side without the defense correspondingly has an excuse or a motivation for backing down, or strong incentive for accepting arguments in favor of backing down."

I will end my remarks by noting a final benefit for expanded and improved U.S. homeland missile defenses: improved assurance and extended deterrence.

With such a system in place, U.S. leaders may be seen as more able to take risks in defense of allies and partners—even nuclear risks. Such a decision will certainly not be taken lightly, even in the presence of significantly effective homeland missile defenses, but such a system may be the crucial factor that provides credibility to U.S. deterrence threats in the eyes of adversaries—which is what matters for deterrence purposes.

In conclusion, the deterrence challenges the United States faces requires looking beyond deterrence threats of punishment to deterrence threats of denial. We can do no less.

* * * * * * * * * * *

Robert G. Joseph

Robert G. Joseph is Senior Scholar at the National Institute for Public Policy. Previously, he served as Under Secretary of State for Arms Control and International Security and as Special Assistant to the President and Senior Director for Proliferation Strategy, Counterproliferation and Homeland Defense.

Good morning. David, thank you for the invitation to be part of today's panel on a topic that I have been engaged on for a very long time. My involvement with strategic missile defense dates to the Reagan Administration in the early days of the Strategic Defense Initiative (SDI) program when I served as the Deputy Assistant Secretary of Defense for Nuclear Forces and Arms Control.

In that position I had the policy lead in the Pentagon for what was then a revolutionary idea contrary to the dominant view within the national security establishment that defending the American homeland against a Soviet missile attack would be both destabilizing and unaffordable—if it could be done at all. Forty years later, does that sound familiar? One take-away from this experience was to never underestimate the power of ideas—even bad ideas that are inconsistent with our national security interests.

It's amazing—and rather depressing—how little the arguments have changed despite fundamental changes in the threat and in the technology that can be applied to the missile defense mission. Almost four decades later, here we are talking about the same bad ideas that still serve as the foundation for much of official thinking about strategic deterrence.

Well, thinking may be the wrong word. As it has been since 1971, when the ABM treaty was signed, arguments against homeland missile defense are based not on reason and facts -- but rather are taken as articles of faith. How else can you explain the perverse notion that vulnerability is a virtue?

Matt does a great job countering these persistent and pernicious arguments against homeland missile defense. But you should note that this section is the longest section of the paper—which I think is quite telling. We are still debating among ourselves this vapid notion that defenses are destabilizing and will lead to an arms race—when as Matt notes, the facts tell us the opposite.

We also continue to argue among ourselves whether strategic defenses are technically feasible and affordable—when we know they are both. When I say we, I mean U.S. defense experts and planners inside and outside of government—with some of the worst offenders in the Pentagon. It's interesting to note that there is no such debate in Russia or China, which are both seeking not only advantages in offensive strategic weapons but with defenses as well, including most notably in space. The U.S. notion of strategic stability is one that has been used by Moscow and Beijing to achieve unilateral advantage but not one that either ever believed in.

In his paper and in his opening comments, Matt also does a great job making the positive case for how and why the defense of the US homeland from missile attack is needed to strengthen deterrence in the current and evolving threat environment. Here, it may be useful to consider defenses against North Korea and Iran separately from defenses against Russia and China. While this may be an artificial dichotomy, it can still be instructive.

For North Korea, I think no serious analyst would argue in favor of mutual vulnerability. Maintaining limited defenses against a limited threat -- especially one that is considered potentially irrational like North Korea—is now generally accepted—and has been since the United States withdrew from the ABM Treaty in 2002. The emerging predicament is that, with the ongoing expansion of the North's nuclear arsenal and missile force, we will need to expand our defenses to keep up with the threat well beyond, in my view, the expected capability of the next generation interceptor. At some point, that increase in our defense capability will become a factor in the strategic relationship with Russia and China.

When we reach this point, those who espouse the virtues of vulnerability will almost certainly argue that we can deter North Korea solely with the threat of nuclear annihilation—somehow reinventing the North as a rationale actor. Defending against the North Korean missile threat will be considered less important than avoiding any perceived threat to Russia's or China's ability to destroy the United States—because that is what is at the core of the strategic stability argument.

An analogous case might be Israel and Iran. Just imagine trying to convince an Israeli defense expert—or any Israeli for that matter—that Israel should rely only on offensive retaliation to deter Iran from attacking Israeli cities. In other words, accepting vulnerability would be the preferred course of action because defending against a missile attack from Iran would be destabilizing—causing an arms race with Iran. I think the reply would be to recommend you get your head examined.

But it is with Russia and China that we constantly hear the old—now debunked—chestnuts about missile defenses causing arms races, and defenses being beyond our technical ability and affordability. Here, Matt points out what I think is the most important contribution of his paper—and that is the ability to strengthen deterrence through the deployment of defenses—not as an impenetrable shield—but as a means to increase the uncertainties in the calculations of the attacker—to undermine his confidence that he will achieve the objectives of the attack. This concept goes back to the original so-called phase one requirements for SDI but is now more important than ever.

Today, as David and Keith Payne argue in a recent *Occasional Paper*, deterrence is more complex and uncertain than ever before—just consider Putin's nuclear threats over Ukraine and Xi's large-scale buildup of China's ICBM force. Russia and China—individually and in combination—present much greater challenges to deterrence than those posed by the Soviet Union. Because deterrence is more problematic, we must act to strengthen it—in part through the deployment of effective strategic defenses which in turn means going to space with sensors and interceptors.

But how can we move forward? Looking at the recent *National Security Strategy*, I would say there is no chance to do so with the Biden administration—whose officials are the chief purveyors of the missile defense myths that Matt has highlighted. We need a new president committed to new concepts of deterrence and to protecting the American people from missile attack—not the concocted virtue signaling we have come to expect from the current crowd.

The new president must appoint a team that will overcome institutional resistance in all national security departments and engage with Congress, the allies and others to win the intellectual argument by explaining the strategic-level benefits of deploying effective defenses not only against rogue states but also Russia and China:

- By complicating the attacker's confidence in his ability to conduct a coercive limited strike—a "cheap shot" as Matt termed it—with little expected consequence.
- By limiting damage to the American homeland.
- By strengthening extended deterrence with allies.
- All of the benefits Matt has laid out.

We did something similar in 2001 and we can do it again.

* * * * * * * * * *

Rebeccah L. Heinrichs
Rebeccah L. Heinrichs is a senior fellow at Hudson Institute and the director of its Keystone Defense Initiative.

Thank you for the invitation to address this distinguished group. I continue to learn from many of you and so I realize that much of what I'm going to say today are things many of you have been saying for years.

What are the benefits of a strengthened homeland missile defense architecture?

Before addressing this, it seems reasonable to acknowledge what we have today. We have a layered missile defense architecture that utilizes all military domains. But it remains strictly designed to defend against missile threats from rogue state actors and, in particular, North Korea.

The Obama Administration left open the possibility of providing a third interceptor site to provide a "shoot-look-shoot" opportunity to defend areas of the homeland that are not sufficiently covered should Iran finally complete its intercontinental ballistic missile program.

It remains the case, according to open-source literature, that Iran does not have a fully developed ICBM program. But I don't have to remind this group that Iran's space-launch program is advancing technologies that are directly applicable to an ICBM program. And the fact that it has been the Islamic Revolutionary Guard Corps (IRGC) that has conducted recent and successful satellite launches only underscores this point.

So for now, the 44 deployed ground-based interceptors defend the U.S. mainland, not our territories of course, from North Korean ICBMs. But because the Trump Administration did not advance the program, despite the President's direction to deploy 20 additional GBIs, the last administration to improve homeland defense in any real way, was the Obama Administration.

My argument, based largely on the threat and what I view as an entirely rational and prudent strategy, has been to advance U.S. homeland defense in a more urgent and focused way.

We should scope what I mean by "advance U.S. homeland defense."

According to U.S. law, there is nothing prohibiting our engineers, in the private and government sectors, from developing systems to intercept missiles other than ballistic missiles and beyond those in North Korea that are threatening Americans. But the direction that the Missile Defense Agency has received, for all intents and purposes, is to build an architecture to defend the homeland against North Korean ballistic missiles. According to the Trump *Missile Defense Review*, the United States would continue to rely on strategic deterrence to manage the ICBM threats from peer adversaries like Russia.

But U.S. Northern Command has the responsibility to defend the United States from categories of threats that go beyond those captured by MDA's mandate. There are threats from non-ballistic missiles, especially cruise missiles, and the threats to the U.S. homeland from Russia are real—especially given Russia's war against Ukraine and its continuing truculence toward the United States for supporting Kyiv.

We should also consider that the Peoples Republic of China (PRC) is in the midst of a strategic breakout, according to outgoing U.S. Strategic Command Commander Admiral Charles "Chas" Richard.

Humility on the part of the U.S. government is required—humility to admit that there is great uncertainty in the international strategic environment and also that, given this uncertainty, relying only on the threat of retaliation in the event of a strategic attack against the United States is woefully insufficient.

The benefits of strengthened homeland defense in this era of great uncertainty, with two advanced nuclear powers, with one rogue nation that continues to improve its nuclear missile capabilities, and with another on the brink of a nuclear ICBM potential, are four-fold.

One, by providing a defense of the most critical military and civilian infrastructure assets that a peer adversary like Russia or China might target, the United States can limit damage in the event of an attack.

Two, by having the ability to limit damage, and by advertising that we could do this (this is what the Biden Administration has labeled deterrence "campaigning"), it bolsters the credibility of U.S. deterrence efforts.

Three, advancing the U.S. homeland defense architecture not only demonstrates to adversaries that the United States has the ability to intercept plausible (however unlikely) attacks against the U.S. homeland, but it also increases the credibility of our nuclear umbrella and allied confidence in our nuclear assurances. Countries like South Korea have sought greater evidence of the U.S. commitment to their defense, especially given North Korea's rapid missile-testing spree. Reassuring allies like South Korea strengthens extended deterrence and lowers the risks of unwanted nuclear proliferation from allies seeking their own nuclear capability.

Four, it imposes a cost on our adversaries and further complicates their calculations, thus bolstering the credibility of our overall deterrence efforts. Just as adversaries have seen value in building defenses that impose planning challenges on us, so should we do the same to them.

In conclusion, the United States has limited its missile defense capabilities for a variety of reasons: for the sake of "strategic stability;" to avoid unintentionally prompting our adversaries to invest in new offensive capabilities; and to avoid an arms race. But by restraining ourselves in this way we have gained none of the promised security benefits. Our adversaries have invested in both defenses and new and advanced offensive strike systems to challenge U.S. military planners. It is advisable, therefore, to move forward with a change in policy and to send a demand signal to industry to develop new systems that advance U.S. homeland missile defense in ways that align it with the security challenges we face in the modern era.

PROCEEDINGS

ASSESSING THE NATIONAL SECURITY STRATEGY AND NATIONAL DEFENSE STRATEGY

The remarks below were delivered at a symposium on "Assessing the National Security Strategy and National Defense Strategy" hosted by the National Institute for Public Policy on November 16, 2022. The symposium highlighted the continuities and discontinuities between the Biden Administration's strategy documents and those of the Trump Administration and its predecessors.

David J. Trachtenberg
David J. Trachtenberg is Vice President of the National Institute for Public Policy and served as Deputy Under Secretary of Defense for Policy from 2017-2019.

Just last month, after a lengthy delay, the Biden Administration finally released the unclassified versions of its National Security Strategy (NSS) and National Defense Strategy (NDS). Within the NDS were two other unclassified strategy documents—the Nuclear Posture Review (NPR) and the Missile Defense Review (MDR).

Taken together, these documents are a smorgasbord of what I would call "the good," "the bad," and "the ugly."

First, the good: I am struck by some of the continuities that exist between this administration's strategy focus and that of the Trump Administration. Most prominent is the National Security Strategy's and National Defense Strategy's validation of the Trump Administration's refocusing of U.S. attention on the threats to U.S. interests posed by China and Russia—what the 2017 NSS and 2018 NDS referred to as the reemergence of "great power competition."[1] Indeed, the 2022 NDS explicitly states, "The PRC and Russia now pose more dangerous challenges to safety and security at home…" and notes that both "could use a wide array of tools" to hinder U.S. national security actions.[2]

Even the 2022 NPR reinforces some of the same fundamental principles supported by the Trump Administration as well as its predecessors: support for the nuclear Triad and a commitment to modernize all three "legs"; revitalizing our nuclear infrastructure; support for extended deterrence; even a rejection of "sole purpose and "no first use" policies that the president himself openly favored.

In short, the 2022 NSS and NDS seem to suggest that when it comes to identifying and focusing on the most serious threats to U.S. national security, the Trump Administration got it right.

---

[1] The White House, *National Security Strategy of the United States of America*, December 2017, p. 27, available at https://trumpwhitehouse.archives.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf.

[2] Department of Defense, *2022 National Defense Strategy of the United States of America*, p. 5, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

As for the bad, the 2022 NSS and NDS list a host of wonderful things we will do but provide no specific details on how we will do them. In his book, Good Strategy/Bad Strategy, Richard Rumelt notes that:

> A good strategy does more than urge us forward toward a goal or vision. A good strategy honestly acknowledges the challenges being faced and provides an approach to overcoming them…. Bad strategy tends to skip over pesky details…and ignores the power of choice and focus, trying instead to accommodate a multitude of conflicting demands and interests.[3]

And as the eminent strategist Colin Gray explained:

> Through frequent abuse the noun, strategy, and inevitably the adjective, strategic, have lost much conceptual integrity…. misunderstanding of strategy, often in the past as also commonly in the present, has been exceedingly painful and expensive. It is improbable that the conceptual habits of generations can or would be turned around, but one can always try.[4]

Strategy should link goals with ways and means, but the NSS and NDS fail to do so. They appear to be little more than aspirational wish lists. For example, the NSS says, "We will build the strongest and broadest possible coalition of nations that seek to cooperate with each other…"[5] "We will pursue an affirmative agenda to advance peace and security and to promote prosperity in every region."[6] "We also will build new ways to work with allies and partners on development and the expansion of human dignity…."[7]

Likewise, the NDS says DoD "will continue to develop operational concepts that realistically expand U.S. options and constrain those of potential adversaries."[8] It says we will "actively campaign across domains and the spectrum of conflict."[9] It says we will "improve our ability…to achieve warfighting objectives," [10]"tailor" our deterrence approaches,[11] and build "enduring advantages."[12] This, of course, all falls under the rubric

---

[3] Richard P. Rumelt, *Good Strategy/Bad Strategy: The Difference and Why it Matters* (New York, NY: Random House, Inc., 2011), pp. 4-5.

[4] Colin S. Gray, "Why Strategy is Different," *Infinity Journal* (Volume 6, Issue 4, Summer 2019), pp. 4-8, available at https://www.militarystrategymagazine.com/article/why-strategy-is-different/.

[5] The White House, *National Security Strategy*, October 2022, p. 7, available at https://www.whitehouse.gov/wp-content/uploads/2022/10/Biden-Harris-Administrations-National-Security-Strategy-10.2022.pdf.

[6] Ibid., p. 12.

[7] Ibid., p. 19.

[8] Department of Defense, *2022 National Defense Strategy of the United States of America*, p. 17., op. cit.

[9] Ibid., p. 12.

[10] Ibid., p. 17.

[11] Ibid., p. 9.

[12] Ibid., p. 19.

of "integrated deterrence"—a concept that requires us to implement "a holistic response" to the security challenges we face.[13]

All of this is unobjectionable in principle, but exactly how are we to do this? How will we prioritize against competing requirements? And what are the implications of that prioritization for assuring allies and deterring adversaries?

And now for the ugly: Where the NSS and NDS veer off target is in their portrayal of a host of non-traditional issues as essential to national security. For example, the NSS declares, "Of all of the shared problems we face, climate change is the greatest and potentially existential for all nations."[14] It therefore elevates the global protection of forests to a national security imperative.[15] It calls for strengthening international health systems and cites the need "to build sustained food security" as a priority.[16] Similarly, the NDS raises climate change and other "transboundary challenges" to the level of national security priorities.[17]

Such noble aspirational goals may indeed be praiseworthy, but I believe they tend to dilute and obscure the importance of addressing nearer-term matters of perhaps greater urgency to American security.

There are other problems with the administration's strategy documents, not the least of which is a slew of seemingly inconsistent language, perhaps intended to satisfy to various competing constituencies. The NPR provides perhaps the most glaring examples. While it acknowledges China and Russia are expanding their reliance on nuclear weapons and states that the U.S. will "maintain nuclear forces that are responsive to the threats we face"[18] and will consider force adjustments to strengthen deterrence, it says we will reduce our reliance on nuclear weapons and cancel the SLCM-N and B-83. And while it eliminates "hedging" against uncertainty as an explicit role for U.S. nuclear forces, it states the U.S. will work to ensure "credible deterrence…in the face of significant uncertainties and unanticipated challenges."[19] This certainly sounds like hedging to me.

And after acknowledging the growing missile threat to the homeland posed by both Russia and China, the strategy documents reject any efforts to actively defend the homeland against such growing threats.

These inconsistencies suggest an approach that seeks, in Rumelt's words, "to accommodate a multitude of conflicting demands and interests," and, therefore, falls into the category of "bad strategy."

* * * * * * * * * *

[13] Ibid., p. 8.

[14] The White House, *National Security Strategy*, October 2022, p. 9, op. cit.

[15] Ibid.

[16] Ibid., p. 29.

[17] Department of Defense, *2022 National Defense Strategy of the United States of America*, p. 6., op. cit.

[18] Department of Defense, *2022 Nuclear Posture Review*, p. 12, available at https://s3.amazonaws.com/uploads.fas.org/2022/10/27113658/2022-Nuclear-Posture-Review.pdf.

[19] Ibid., p. 7.

Douglas J. Feith
Douglas J. Feith is former Under Secretary of Defense for Policy.

The Biden Administration's national security strategy, as released to the public, has some praiseworthy elements, stressing, for example, the "need for American leadership." But it does not take its own words seriously enough. Its discussion of "leadership" is confusing, and the administration is not providing for the kind of military strength that would make U.S. leadership effective.

A Preliminary Word on Precision

A strategy should not use vague and ambiguous language (let alone mind-numbing repetition). Having said that no nation is better positioned than the United States to compete in shaping the world, as long as we work with others who share our vision, the strategy declares (the italics are mine), "This means that the foundational principles of self-determination, territorial integrity, and political independence *must* be respected, international institutions *must* be strengthened, countries *must* be free to determine their own foreign policy choices, information *must* be allowed to flow freely, universal human rights *must* be upheld, and the global economy *must* operate on a level playing field and provide opportunity for all." The fuzziness—incoherence—of using the word "must" should be obvious.

For example: "The United States *must* . . . increase international cooperation on shared challenges even in an age of greater inter-state competition." But "some in Beijing" insist that a prerequisite for cooperation is a set of "concessions on unrelated issues" that the U.S. government has said are unacceptable. So the strategy effectively declares that cooperation with China is a "must" even when China says we cannot have it. In other words, the word "must" doesn't really mean "must." In this case, it expresses no more than the administration's impotent preference.

This strategy is 48 pages long. It uses the word "must" 39 times. To drive home that President Biden is not his predecessor, the strategy constantly emphasizes allies and partners. It uses the word "allies" 38 times and "partner" or "partnership" an astounding 167 times. Meanwhile, it does not use "enemy" even once. Two of the three times it uses the word "adversary" it is referring to "potential" rather than actual adversaries. The third time, it says only that America's network of allies and partners is "the envy of our adversaries."

Enemies and Hostile Ideology

The strategy identifies, correctly in my view, America's "most pressing challenges" as China and Russia. China is described as the only "competitor" with both the intent and power to "reshape the international order." Russia is called "an immediate threat to the free and open international system," while the Ukraine war is rightly characterized as "brutal and unprovoked." The discussion of enemies, however, is euphemistic and misleading and does

not give explicit guidance on confronting them. Alluding to China and Russia, it talks of "competing with major autocratic powers" as if everyone in the "competition" is playing a gentlemanly game with agreed rules. That creates a false picture of the problem.

The strategy states that China "retains common interests" with the United States "because of various interdependencies on climate, economics and public health." In discussing "shared challenges"—such as climate change or COVID—it implies that Chinese leaders see these challenges the same way the administration does, but the well-known recent history of Chinese secretiveness about COVID, for example, refutes that assumption.

There are references to pragmatic problem-solving "based on shared interests" with countries like China and Iran. The strategy does not explain, however, what U.S. officials should do if such cooperation is inconsistent with other U.S. interests. Should they work with China at the expense of opposition to genocide against the Uighurs? Should they work with Iran at the expense of that country's pro-democracy resistance movement?

Iran and North Korea are called "autocratic powers," but being autocratic is not the key to their hostility and danger. Rather, it is that they are ideologically hostile to the United States and the West.

There are two passing references to "violent extremism," though no discussion whatever about anti-Western ideologies. U.S. officials are given no direction to take action to counter such ideologies. The strategy is entirely silent on jihadism and extremist Islam.

Leadership and Followership—Ties to Allies and Partners

While it properly calls attention to the value of America's "unmatched network of alliances and partnerships," the strategy does not deal adequately with questions of when the United States should lead rather than simply join its allies. It does not acknowledge that there may be cases when the United States is required to go it alone. President Biden is quoted as telling the United Nations, "[W]e will lead. . . . But we will not go it alone. We will lead together with our Allies and partners." But what if American and allied officials disagree? Sometimes the only way to lead is to show that one is willing to go it alone.

Failing to distinguish between leadership and followership is a major flaw. While asserting that America aspires to the former, the strategy declares that "we will work in lockstep with our allies." Such lockstep would ensure that the United States is constrained by the lower-common-denominator policy of our allies. If President Biden really believes what he is saying here, he is telling his team to refrain from initiatives that any or all of our allies might reject. Instead of soliciting ideas from administration officials that would serve the U.S. interest even if they require campaigns to try (perhaps unsuccessfully) to persuade our allies to acquiesce, his strategy discourages initiative and efforts to persuade. That is the opposite of leadership.

The strategy says that "our alliances and partnerships around the world are our most important strategic asset." But that is not correct; our military power is. This is a dangerous mistake. Our alliances can be highly valuable, but to suggest that they are more important than our military capabilities is wrong and irresponsible.

The document says, "Our strategy is rooted in our national interests." This assertion is at odds with the insistence that America will not act abroad except in concert with our allies and partners. The strategy claims that "Most nations around the world define their interests in ways that are compatible with ours." That, however, is either banal or untrue. Our European allies have important differences with us regarding China, Iran, Israel, trade and other issues. Before the Ukraine war, they had major differences with us regarding Russia.

The strategy says, "As we modernize our military and work to strengthen our democracy at home, we will call on our allies to do the same." What if they do not heed the call, however? For decades, U.S. officials complained vainly that NATO allies underinvested in defense, confident that the United States would cover any shortfalls—what economists call a free-riding problem. Along similar lines, the strategy declares that America's alliances "must be deepened and modernized." But how should U.S. officials deal with allies who act adversely to U.S. interests, as Turkey has so often done under Erdogan—in buying Russian air-defense systems, for example—and as the Germans did, before the Ukraine war, in increasing their dependence on Russian natural gas?

Interestingly, on strengthening the U.S. military, the strategy does not say that U.S. allies have to agree or cooperate. It says, "America will not hesitate to use force when necessary to defend our national interests." This part of the document reads as if it had different authors from the rest.

Nuclear Deterrence

The strategy makes an important point about nuclear deterrence as "a top priority" and highlights that America faces an unprecedented challenge in now having to deter two major nuclear powers. It makes a commitment to "modernizing the nuclear Triad, nuclear command, control, and communications, and our nuclear weapons infrastructure, as well as strengthening our extended deterrence commitments to our Allies." But the administration has not allocated resources to fulfill its words on deterrence and Triad modernization.

Promoting Democracy and Human Rights

"Autocrats are working overtime to undermine democracy and export a model of governance marked by repression at home and coercion abroad," the strategy accurately notes, adding that, around the world, America will work to strengthen democracy and promote human rights. It would be helpful if it also explained why other country's respect for democracy tends to serve the U.S. national interest. This is not obvious and many Americans, including members of Congress, show no understanding of how democracy promotion abroad can help the United States bolster security, freedom and prosperity at home.

The strategy does not explain how its championing of democracy and human-rights promotion can be squared with its emphasis on respecting the culture and sovereignty of other countries and not interfering in their internal affairs. Nor does it explain how officials

should make trade-offs between support for the rights of foreigners and practical interests in dealing with non-democratic countries. Officials need guidance on such matters. The public also would benefit from explanations.

The administration just announced that Saudi Arabia's crown prince, who is also prime minister, has immunity from civil liability for the murder of Jamal Khashoggi, a Saudi journalist who worked for *The Washington Post*. The strategy does not shed light on how the relevant considerations were weighed. It says the United States will make use of partnerships with non-democratic countries that support our interests, "while we continue to press all partners to respect and advance democracy and human rights." That's fine as far as it goes, but it does not acknowledge, for example, that we sometimes have to subordinate human rights concerns for national security purposes, as when President Franklin Roosevelt allied with Stalin against Hitler. A strategy document should be an aid in resolving complexities, not a simplistic list of all the noble things we desire or wish to be associated with.

Refugees

Regarding refugees, it is sensible that the strategy reaffirms the U.S. interest in working with other countries "to achieve sustainable, long-term solutions to what is the most severe refugee crisis since World War Two—including through resettlement." But there is no mention of why U.S. officials should press Persian Gulf states to accept more refugees from the Middle East, given that those states share language, culture and religion with those refugees.

Willing Ends Without Providing Means

The strategy does a lot of willing the end but not specifying or providing the means. As noted, the administration is not funding defense as it should to accomplish its stated goals. On Iran, the strategy says, "[W]e have worked to enhance deterrence," but U.S. officials have been trying to revive the nuclear deal that would give Iran huge financial resources in return for limited and unreliable promises.

The strategy says, "We will support the European aspirations of Georgia and Moldova.... We will assist partners in strengthening democratic institutions, the rule of law, and economic development in the Western Balkans. We will back diplomatic efforts to resolve conflict in the South Caucasus. We will continue to engage with Turkey to reinforce its strategic, political, economic, and institutional ties to the West. We will work with allies and partners to manage the refugee crisis created by Russia's war in Ukraine. And, we will work to forestall terrorist threats to Europe." But these items are presented simply as a wish list, without explanation of the means we will use, the costs involved or the way we will handle obvious pitfalls along the way.

Setting Priorities

A strategy paper should establish priorities, but this one simply says we have to do this and that, when the actions are inconsistent with each other. It is line with the quip attributed to Yogi Berra: When you get to a fork in the road, take it. It says we should act in the U.S. national interest, but we should also always act with allies and partners. We should oppose Chinese threats, but always cooperate with China on climate issues. We should pursue the nuclear deal with Iran even when Iran is threatening its neighbors and aiding Russia in Ukraine (and, as noted, crushing its domestic critics). We should insist on a two-state solution to the Israel-Palestinian conflict while the Palestinian Authority remains unreasonable, corrupt, inflexible and hostile.

A strategy should not set up choices that involve trade-offs and then give no guidance on how to resolve the trade-offs. If it promotes arms control and other types of cooperation (on COVID, for example) with Russia and China, it should forthrightly address problems of treaty violations and specify ways to obtain cooperation when it is denied.

Such a document cannot specifically identify all possible trade-offs and resolve them, but it can set priorities and do a better job than this strategy does in informing officials on how to handle easily anticipated dilemmas.

Strategic Guidance or Campaign Flyer

The administration's strategy combines valid points and unreality. It is unclear whether it is a serious effort to provide guidance, directed at officials, or a boastful campaign document, directed at the public. Mixing the genres is not useful.

* * * * * * * * * *

Christopher A. Ford
Christopher A. Ford is former Assistant Secretary of State for International Security and Nonproliferation.

Following such terrific commentary from friends and colleagues I've worked with in various capacities over the years in the George W. Bush Administration, at Hudson Institute, and in the Trump Administration, it's a hard to add much, and I agree with the points David, Doug, Nadia, and Bridge have made. I should make clear in this regard, however, that I'm only speaking for myself here, and not (for instance) for the MITRE Corporation or the Hoover Institution.

But by way of putting my own gloss on things, let me flag a few of the points that first jumped out at me from the National Security Strategy (NSS) and the National Defense Strategy (NDS). (I'll also add a dusting of comments about the Nuclear Posture Review [NPR], if you can forgive me a little digression in a good cause.)

So let's start with what I see as the biggest failing of the National Security Strategy: it suffers from a structural weakness that significantly undermines its utility in performing its most critical function. A "National Security Strategy" is supposed to serve as an overall guide for how to focus strategic planning, prioritization, and the allocation of scarce resources of time, energy, attention, and funding.

Yet the NSS seems unable or unwilling to prioritize and focus upon the most critical national security challenges. In fact, imports a range of politically controversial elements of President Biden's *domestic* agenda into the discussion as "national security" objectives. That not only risks undermining the prospects for actually *implementing* a consistent U.S. national security strategy with meaningful bipartisan support over time. It also blurs the focus of the document, in some respects so much that it can be difficult to see how it can provide much guidance for national security prioritization at all.

The list of what are basically *domestic* policy agenda items in the "national security" priorities of the NSS is quite impressive. Liberalizing U.S. immigration policy, for instance, makes an appearance, as does making "unprecedented generational investments" in clean energy and "creating millions of good paying jobs and strengthening American industries."

Health care access and gun control are also said to be U.S. national security priorities, as well as fixing what are said to be longstanding economic rules and policies that "privilege corporate mobility over workers and the environment, thereby exacerbating inequality and the climate crisis." It is also apparently critical to U.S. national security that we "counter[er] anticompetitive practices, bring[] worker voices to the decision-making table, and ensur[e] high labor and environmental standards." The NSS promises, furthermore, to "protect and promote voting rights and expand democratic participation … building on the work of generations of activists to advance equity and root out systemic disparities in our laws, policies, and institutions."

In short, the reader of the Biden Administration's new NSS might be forgiven for concluding that it is a "national security" imperative for the United States to implement the entire domestic policy agenda of the progressive wing of the Democrat Party. Whatever one thinks of the particular measures it advocates, therefore, this undermines the document as a useful statement of national security priorities.

I hope this is just an unfortunate but substantively fairly inconsequential example of the performative virtue-signaling that Doug, Nadia, and Bridge have pointed out in the NSS. The danger, however, is that this is actually how the Administration think's about national security. And that would be worrisome, since if most of your domestic policy agenda is called out as a priority in your flagship document on national security priorities, it's hard to say that you really *have* national security priorities. If *everything* you want to do is a "national security" imperative, then *nothing* really is—and there is no way to think intelligibly about strategic prioritization. So that's a big failing.

But, in fairness, there are also things to like in the NSS and the NDS.

To me, one of the most striking things about these new documents is the degree to which the current administration now seems admit that the "hawks" in the U.S. national security policy community basically read the strategic environment right after all. This is especially

the case where it comes to calling out threats from revisionist great power challengers—including *nuclear weapons* threats that the Biden Administration very clearly feels make further disarmament progress impossible without dramatic changes in strategic policy by those strategic competitors. (I guess the Biden Administration's NPR, you might say, is where Barack Obama's "Prague Speech" of April 2009 goes to die.)

All this is a pretty big deal, and I hope will send a strong signal to our adversaries that America is finally taking great power competition seriously on both sides of the political aisle. The Biden Administration, after all, now agrees with the signature innovation of the Trump Administration's national security team. According to the new NSS, after all, "the post-Cold War era is definitively over and a competition is underway between the major powers to shape what comes next." And it claims the U.S. Government is firmly devoted to succeeding in that strategic competition.

Of course, as a hawkish conservative, I wish for the country's sake that things weren't so deep into "we told you so" territory here. And I certainly wish the Left hadn't excoriated *us* so much at the time for our hard-nosed approach to competitive posture and nuclear weapons policy, which they now admit is what America needs. And it's shockingly *late* for them to be first articulating that our country has this problem and needs to get serious about competing. Nevertheless, it's good to see the recognition—and that's an agenda on which we can all work together in an era in which politics is otherwise terribly fractious and polarized.

Yet I think the Biden Administration's latest strategic guidance still falls short—and here I'll depart a little bit from our discussions so far by also flagging the new NPR. It's a fundamental tenet of the new NPR that the United States will "maintain nuclear forces that are responsive to the threats we face." These new guidance documents also make clear that such threats are clearly *increasing* dramatically.

But having promised to maintain nuclear forces responsive to these escalating threats, when it comes to actual nuclear weapons systems, the Administration either simply continues the *status quo* (*i.e.*, with "Triad" recapitalization) or actually *cuts* nuclear weapons programs (the SLCM-N program and the B83-1 gravity bomb). There is quite literally no sign of any movement in or which U.S. nuclear force posture or policy that actually *responds* to the admittedly increasing threats we face. In the face of that growing nuclear threat, in other words, the NPR forswears increasing the *size* of the U.S. nuclear stockpile and eliminates two nuclear weapons systems, each of which provides a unique *type* of nuclear capability for which no replacement is as yet anywhere on the horizon.

Almost by its own admission, therefore, the Biden Administration's nuclear strategy falls short of its own promises and thus shortchanges U.S. national security. This will not be very reassuring to the allies and partners the Biden Administration claims to prize, it is likely to create all sorts of problems in Congress, and it certainly doesn't seem good for the overall efficacy of U.S. nuclear deterrence. So that's not a good thing.

But let me conclude by pivoting again back to more hopeful elements of the new documents. Creditably, the Biden NPR says some pretty sound things about the importance of recapitalizing the U.S. nuclear weapons production infrastructure so that it can "respond

in a timely way to threat developments and technology opportunities" and be able to "produce weapons required in the near-term and beyond."

I hope that is sincerely meant, since our crumbling infrastructure is a longstanding problem for which both political parties and multiple administrations and Congresses deserve great blame. And fixing the problem will be hard: finally achieving such a genuinely responsive infrastructure will take no small amount of money, time, and effort. So I'm very glad the NPR calls it out as a priority objective. And I think such an infrastructure modernization agenda can be—and *must* be—a key focus of bipartisan attention, and a considerable contribution to the efficacy of what the NSS and NDS call "integrated deterrence."

Which brings me to my final point. I'm intrigued by the calls in the NSS and NDS for approaches to competitive strategy based on "integrated deterrence" and "campaigning." They clearly articulate the aspiration to respond to our adversaries' "holistic" strategies with a "holistic" and coordinated U.S. approach to situational awareness, policy development, and policy implementation of our own. A serious effort to develop such a capability would be very welcome, for these are things that (let's be honest) the U.S. Government isn't traditionally very good at.

So this call for integration and coordination seems quite sensible to me, as long as ideas like "integrated deterrence" aren't simply used to make excuses for skimping on the various elements of "hard power" that provide so much of deterrence's underlying foundation. ("Don't worry about that canceled missile program," one might imagine the argument going. "We'll make up for it with 'integrated deterrence'!") I don't see much sign of such excuse-making yet, however, and I hope that the Administration really takes this idea of holistic coordination seriously, and is willing to devote to it the attention, resources, and top-cover that such an effort would require.

So on the whole, I give the new suite of Biden Administration security guidance documents a mixed review. They *do* fall short in some key regards. But there's still much to work with in them, and which can be starting points for shared endeavor across the political divide to improve deterrence and make our national security bureaucracy better able to meet the challenges ahead.

ASSESSING THE 2022 NUCLEAR POSTURE REVIEW

The remarks below were delivered at a symposium on "Assessing the 2022 Nuclear Posture Review" hosted by the National Institute for Public Policy on December 19, 2022. The symposium highlighted the Biden Administration's approach to U.S. nuclear posture and considered the adequacy of U.S. nuclear programs in light of the changed international security environment.

David J. Trachtenberg
David J. Trachtenberg is Vice President of the National Institute for Public Policy and served as Deputy Under Secretary of Defense for Policy from 2017-2019.

In October, the Biden Administration finally released the unclassified version of its *Nuclear Posture Review* (NPR), which was embedded in the *National Defense Strategy* (NDS) along with the *Missile Defense Review* (MDR).

I think it's fair to say that the 2022 NPR contained a few surprises, not the least of which were some significant elements of continuity with the Trump Administration's NPR and other prior Nuclear Posture Reviews. This includes support for the nuclear Triad and a commitment to modernize all three "legs"; revitalizing our nuclear infrastructure; support for extended deterrence; the need for "tailored nuclear deterrence strategies;" rejecting calls to de-alert ICBMs; and even a rejection of "sole purpose and "no first use" policies that the president himself openly favored. It also adopts almost verbatim the same declaratory policy on nuclear weapons employment contained in the 2018 NPR.

The NPR also acknowledges that "due to the actions of our strategic competitors, the international security environment has deteriorated in recent years."[1] It recognizes China's and Russia's military expansion and greater reliance on nuclear weapons for coercive purposes, stating, "The current and growing salience of nuclear weapons in the strategies and forces of our competitors heightens the risks associated with strategic competition and the stakes of crisis and military confrontation."[2] It further states that "as the security environment evolves, it may be necessary to consider nuclear strategy and force adjustments to assure our ability to achieve deterrence…."[3] Indeed, the NPR explicitly declares that the United States will "maintain nuclear forces that are responsive to the threats we face."[4]

However, the document appears to suffer from a case of schizophrenia. While recognizing that Russia and China have increased the role of nuclear weapons in their own postures, it

[1] Ibid. p. 4.

[2] Department of Defense, *2022 Nuclear Posture Review*, p. 5, available at https://s3.amazonaws.com/uploads.fas.org/2022/10/27113658/2022-Nuclear-Posture-Review.pdf.

[3] Ibid. p. 5.

[4] Ibid., p. 1.

says "The United States is committed to taking steps to reduce the role of nuclear weapons in our strategy…."[5]

While acknowledging that China has embarked on what it calls "an ambitious expansion, modernization, and diversification of its nuclear forces" and that Russia is "steadily expanding and diversifying [its] nuclear systems,"[6] the NPR proposes no new or "diversified" U.S. nuclear programs, cancels the SLCM-N program, and proposes to retire the B83-1 gravity bomb.

Interestingly, the NPR's emphasis on "integrated deterrence" includes, in its words, "better synchronizing nuclear and non-nuclear planning, exercises, and operations."[7] It notes that this integrated deterrence approach "incorporates suitable non-nuclear capabilities tailored to specific threat scenarios…."[8] "Non-nuclear capabilities may be able to complement nuclear forces in strategic deterrence plans and operations," it states.[9]

This integration of nuclear and non-nuclear capabilities for deterrence was also a key tenet of the Trump Administration's NPR, which noted that "U.S. forces will ensure their ability to integrate nuclear and non-nuclear military planning and operations."[10]

As I recall, better integration of nuclear and non-nuclear capabilities was also one of the key pillars of the "New Triad" concept proposed in the Bush Administration's NPR. Indeed, both the Bush and Trump Administrations were roundly criticized by those who saw such integration as blurring the line between the use of nuclear and non-nuclear weapons, thus lowering the threshold for nuclear use and making nuclear war more likely.

While those arguments were specious at the time, there seems to be no such criticism of the concept now that the Biden Administration has adopted it. I suppose imitation truly is the sincerest form of flattery. Indeed, the arguments for integrating nuclear, non-nuclear, and defensive capabilities to improve deterrence are not new, they made sense then, and continue to make sense now.

Another inconsistency with regard to "integrated" deterrence seems to be the lack of integration between the NPR and the *Missile Defense Review*. For example, the NPR eliminates "hedging against an uncertain future" as an explicit role for nuclear weapons[11] while the MDR calls investing in the "full spectrum of missile defeat capabilities" while hedging against uncertainty "a strategic imperative for the United States."[12] Of course,

---

[5] Ibid., p. 7.

[6] Ibid., p. 4.

[7] Ibid., p. 10.

[8] Ibid., p. 9.

[9] Ibid., p. 10.

[10] Department of Defense, *Nuclear Posture Review 2018*, February 2018, p. 21, available at https://media.defense.gov/2018/Feb/02/2001872886/-1/-1/1/2018-NUCLEAR-POSTURE-REVIEW-FINAL-REPORT.PDF.

[11] 2022 Nuclear Posture Review, op. cit., p. 7.

[12] Department of Defense, *2022 Missile Defense Review*, p. 12, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

neither strategy document proposes investing in defensive capabilities that could hedge against the prospect of either a Russian or Chinese strategic attack on the U.S. homeland.

I will conclude here and look forward to hearing the perspectives of our panelists.

* * * * * * * * * * *

Keith B. Payne
Keith B. Payne is President of the National Institute for Public Policy. Previously, he served as Deputy Assistant Secretary of Defense for Forces Policy.

As usual, I will start by noting that my comments reflect only my personal views. That said, it is a pleasure to participate on this panel with such outstanding colleagues. Our time is short, so I will summarize my general view of the 2022 NPR, and then focus on only a handful of issues that deserve to be called out.

First, this NPR, even with flaws, is a welcome relief. This is because, while President Biden's past positions regarding nuclear policy seemed to be a captive of minimum deterrence thinking and the nuclear disarmament community, the 2022 NPR is not. It includes multiple useful points that do not move U.S. policy in the problematic ways apparently expected by the nuclear disarmament community—to that community's obvious disappointment.

By doing so, we see a familiar dynamic. President Jimmy Carter came into office asking why the U.S. strategic nuclear deterrent could not reside in a single ballistic missile carrying submarine. He departed office having signed the "Countervailing Strategy," which was the basis for the subsequent Reagan Administration's nuclear modernization program of the 1980s.

Two decades later, President Obama came into office vocally promoting global nuclear disarmament. Indeed, he was awarded the Nobel Prize for doing so. Nevertheless, he subsequently put into motion most of the current nuclear modernization program that now so alarms the nuclear disarmament community.

The Biden Administration's NPR carries on this tradition of a new administration arriving with an apparent nuclear disarmament agenda, but, in time, moves toward general consistency with established bipartisan policy. For example, despite apparent pressure from the disarmament community, this NPR does not:

- eliminate a leg of the Triad;
- adopt a "no first use" or a "sole purpose" declaratory policy;
- retreat from U.S. extended nuclear deterrence coverage for the assurance of allies, i.e., the "nuclear umbrella";
- depart from most of the nuclear rebuilding program initiated by the Obama Administration and advanced by the Trump Administration; or,

- regress to the badly-aging policy agenda of minimum deterrence that continues to be pushed by some.[13]

In short, despite the expectations of some and the fears of others, this NPR generally is consistent with all previous NPRs and decades of established bipartisan policy. As a former Biden Administration DoD official rightly observed, "…the new Nuclear Posture Review (NPR) makes relatively few changes from the 2018 NPR, continuing decades-long policies and strategies."[14] It does not adopt the policy agenda advocated by the disarmament community for decades. For not descending to those places despite the apparent pressure to do so, the 2022 NPR deserves a good measure of praise.

I would like to build on this point by emphasizing the two most important background positions this NPR advances. These are the positions that justify its rejection of minimum deterrence and all that goes along with a disarmament agenda that is so detached from the contemporary threats facing the West.

First, for the most part, this NPR acknowledges the increasing dangers of the international threat environment and the implications of those dangers for U.S. nuclear policy. There is no need to go into detail here about those dangers; they involve the question of how to deter in an unprecedented, uncertain threat environment.[15] The general principles of deterrence are timeless, but we must adapt the application of deterrence to changing circumstances and dangers. This NPR seems to recognize both the danger and the need to adapt now. That recognition is a relief.

This point is directly related to a second background NPR position that deserves praise. That is, its clear acceptance of the need to "tailor" deterrence to the unique circumstances of opponent, time and place. The need to tailor deterrence may seem like a no-brainer to those unfamiliar with much of U.S. Cold War policy—which essentially presumed that opponents shared U.S. perspectives on factors key to the functioning of deterrence, i.e., a uniformity of perceptions, values and modes of calculation. But I assure you, getting to the point where tailoring deterrence to account for the significant differences in these factors is a basic policy principle was decades in the making and is enormously consequential.

Why consequential? Because once the requirement to tailor deterrence to the unique circumstances of opponent, time and place is recognized, so too is the flexibility in deterrence capabilities, planning and strategy needed to be able to tailor deterrence. In short, a spectrum of capabilities, nuclear and conventional, may be required to deter a diversity of opponents at different times and in different contexts. There is no easy, all-purpose standard

---

[13] John Isaacs, "'Old Think' Is Driving U.S. Nuclear Weapons Policy: Cutting drastically the number of U.S. nuclear weapons should not depend on Russian or Chinese assent and could and should be considered now," *National Interest Online*, December 17, 2022, available at https://nationalinterest.org/feature/%E2%80%98old-think%E2%80%99-driving-us-nuclear-weapons-policy-206024.

[14] Leonor Tomero, "NPR 2022 Recognizes Importance of Risk Reduction, Falls Short on Reducing Role of Nukes," *RussiaMatters.org*, December 26, 2022, available at https://www.russiamatters.org/analysis/npr-2022-recognizes-importance-risk-reduction-falls-short-reducing-role-nukes.

[15] See Keith B. Payne and David J. Trachtenberg, *Deterrence in the Emerging Threat Environment: What is Different and Why it Matters, Occasional Paper* (Fairfax, VA: National Institute Press, August 2022).

of adequacy for deterrence; believing otherwise is the basic dangerous presumption of minimum deterrence policy thinking. This NPR helps to put a nail in that coffin, at least for now. That is no trivial point.

Let me quickly move from this deserved commendation of the 2022 NPR to 4 points of concern.

First, despite its recognition of the dangers in the emerging threat context, it seems to take an overly relaxed, business-as-usual approach to those threats. Perhaps this is because, reportedly, this NPR was not updated prior to its October 2022 release to take into account both Russian and Chinese actions throughout 2022.[16]

For example, the timeline it adopts with regard to the threat from China seems overly optimistic. To be specific, it says that China likely intends to possess "at least" 1,000 deliverable warheads by the end of decade, and that "by the 2030s" the United States will face two major nuclear powers as strategic competitors and potential adversaries.[17]

Saying that China will possess "at least" 1,000 strategic warheads by the end of the decade suggests that the number given is the lowest end of a plausible range of force numbers—the lowest common denominator. Using the qualifier "at least" for prospective Chinese nuclear force numbers is artful but does not give insight as to the likely range of plausible numbers. It is akin to saying there is "at least" one person in each automobile on the road, i.e., the driver. That observation is true, of course, but likely misleading as to the actual number of persons on the road.

Indeed, one month after the NPR's October 2022 public release, the Pentagon issued its annual report on China and concludes that China plans to "basically complete modernization" of its armed forces by 2035, and, "If China continues the pace of it nuclear expansion, it will likely field a stockpile of about 1500 warheads by its 2035 timeline."[18] Here, mercifully, the NPR's artful qualifier "at least" is discarded for the more telling descriptor "about" with reference to the number of Chinese nuclear forces, with a 50 percent increase in the NPR's given number. Even that number, which is 50 percent higher than the figure given in the 2022 NPR, may be low. A former senior DOD official who follows the Chinese force numbers very closely observed: "The 2022 Pentagon report is clearly minimizing the numerical implications of Chinese deployment of MIRVed strategic missiles…. Today, the low estimates of Chinese nuclear weapons numbers and projected

---

[16] *The Washington Post* pointed out, "Perhaps most strikingly, the authors acknowledge that the [NPR] documents were not updated since March…despite a war in Ukraine that was in its infancy when they penned their assessments." See, Karoun Demirjian, "6 key takeaways from the Pentagon's new defense, nuclear policies," *The Washington Post*, October 27, 2022, available at https://www.washingtonpost.com/national-security/2022/10/27/6-highlights-pentagon-nuclear-china/.

[17] Department of Defense, *2022 Nuclear Posture Review*, October 2022, p. 4, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

[18] Department of Defense, *Military and Security Developments Involving the People's Republic of China, 2022*, p. IX, available at, https://media.defense.gov/2022/Nov/29/2003122279/-1/-1/1/2022-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF.

growth are so far below the delivery capability of the missiles that China is *known* to be building that they lack any credibility."[19]

The NPR's seemingly relaxed view of the threat to U.S. deterrence goals posed by China is out of place given Beijing's apparent intentions, military buildup, and expanding nuclear capabilities. The NPR seems to say we have ample time, while then-Commander of U.S. Strategic Command, ADM Charles Richard, recently said the U.S. deterrence ship is sinking now and "it isn't going to matter how good our [operating plan] is or how good our commanders are, or how good our forces are—we're not going to have enough of them. And that is a very near-term problem."[20]

As ADM Richard has rightly observed, China's threat to U.S. deterrence goals is looming now. Perhaps China's rapid expansion of nuclear forces will not fully mature until the 2030s. But its threat to U.S. deterrence goals is *not* dependent on the time it takes China to reach some measure of "parity" (or more) with the United States in strategic nuclear force numbers. China's threat to deterrence flows from the contemporary combination of Beijing's expansionist, revisionist goals and corresponding rapid buildup of conventional and nuclear capabilities.

The number of China's strategic nuclear forces in comparison to the number of comparable U.S. nuclear force is not irrelevant to U.S. deterrence considerations, but it is *not* the only, or the most important component of the threat China poses to U.S. deterrence goals. Believing that some ebbing U.S. numeric advantage or "parity" in strategic forces equals a safe relationship with China reflects the type of thinking that has unhelpfully skewed U.S. deterrence policy for decades, e.g., that a "parity" or balance in strategic nuclear forces (according to a chosen numeric measure) ensures that deterrence stability will endure. That essentially is an inadequate engineering approach to the understanding deterrence. If such an engineering approach to deterrence were reasonable, understanding how to deter and identifying a force adequate to the task would be much simpler. But it is not. It misses the most important political-military factors of the involved parties, i.e., their respective values, intentions, focus, political goals, determination, perceived strengths, weaknesses and vulnerabilities, and communications.

Accordingly, the most important ingredients in the threat to deterrence now posed by China are the apparent decade-long developments in its thinking about the role of nuclear weapons in support of its corresponding expansionist, revisionist foreign policy goals.[21] This

---

[19] Mark B. Schneider, "Will the Pentagon Ever Get Serious About the Size of China's Nuclear Force?," *RealClear Defense*, December 15, 2022, available at https://www.realcleardefense.com/articles/2022/12/15/will_the_pentagon_ever_get_serious_about_the_size_of_chinas_nuclear_force_870335.html (emphasis in original).

[20] Quoted in, Caleb Larson, "'Sinking Slowly': Admiral Warns Deterrence Weakening Against China," *The National Interest*, November 7, 2022, available at https://nationalinterest.org/blog/buzz/'sinking-slowly'-admiral-warns-deterrence-weakening-against-china-205759.

[21] For a lengthy analysis of China's goals and envisioned role for nuclear weapons see, Keith Payne, Matthew Costlow, Christopher Ford, David Trachtenberg, and Alexander Vaughn, *Deterring China in the Taiwan Strait, Special Issue: Journal of Policy and Strategy*, Vol. 2, No. 2, 2022, especially chapters 1 and 2, available at https://nipp.org/wp-content/uploads/2022/05/Special-Issue-final.pdf.

includes the use of nuclear threats for the purpose of nuclear coercion to support these goals. This unprecedented political-military challenge to U.S. deterrence goals is *not* dependent on China attaining some U.S. notion of "parity" or better in strategic nuclear forces in the 2030s. This challenge is here and now, and the United States needs to recognize its immediacy and identify a path forward to deter war. The 2022 NPR does not appear to do so.

Second, this NPR curiously eliminates the SLCM-N program, reportedly against the expressed advice of senior U.S. military leaders,[22] and contrary to the overall thrust of the report itself because SLCN-N would have unique capabilities likely valuable for tailoring deterrence in the emerging threat environment. This NPR seems to recognize emerging threats to deterrence and the need to tailor deterrence, but then seeks to kill a capability uniquely suited to tailoring and preserving deterrence in the emerging threat context. It is difficult to explain this decision other than SLCM-N—having been initiated by the Trump Administration—was the chosen, low-hanging fruit to eliminate something nuclear and to differentiate itself from the 2018 NPR.

Third, the 2022 NPR identifies arms control as "the most effective, durable and responsible path to reduce the role of nuclear weapons in our strategy and *prevent their use*."[23] To claim that arms control rather than deterrence is the "most effective, durable and responsible path" to preventing the employment of nuclear weapons is manifestly problematic and suggests a distorted prioritization. In Europe today, did past agreements regarding the elimination of nuclear weapons on Ukrainian soil prevent Russian invasion of Ukraine or Moscow's subsequent stream of extreme nuclear threats? These threats have created greater concern about the probability of nuclear war than at any time in decades. Do the pertinent past agreements or *any others* now provide the much-appreciated measure of confidence that Moscow will *not* actually employ nuclear weapons, or do NATO's deterrence capabilities provide that comfort? To ask the question is to identify the proper prioritization of deterrence and arms control as paths to prevent nuclear use. Both may be helpful, but when arms control and deterrence initiatives are in competition and trade-offs must be made, the priority must be in favor of deterrence because sustaining deterrence is paramount to preventing nuclear employment in a harsh threat environment.

Finally, and potentially most importantly, this NPR eliminates "hedge against an uncertain future" as a formal role of nuclear weapons.[24] This position contradicts the NPR's recognition of the need to adapt deterrence in an increasingly dangerous and uncertain threat environment. It also contradicts the decades-long bipartisan recognition of the critical

---

[22] See for example, Valerie Insinna, "Grady 'Aligned' With Milley on Embattled Low-Yield Nuke Program," *Breaking Defense*, May 5, 2022, available at https://breakingdefense.com/2022/05/grady-aligned-with-milley-on-embattled-low-yield-nuke-program.

[23] Department of Defense, *2022 Nuclear Posture Review*, op. cit., p. 16 (emphasis added).

[24] Department of Defense, *2022 Nuclear Posture Review*, op. cit., p. 7, available at https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF.

need for hedging, and the increasing uncertainties and corresponding need for hedging in the emerging threat environment,[25] which this NPR acknowledges.

One can only wonder at the logic that says nuclear deterrence is a top priority in an increasingly uncertain threat environment, but that hedging is no longer a formal role for nuclear weapons. Some have suggested this is innocuous language to be ignored.[26] Perhaps, but there was ample time to clean up any unintended language, and policy words can have consequences, now and in the future.

Recall that over 50 years ago an NSC analyst explained to Henry Kissinger that the nuclear disarmament language in Article VI of the Non-Proliferation Treaty "is an essentially hortatory statement and presents no problems,"[27] so Kissinger did not need to think twice about it. Yet, that Article has since become the focal point of claims that the NPT *requires* movement to nuclear disarmament.

Policy words can have meaning, and this NPR's language rejecting hedging holds potentially significant consequences. Perhaps this NPR's language against hedging, rather than being an innocuous throw-away line, was included as a hook for future efforts to eliminate U.S. capabilities needed to upload nuclear weapons beyond New START limits, i.e., capabilities to hedge. If so, it is both serious and far removed from the harsh realities of the contemporary and foreseeable threat environment.

Conclusion

In summary, the 2022 NPR deserves considerable praise for rejecting the minimum deterrence and nuclear disarmament policy agendas. Indeed, one dissatisfied commentator with a disarmament agenda concluded that the United States should just stop issuing NPRs because "the Pentagon controls the pen," i.e., they are written by DoD professionals who, on a fully bipartisan basis, tend to be guided by an alternative national security agenda.[28] They may hold nuclear disarmament up as an ultimate destination, but generally recognize, as the bipartisan Strategic Posture Commission (Perry-Schlesinger Commission) observed, "The conditions that might make possible the global elimination of nuclear weapons are not present today and their creation would require a fundamental transformation of the world political order."[29]

---

[25] See Payne and Trachtenberg, *Deterrence in the Emerging Threat Environment: What is Different and Why it Matters, Occasional Paper*, op. cit., pp. 20-49.

[26] See this reported comment by Hans Kristensen in, Bill Gertz, "Biden strategy shift limits role of nuclear arms as China, Russia expand arsenals," *The Washington Times*, November 2, 2022, available at https://www.washingtontimes.com/news/2022/nov/2/biden-strategy-shift-limits-role-of-nuclear-arms-a/.

[27] Spurgeon Keeny, *Memorandum For Dr. Kissinger, Provisions of the NPT and Associated Problems*, The White House, January 24, 1969, Declassified August 6, 2007, p. 5, available at https://2001-2009.state.gov/documents/organization/90727.pdf.

[28] Joe Cirincione, "A failure to review America's nuclear posture," *Bulletin of the Atomic Scientists*, Oct. 28, 2022, available at https://thebulletin.org/2022/10/a-failure-to-review-americas-nuclear-posture/.

[29] Congressional Commission on the Strategic Posture of the United States, *America's Strategic Posture* (Washington, D.C.: U.S. Institute of Peace, 2009), p. xvi.

Those who now are so critical of the 2022 NPR for *not* adopting their preferred nuclear disarmament agenda simply cannot understand the continuing bipartisan rejection of their policy recommendations by those responsible for U.S. security and nuclear policy. A pertinent observation by the late and incomparable Oxford Professor, Sir Michael Howard is insightful: "Nobody who has been brought into contact with that inner group of civil and military specialists who are responsible for the security of this country can fail to notice the almost physical pressure exerted on them by that responsibility, affecting their processes of thought (and often their manner of speech) in much the same way as the movements of a man are affected when he tries to walk in water….they share a common skepticism as to the possibility of disarmament, or indeed of the creation of any effective international authority to whom they can turn over any portion of their responsibilities." Sir Michael adds the critical point that, "the impatient onlookers, who have never themselves been plunged into that element, cannot understand why.[30]

I am pleased to commend the 2022 NPR for its clear rejection of the disarmament community's agenda and minimum deterrence, and correspondingly, for recognizing the need to rebuild U.S. deterrence capabilities to meet the deterrence needs of an increasingly dangerous threat environment. That praise comes with a caveat, however, because it also contains some internally contradictory, troubling directions that are detached from, and inadequate for the rapidly advancing threats now confronting the West. Perhaps there is more to come.

* * * * * * * * * *

John Harvey

John Harvey is former Principal Deputy Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs and former Director of the Policy Planning Staff of the National Nuclear Security Administration.

Thanks to David and the NIPP team for inviting me to participate. I am happy to join four "nuclear rock stars" on this panel—my colleagues Frank Miller, Keith Payne, Brad Roberts, and Rob Soofer. Many of you have seen our publication in *Real Clear Defense*—"Assessing the Biden 2022 NPR"—which calls attention to many Biden decisions on nuclear policy which we commend and identifies as well some shortfalls. Today, I will drill down on one NPR shortfall, i.e., the failure to develop solutions to the so-called "two nuclear peer" threat.

Over the next two decades the United States is carrying out a complex modernization program involving the near simultaneous replacement of every leg of the aging Triad, a major upgrade to nuclear command and control (NC2), and recapitalization of NNSA's aging warhead production infrastructure. This program, however, is not creating more nuclear weapons with exquisite new military capabilities; it is simply replacing what we have today with modern variants. Is this sufficient to address threats that will evolve significantly over

[30] Michael Howard, *Studies in War and Peace* (New York: Viking Press, 1964), pp. 215-216.

the 50-70 years that these systems are to remain in the field? After all, much of the ongoing modernization program was established more than a decade ago, when the global security environment was much more benign. To answer this question, a central focus is evolution of the threat posed by Russia and China.

Russia and China

Mr. Putin's open contempt for, and single-handed attempt to, upend the post-Cold War international security order in seeking to recreate the Soviet Union all suggest the persistence of dangers for which the U.S. nuclear deterrent is relevant. The discovery of China's expanded ICBM program, as part of its sprint from a minimum deterrent force to nuclear peer status, and Beijing's increasingly strident threats to take Taiwan by force bolster that case. In summary, the global security environment is getting worse not better.
The NPR clearly recognizes Russia's and China's coercive strategies of nuclear threats to advance expansionist goals, and the need for tailored, flexible U.S. deterrence capabilities to defeat those strategies. That said, the Biden NPR does not go far enough in addressing the worsened threat environment with concrete responses for continuing to deter Russia and China. It is important to establish the context for my critique. Major changes in the security environment—Russia's February 2022 invasion of Ukraine, discovery of China's expanded ICBM program—were evolving simultaneously with the 2022 NPR. As a result, I would cut the Biden team some slack for not yet having solutions to the challenges it correctly identifies.

The "Two Nuclear Peer" Threat

Regarding the two nuclear peer threat, in the past, U.S. nuclear forces were focused on Russia; in a sense, China was a lessor included threat. The emergence of China toward peer status, seen as a prospect for the mid-2030s, changes that calculation. Quoting from the NPR:

> By the 2030s the United States will, for the first time in its history, face two major nuclear powers as strategic competitors and potential adversaries. This will create new stresses on stability and new challenges for deterrence, assurance, arms control and risk reduction.[31]

The key question: Can the United States continue to deter China as a nuclear peer, an aggressive Russia, or possibly both simultaneously, with existing nuclear forces, or will it need to increase the force? This last point brings the so-called "hedge" into play.

Very simply put: We design a baseline nuclear force to address the threat that we anticipate; the hedge is intended to provide options to adjust that force in the event we guess

[31] Department of Defense, *2022 Nuclear Posture Review*, October 27, 2022, p. 4, available at https://s3.amazonaws.com/uploads.fas.org/2022/10/27113658/2022-Nuclear-Posture-Review.pdf.

wrong on the threat or something else bad happens technically. China's aggressive effort to ramp up its ICBM force is precisely the unanticipated "surprise" for which a hedge was contemplated.

That said, deterring a hostile Russia and China, possibly at the same time, has been a feature of U.S. policy for decades. During the Cold War, even in light of a major nuclear exchange with Russia, the United States maintained sufficient survivable warheads in reserve to deter any incentive by China to "pile on." But this was during a time when both Russia and the United States maintained many thousands of strategic warheads, while China possessed just a few tens of ICBMs that could reach the United States. There was flexibility then in U.S. forces to deter both.

Today, with U.S. deployed strategic warheads capped at 1,550 under New START, China is ramping up to potentially several thousand ICBM warheads. Limiting options is the fact that the intensive, ongoing program to modernize each Triad leg leaves little, if any, excess capacity for DoD or NNSA to respond with new nuclear program starts in the near term. For now, I see three options for the Biden team in advancing a plan for how to respond to China's buildup:

- Do nothing for now forces-wise; focus on diplomacy and arms control to manage this competition. If it takes China until 2035, as estimates suggest, to complete its buildup, then there is some time for dialog.
- Revisit doctrine, targeting, and employment policy to see what changes might be needed to achieve multi-polar deterrence objectives with currently planned forces.
- Plan now, under existing nuclear doctrine, to augment current force size or composition and possibly bolster missile defenses as China's buildup is realized.

In the near term, U.S. forces could be augmented by uploading reserve warheads to existing delivery systems. In the longer term, the ongoing modernization program enables an option that "hot" production lines for the Sentinel ICBM, B-21 bomber, Columbia SSBN, LRSO, nuclear warheads and the like could be extended once their originally intended build is completed.

For a threat that may materialize by the mid-2030s, however, this option is not sufficiently responsive. If we field Columbia at a rate of one per year starting, say in 2030, then the 13th sub would not come off the production line until the early 2040s. Deploying 400 Sentinel ICBMs at an estimated rate of one per week, again starting in the 2030 timeframe, means that additional ICBMs, at their earliest, would not be fielded until the late 2030s. What could be done sooner by uploading reserve warheads to existing delivery systems?

Today, U.S. strategic nuclear forces consists of:

- 400 deployed Minuteman III ICBMs
- 12 deployed Ohio-class subs each with 20 Trident II SLBMs
- 41 B52 Bombers
- 19 B2 Bombers.

Under the 1,550 warhead limit, the United States allocates about 1,090 warheads to the SSBN force, 400 single-warhead ICBMs, and, according to the bomber counting rule, 60 warheads assigned to heavy bombers (although each can carry multiple ALCMs and bombs). MIRVing Minuteman III, and uploading SLBM warheads to currently unoccupied slots on the Trident II D-5 bus, could add close to one thousand additional warheads to the deployed force. Uploading additional ALCMs to B-52 bombers—they can carry up to twenty but are typically deployed with fewer—would add significantly to that total. To be sure, uploading does add some operational inefficiencies. Still, this is not an insignificant force augmentation capability.

Timing is an additional hedge consideration. Making reserve warheads available for upload, could take many months depending on whether limited-life components such as tritium bottles are available or need to be produced. Once activated, the timelines for weapons upload will vary depending on the delivery system—days to weeks for bombers, weeks to months for the subs, and months to years for ICBMs. If existing trends in China's nuclear expansion continue, the choice may become when, not whether, to implement such options.

Stella Morabito, *The Weaponization of Loneliness: How Tyrants Stoke Our Fear of Isolation to Silence, Divide, and Conquer* (New York, NY: Post Hill Press, 2022), 278 pp.

What compels individuals to loot and burn businesses in the United States in the 21st century like they did in Portland in 2020 during the Black Lives Matter protests under the delusion that their actions are generating social justice and correcting historical wrongs? How does a suburban mom justify spitting at and yelling in policemen's faces,[1] behavior she would not ordinarily condone in herself or her children? Why do so many people stand by when a vocal minority pushes discriminatory and unjust policies? Most importantly, what can individuals do to counter mechanisms that generate and feed on vicious impulses that isolate people from each other and make them more susceptible to manipulation by what the author calls the power-hungry class? In her book *Weaponization of Loneliness: How Tyrants Stoke Our Fear of Isolation to Silence, Divide, and Conquer*, Stella Morabito discusses tools that totalitarian states use to divide the population to make it easier to control and, with concrete examples, illustrates efforts to implement the same methods in the United States.

The book begins with an historical overview of Cromwell's Puritan revolution, Robespierre's rule of terror after the French Revolution, Communists' brutal pursuit of classless society, and Hitler's genocidal quest for *Übermenschen*. The selection is deliberate; a closer examination shows that the tools these regimes utilized to compel individuals to go along with their destructive goals differed only in time and place, not in kind. Regrettably, as the author illustrates, these tools are alive and well and at work in the United States: from political correctness demanding restrictions on freedom of speech, to resegregation of Blacks, estrangement of women, identity politics on hyperdrive, cancel culture, and failure to provide solid public education while wanting to treat homeschooling parents like domestic terrorists. The mechanisms at work "appeal to the same forces: a craving for status, the need for belonging, obedience to overwhelming propaganda, hatred of a common perceived enemy, terror of being lumped in with the 'unfit,' and fear of ostracism by the in-group," as Morabito states in her book. Today's revolutions lack a central figure, like Mao or Cromwell. Rather, they are a hydra-like conglomerate of various actors with overlapping interests, including members of Big Tech, Big Media, Big Government, or Big Pharma groups.

Psychological research shows that humans' natural fear of loneliness is the utopian radicals' most valuable asset in their drive to isolate individuals, instill mob mentality, and use these manipulated individuals to silence those who disagree with their goals. In the pursuit of utopia, and satisfying an unquenchable lust for power, one can do no better than severing family, faith, and community ties that ground humans with the purpose of their existence. Such is the goal and effect of identity politics, political correctness, and mob agitation. It serves to divide Americans into ever smaller groups alienated from each other and rewards self-censoring, which inhibits the development of closeness that follows

[1] Stella Morabito, "Why Do So Many White Women Hate Themselves?" *The Federalist*, July 9, 2020, available at https://thefederalist.com/2020/07/09/why-do-so-many-white-women-hate-themselves/.

genuine friendships and free opinion exchanges. The ultimate aim of a utopian radical is to destroy the private sphere and supplant real relationships with an overarching dependence on the state. That is because "families, faith, and community are such extraordinary sources of strength to individuals" and provide a degree of protection from authoritarians' efforts to control them, which is why utopian radicals are compelled to destroy them.

Awareness of these mechanisms at work is the prerequisite to resisting them. Morabito ends the book on a high note: it is possible to counter the machinery of loneliness. First, by launching "propaganda awareness" book clubs in which (preferably face-to-face) discussions of these important topics can flourish and friendships can be created. Such book clubs can inoculate one's mind to cult-like tactics and methods authoritarians use to extract obedience. Individuals' studies should also include a wealth of social psychology research on conformity impulses, mob psychology, and cult methods. Second, by becoming actively engaged to recover the original missions of education, medicine, entrepreneurship, and community building. There are also smaller ways in which individuals can throw a wrench in the machinery of loneliness, including reviving comedy, filling gaps in general knowledge, investing in the local community, and supporting the revival of beauty in the public square. Hopefully it is not too late for the United States to reclaim a sense of community on which democracies may continue to flourish.

Reviewed by Michaela Dodge
National Institute for Public Policy

* * * * * * * * * * *

Charles Glaser, Austin Long, and Brian Radzinsky (eds.), *Managing U.S. Nuclear Operations in the 21st Century* (Washington, DC: Brookings Institution Press, 2022), 287 pp.

When most people consider the issue of nuclear deterrence, they think of nuclear weapons and the delivery systems that carry them, including the U.S. strategic Triad of land-based intercontinental ballistic missiles (ICBMs), sea-based submarines and sea-launched ballistic missiles (SLBMs), and heavy bombers. However, it is not possible to appreciate fully the intricacies and complexities of nuclear deterrence without understanding the other elements so critical to its effective functioning. These include policy, strategy, and doctrine; nuclear employment guidance; civilian oversight of the military; alliance considerations; the nuclear command and control (NC2) system; and the role of arms control.

Managing U.S. Nuclear Operations in the 21st Century provides a comprehensive review of some of these lesser-considered aspects of U.S. nuclear operations. It is an updated version of a similar volume, also published by the Brookings Institution, in 1987. As two of the editors note in the Introduction, "Debates about U.S. nuclear policy tend to focus on a small set of high-level issues…. While these are certainly important, U.S nuclear policy entails much more" (pp. 1-2). They also acknowledge that "much has changed since the publication of that [earlier] book," (p. 5) including the overall strategic environment since the end of the Cold

War, technological advances, and the growth in adversary nuclear capabilities and more threatening nuclear postures. Among the more significant insights they highlight are 1) the growth in civilian involvement in nuclear planning and targeting issues since the 1980s; 2) the impact of today's more dangerous international security environment on U.S. strategy and the planning process; and 3) the importance of a more resilient and adaptable nuclear command and control system.

The book's chapters are written by noted subject matter experts, most of whom previously served as senior military or civilian officials in the U.S. government with responsibilities for U.S. nuclear policy. The pedigree of each of the authors is impressive and is demonstrated by their expertise and level of understanding of nuclear issues.

After the editors provide a basic but necessary description of the relationship between deterrence and nuclear strategy, former DoD and National Security Council senior official Franklin Miller discusses the evolution of civilian oversight under successive presidential administrations. Citing historical evidence of a Cold War "disconnect" between the need to ensure the president has flexible deterrent options and the actions necessary to allow for implementation of those options, (p. 65) he concludes that significant improvements have taken place in the nuclear planning process since the Cold War and argues that these improvements must be sustained through continued efforts to improve cooperation between the civilian and military leadership. Former Under Secretary of Defense for Policy James Miller reviews the civilian-military relationship in the Obama Administration and notes that "sustained discourse" between civilian overseers and military implementers with respect to nuclear planning "is critical to ensuring that policy goals can be achieved" (p. 89). Former USSTRATCOM Deputy Director for Strategic Plans and Policy Michael Elliott rigorously details how presidential guidance is translated into nuclear operational plans. He notes that "Meticulous planning is the foundation of a military posture designed to maintain the peace" and concludes, "When dealing with nuclear weapons, policy, plans, and operations, there can be no mistakes" (p. 129).

Former USSTRATCOM Commander Gen. Robert Kehler (USAF, Ret.) discusses the "human dimension" of nuclear operations, including the role of morality, legality, and ethics in the nuclear decision process. He writes that "Nuclear weapons have prevented nuclear use and major conventional war since 1945 and will continue to do so as long as the United States' nuclear forces remain credible and the men and women who perform the mission receive the unequivocal support of the nation that demands their efforts. Establishing and sustaining their trust and confidence in the chain of command is the most important requirement of all" (p. 163). In commenting on nuclear command and control (NC2), John Harvey, a former senior DoD and Department of Energy (DoE) official, and John Warden, an Institute for Defense Analyses contributor to numerous DoD studies, note that the United States relies on an NC2 system designed during the Cold War and argue that "In the current security environment, the likely pathways to major conventional conflict and nuclear escalation are far different" (p. 167). Therefore, they argue that modernization of the legacy "Thin Line" NC2 system is essential. An objective of NC2 is to "increase the time that the president has to make decisions on nuclear weapons employment." They assert that

"increasing the time available for information gathering and deliberation," will "reduce the likelihood that the pressure to quickly decide to employ nuclear weapons leads to unsatisfactory outcomes" (p. 184).

Elaine Bunn, who served in various official capacities at DoD, addresses the related issues of extended nuclear deterrence and assuring allies, calling for more extensive discussions with Japan and South Korea, for example, noting that allied views are "not monolithic" (p. 222) and concluding that shoring up the credibility of U.S. extended deterrence guarantees is necessary to avoid "deterioration, and even an end to the U.S. network of alliances—and consequently, more nuclear-armed nations" (p. 229). Finally, although acknowledging that "Arms control is not an end in itself but a tool to enhance national security and international stability," Linton Brooks, a former Deputy Administrator at the National Nuclear Security Administration with over six decades of experience, argues that "Nuclear operations and arms control are inescapably linked…." (p. 276). Given the complexities of today's international environment, he concludes that "New approaches to agreements will be required…involving multiple parties" (p. 277). Although some might question the utility of arms control in today's environment, Brooks contends that "The most important impact arms control has on nuclear operations is in setting the size and to some degree the composition of strategic nuclear forces" (p. 276). And while noting that "in an era of great-power competition, many believe we may need to increase nuclear forces at some time in the future," he acknowledges that other than through a cumbersome amendment process, "we have no way to reflect that need in our current arms control approach built around legally binding treaties" (p. 276).

In short, *Managing U.S. Nuclear Operations in the 21st Century* is a well-written and well-documented treatise on virtually all aspects of nuclear deterrence, planning, and operations. In light of the fact that nuclear weapons are here to stay, at least for the foreseeable future, and the growing volatility of the international security environment, this book adds enormously to an understanding of the factors that must be considered to ensure that U.S. nuclear policy and strategy are soundly formulated and aligned with national deterrence objectives. At a time when discussion of nuclear weapons and deterrence generates strong emotional reactions that tend to discount important issues and nuances, the contributors to this volume have done an important public service.

Reviewed by David J. Trachtenberg
National Institute for Public Policy

* * * * * * * * * *

Edward Kaplan, *The End of Victory: Prevailing in the Thermonuclear Age* (Ithaca, NY: Cornell University Press, 2022), 280 pages.

Nuance and nuclear weapons do not appear to be natural partners. Can fine distinctions really be associated with the most destructive instrument (yet) invented by mankind? At the sunset of the atomic age and the dawn of the thermonuclear age, a highly secretive group of

military leaders set out – at the direction of President Eisenhower – to answer the strategic question of the decade: if not "victory," then what? The answer lay in a new and nuanced strategy: prevailing.

Dr. Edward Kaplan, a former USAF Colonel and currently the Dean of the School of Strategic Landpower at the U.S. Army War College, has written a fascinating account of the Net Evaluation Subcommittee (NESC), the products of which have only very recently been mostly declassified. President Eisenhower directed the National Security Council to establish the NESC, at first as an organizational experiment, to conduct a dispassionate analysis of America's worst nightmare – a Soviet "bolt out of the blue" nuclear attack against the U.S. homeland. Later iterations of the NESC's annual reports modified and added to this scenario based on Presidential guidance by adjusting warning times, projected Soviet bomber and ICBM capabilities, and other factors. NESC report results – helpfully republished in the book – make for a grim read as it becomes difficult for the reader to comprehend the scale, scope, and suddenness of thermonuclear war. Yet, Presidents Eisenhower and Kennedy both thought that these cold calculations were integral for developing U.S. nuclear deterrence policy, the foundation for U.S. defense policy overall.

The creation of the NESC was grounded in necessity as much as frustration. President Eisenhower was no stranger to the long-running tension between officials in charge of intelligence and officials in charge of U.S. military plans. Both groups were reticent, even hostile, to sharing information with the other and thus, U.S. policy suffered as a result. Something was needed to rise above these siloed departments and the raging interservice rivalries of the U.S. Air Force, Army, and Navy.

As Kaplan ably relates, the NESC was unique organizationally – reporting only to the President who then decided on the distribution of reports on a case-by-case basis – and this, naturally, led to tradeoffs. The NESC's small membership and highly secretive nature allowed the President to ask some of the most politically sensitive questions (and be given blunt answers) relatively freely. Yet, secrecy also had its drawbacks. The NESC's annual reports were tightly controlled (usually only two copies existed, one in the NSC and one in a "disaster file" for continuity of government), and thus its conclusions were not always relayed to other U.S. defense officials who could have benefited from the information, or questioned NESC assumptions.

The NESC, Kaplan demonstrates persuasively, played an outsized and, till now, nearly unrecognized role in the formation of U.S. nuclear strategy – namely the shift from seeking to achieve "victory" in the Clausewitzian sense to "prevailing." The difference between "victory" and "prevailing" may seem overly academic to some, but to the most senior U.S. defense officials at the time, it was a distinction with a difference. Kaplan shows that the NESC helped lead a change in U.S. goals from utterly dominating the Soviet adversary at minimal cost ("victory"), a holdover from World War II thinking, to the more realistic goals of surviving as a functioning society with "acceptable," though horrific, costs ("prevailing"). In a memorable summary sentence, Kaplan describes the difference between the two strategies by remarking that countries typically held "victory parades," not "prevailing parades" – such would be the case after a general nuclear war.

This reviewer found nothing of substance to criticize in this work – even though it is traditional for a reviewer to do so. The sources are extensive, Kaplan's grasp of the secondary literature is sound, and even more impressive, he deftly and clearly explains nuanced concepts (victory vs. prevailing; net assessment vs. systems analysis; deterrence by denial and deterrence by punishment) in ways non-experts can easily understand.

Kaplan's focus on the NESC as a microcosm of broader U.S. nuclear strategy debates at the time rewards readers whose interests may range from organizational theory, U.S. nuclear policy, nuclear targeting, operations, war gaming, and Presidential decision-making. *The End of Victory* is, quite simply, required reading for the nuclear policy professional today. Kaplan is a knowledgeable guide through the history of U.S. officials translating policy into operations from the 1950s through the 1960s – a grim business, but one that produced the foundation for U.S. nuclear strategy, and deterrence, for decades to follow.

Reviewed by Matthew R. Costlow
National Institute for Public Policy

The following documents present excepts from recent key testimonies, particularly those relevant to U.S. nuclear policy. A common thread running through them is the seriousness with which U.S. adversaries pursue, advance, and in some cases use new capabilities to achieve their objectives at U.S. and allies' expense.[1] The testimonies also outline some of the steps the United States is planning to take or should be taking to address the challenge.

Document No. 1. Excerpts from the Statement of Dr. John F. Plumb, Assistant Secretary of Defense for Space Policy before the House Armed Services Committee, Subcommittee on Strategic Forces on Fiscal Year 2024 Strategic Forces Posture, March 8, 2023.

INTRODUCTION

Today, the United States finds itself in a highly dynamic and challenging security environment characterized by intensifying strategic competition, assertive behavior by multiple competitors, rapidly evolving domains of conflict, shifting balances of power, and, as a result, a growing risk of military confrontation. Our competitors have placed nuclear weapons, space warfare, and long-range strike at the center of their strategies to coerce and fight the United States and its allies and partners. They are investing heavily in nuclear weapons that can threaten U.S. forces and territory and our allies and partners. Our competitors seek to create a future operating environment in which they can leverage space and strike capabilities to hold at risk our forces, ports, and airfields, and to deny U.S. freedom of maneuver. As recent events make clear, our competitors are developing a range of capabilities to reach the U.S. homeland, ranging from high-altitude balloons for intelligence collection to nuclear-armed hypersonic weapons. Nuclear, space, and missile capabilities also underwrite ongoing efforts by U.S. competitors to gain advantage in "gray zone" competition, undercut U.S. leadership, and reshape global norms to their advantage.

Nuclear weapons, space capabilities, and missile defense are all essential to integrated deterrence. The Department's efforts in these areas undergird all four priorities in the NDS [National Defense Strategy]: (1) defending the homeland; (2) deterring strategic attacks; (3) deterring aggression while preparing to prevail in conflict; and (4) building a resilient Joint Force and defense ecosystem that can sustain U.S. strategic advantage. To ensure we will meet the challenge of the deteriorating security environment, the Department is committed to investing in nuclear triad modernization, homeland and regional missile defense, and a more resilient space architecture.

[1] The content in this Documentation section has been shortened for presentation.

SECURITY ENVIRONMENT

People's Republic of China

The People's Republic of China (PRC) is engaged in a significant and fast-paced expansion, modernization, and diversification of its nuclear forces, which has resulted in the establishment of a nascent nuclear triad. If the PRC continues the current pace of its nuclear force expansion, it could field an arsenal of about 1,500 warheads by 2035. The PRC's intercontinental-range forces are complemented by several theater-range road-mobile ballistic missile systems, and it is developing advanced nuclear delivery systems such as a strategic hypersonic glide vehicle. The PRC is increasing the peacetime readiness of its forces by moving to a launch-on-warning posture. While the end state of the PRC's nuclear force expansion remains uncertain, the trajectory of these efforts points to a large, diverse nuclear arsenal with a high degree of survivability, reliability, and effectiveness, and ever-evolving opaque doctrine. This could provide the PRC with new options before and during a crisis or conflict to leverage nuclear weapons for coercive purposes, including military provocations against U.S. allies and partners in the region. By the 2030s, the United States will, for the first time, face two major nuclear powers as strategic competitors and potential adversaries.

The PRC has dramatically advanced its development of conventional and nuclear-armed ballistic and hypersonic missile technologies and capabilities through intense and focused investment, development, testing, and deployments. In 2021, the PLA Rocket Force (PLARF) launched approximately 135 ballistic missiles for testing and training. This was more than the rest of the world combined, excluding ballistic missile employment in conflict zones. In 2021, the PRC continued building three solid-fueled intercontinental ballistic missile (ICBM) silo fields, which will cumulatively contain at least 300 new ICBM silos. China's deployment of the DF-17 hypersonic glide vehicle (HGV)-armed Medium-Range Ballistic Missile (MRBM) will continue to transform the PLA's missile force. Additionally, the PRC has a robust and redundant integrated air defense system (IADS) architecture over land areas and within 300 nautical miles (345 miles) of its coast that relies on an extensive early warning radar network, fighter aircraft, and a variety of Surface-to-Air Missile (SAM) systems.

Russia

Russia continues to emphasize nuclear weapons in its strategy while modernizing and expanding its nuclear forces. Russia's nuclear saber-rattling, displayed throughout its unprovoked and indefensible full-scale invasion of Ukraine, is irresponsible and troubling. Russia is steadily expanding and diversifying nuclear systems that pose a direct threat to NATO and neighboring countries. In addition to New START [Strategic Arms Reduction] Treaty-accountable systems, Russia maintains a sizable stockpile of warheads that are not treaty-limited. It continues to pursue several novel nuclear-capable systems designed to hold the U.S. homeland or Allies and partners at risk, some of which are also not accountable

under the New START Treaty. While Russia has not withdrawn from the New START Treaty, its purported suspension of Russia's participation in the New START Treaty is troubling.

Russia is developing, testing, and fielding a suite of nondestructive and destructive counterspace systems to degrade or deny U.S. space-based services as a means of offsetting a perceived U.S. military advantage and deterring the United States from entering a regional conflict. These systems include jamming and cyberspace capabilities, directed energy weapons, on-orbit capabilities, and ground-based DA-ASAT missile capabilities.

Russia has used thousands of air, land, and sea-launched cruise and ballistic missiles, including hypersonic missiles against Ukraine mainly as weapons of terror against, striking vulnerable civilian (non-military) targets, including schools, hospitals, and critical infrastructure. Battlefield usage has reduced Russia's weapons inventories and export controls are hindering its ability to effectively produce modern precision-guided munitions but Russia continues to strike civilian targets in Ukraine. Russia has retained and upgraded its own missile defense system designed to protect Moscow against a U.S. strike, and it has developed several lower-tier air defense systems for its own use and export.

Democratic People's Republic of Korea (DPRK)

The DPRK has ambitions to develop its space program and has placed two satellites in orbit. Under the guise of peaceful use of space, the DPRK applied data from its space program to aid in the development of long-range and multistage ballistic missiles as well as counterspace capabilities, including GPS and SATCOM [global satellite communications] jamming.

The DPRK continues to improve, expand, and diversify its conventional and nuclear missile capabilities, posing an increasing risk to the U.S. homeland and to U.S. forces, allies, and partners in theater. The DPRK recently displayed new, larger ICBMs during a military parade, conducted an ICBM test in February, and conducted a variety of missile tests over the last year including what it claims are hypersonic missiles.

NUCLEAR STRATEGY AND POSTURE

As reflected in the President's forthcoming budget request for Fiscal Year 2024, the administration is committed to full-scope modernization of all three legs of the triad as well as those nuclear capabilities that support regional deterrence. This includes full funding of the SENTINEL ICBM; the COLUMBIA-class submarine (SSBN); the B-21 RAIDER strategic bomber; and the long-range standoff cruise missile. The Department will continue nuclear certification of the F-35A aircraft; fielding of the B61-12 nuclear gravity bomb; and retention of the W76-2 low-yield ballistic missile warhead. The Department will also work to modernize our nuclear command, control, and communications architecture to ensure its effectiveness and resilience in an evolving security environment.

We must prepare for a potential future in which Russia continues to maintain large numbers of warheads on strategic, non-strategic and novel systems, while China continues to expand and modernize its arsenal without constraints.

Non-nuclear capabilities are also essential to deterrence, and a key priority for NDS and NPR [Nuclear Posture Review] implementation is to better synchronize nuclear and non-nuclear planning, exercises, and operations. As an example of this approach, the Department is actively studying the problem of how to hold at risk hard and deeply buried targets by leveraging existing capabilities and taking an all-domain approach to developing an enduring solution to this problem set.

The capability to deter limited nuclear attacks is critical given that some competitors have developed strategies for warfare that may rely on the threat or actual employment of nuclear weapons to terminate a conflict on advantageous terms. Some allies and partners are also particularly vulnerable to attacks with non-nuclear means that could produce devastating effects.

Arms Control and Nonproliferation

The Department is committed to seeking mutual and verifiable nuclear arms control and non-proliferation measures when they can increase our national security interests. However, we cannot ignore the PRC's and Russia's expansions of their nuclear arsenals. Nor can we ignore Russia's unprovoked and unjust aggression against Ukraine, its noncompliance with provisions of the New START Treaty, and its recent announcement of a purported suspension of its treaty obligations. Russia's non-compliance underscores the looming challenges of a world in which the United States confronts two nuclear peer competitors simultaneously. Any future nuclear arms control framework with Russia must also account for the PRC's nuclear expansion.

SPACE STRATEGY AND POSTURE

Our adversaries have seen more than two decades of U.S. military successes enabled by space capabilities. They seek to deny our ability to leverage space, and are developing a range of capabilities to do so. Addressing these threats requires mission assurance of our space capabilities. The foundation of mission assurance is resilience—being able to provide critical space-based services across the Joint Force in competition, crisis, and conflict. Resilience is also the primary way to deny adversaries the benefit of attack. The nascent resilient Missile Warning/Missile Tracking architecture is a good example of the Space Force's pivot to a series of resilient-by-design architectures that will assure the mission while being both more survivable and more capable. This tracking layer will improve U.S. all-domain awareness globally to increase our warning, tracking, and attribution capabilities, especially as it relates to threats like hypersonic glide vehicles. Systems like these will address emerging threats, expand our warning time and senior leader decision space, and enhance our missile defeat capabilities to negate these threats.

One example of how we are strengthening military-to-military ties to our allies is through the Combined Space Operations (CSpO) Initiative, which includes defense leaders from Australia, Canada, France, Germany, New Zealand, the United Kingdom, and the United States. In this forum, we are identifying ways to improve cooperation, coordination, and interoperability to sustain freedom of action in space, optimize resources, enhance mission assurance, and prevent conflict.

MISSILE DEFENSE STRATEGY AND POSTURE

Within the integrated deterrence framework, missile defense weaves together all instruments of national power across warfighting domains, geographic theaters, the spectrum of conflict, and our global network of alliances and partnerships. More specifically, missile defense provides resilience to our deterrence and defense posture; complicates adversary attack planning and reduces an adversary's confidence of success; raises the deterrence threshold for potential conflict; offer[s] assurances to our allies and partners that the United States stands behind its global security commitments; and provides defensive military options that may be less escalatory than employing offensive systems.

One line of effort on our homeland missile defense that I would like to highlight is the Department's commitment to strengthen the defense of Guam through a layered IAMD architecture. As stated in the 2022 MDR, Guam is a part of the United States homeland and any missile attack against it or any other U.S. territory would be met with an appropriate response. As such, the Department requested $892M in FY23 for this purpose. The Department is also in the process of designating, as required by statute, a single senior official to manage the missile defense effort on Guam.

The Department is also investing in our capacity to sustain extended conflicts. This is most evident in Ukraine where, without missile defense, Russia would have likely achieved air dominance and possibly achieved many of its original objectives months ago. That is why air and missile defense remains Ukraine's top priority.

Missile defense cooperation with our allies and partners is growing rapidly in response to the changed security environment.

* * * * * * * * * *

Document No. 2. Excerpts from the Statement of General Glen VanHerck, United States Air Force Commander, United States Northern Command and North American Aerospace Defense Command before the House Armed Services Committee, Subcommittee on Strategic Forces on Fiscal Year 2024 Strategic Forces Posture, March 8, 2023.

The successful defense of North America requires the Department of Defense to move beyond outdated assumptions and plans that do not fully reflect competitor capability, capacity, and intent to threaten the homeland. Likewise, continued action is required to build

enduring advantages and outpace the gains made by competitors around the globe. This will require the Department to invest in modernization, implement innovative processes, prioritize our personnel and improve civilian hiring practices, and increase agile decision making at all levels.

STRATEGIC ENVIRONMENT

Today's strategic environment is the most complicated and potentially dangerous in my 35+ years of service.

The People's Republic of China (PRC)

The PRC remains NORAD and USNORTHCOM's long-term pacing challenge. Beijing continues ambitious military modernization at an alarming pace. It would be naive to think their sprint to develop advanced cyber tools, maritime capabilities, and hypersonic technology has only regional applications, as the PRC continues to develop advanced long-range conventional and strategic capabilities and the infrastructure necessary to project military power at greater distances. Underpinning this growth is a rapid nuclear expansion that is on pace for the PRC to expand their nuclear stockpile from what DoD estimates is over 400 today to about 1,500 by 2035. While less observable, the PRC's aggressive efforts to exploit the information technology sector are accelerating an increasing threat to North America.

The PRC's aggressive actions in the Pacific in mid-2022 following Congressional visits to Taiwan illustrate how regional events create geostrategic ripple effects that can quickly reach our shores. President Xi is likely to use his next term in office to double down on the PRC's revisionist foreign policy, and is likely to include global efforts to undermine the United States and bolster partnerships with U.S. competitors, including Russia. In February 2022, Xi signaled his intent to follow this path when he declared the PRC-Russia friendship would have no limits in a public pronouncement just weeks before Russia's illegal and unprovoked full-scale invasion of Ukraine. The PRC has almost certainly watched the war to draw lessons that will inform its next steps toward Taiwan.

Xi's statement also proved to be more than rhetorical when, in May 2022, the PRC and Russia conducted a combined bomber patrol over the Sea of Japan coinciding with the Quad Leaders' Summit in Tokyo. The May 2022 bomber patrol was followed by a second bomber patrol in November 2022. The cooperation is not confined to the air domain. PRC and Russian naval forces conducted a combined patrol in the fall of 2022 that covered 7,000 nautical miles in the Pacific, included a first-ever combined naval transit of the Aleutian Islands, and came on the heels of Xi sending scores of troops to Russia to participate in Moscow's largest annual military exercise. For years, the PRC has relied on Russian military materiel to build its armed forces, and I am aware of reports that the PRC has transferred materiel with military applications to Russia during Russia's war against Ukraine. These actions are more than symbolic and demonstrate the PRC's growing power projection

capabilities, which will likely encompass the Arctic in the next decade—a region the PRC is eying with its self-proclaimed status as a near-Arctic state.

Russia

As USNORTHCOM and NORAD take necessary measures to defend against a growing PRC threat, the commands continue to defend the United States and Canada every day against Russian aggression in all domains. Russia's brazen and unprovoked full-scale invasion of Ukraine in 2022 proved that Russia has the capability and capacity to inflict significant damage to infrastructure and other critical targets with its all-domain long-range strike capabilities. Russia also has a history of conducting clandestine operations in other nations to achieve its political objectives. While Russia has overplayed its hand, suffered significant losses to the heroic Ukrainian defense forces, and inadvertently helped to unify NATO, it has gained real-world combat experience as it enters its second year of the full-scale invasion. The meager performance of Russia's ground forces in Ukraine should not overshadow other capabilities it has showcased in Ukraine, including air- and sea-launched cruise missiles capable of striking North America, cyber activities, and economic coercion. For the first time, we also saw Russia employ its new KILLJOY air-launched hypersonic missile in combat.

Concurrent with its war against Ukraine, Russia has also continued to conduct major military exercises and test developmental capabilities that will compound the threat to North America once fielded. In April 2022, Russia tested the massive SARMAT ICBM, a highly capable strategic weapon that helps reinforce the critical importance of a modern and reliable U.S. strategic deterrent. Meanwhile, Russia is testing its special mission Belgorod nuclear submarine, a modern platform capable of carrying the nuclear-capable Poseidon torpedo, designed to hold the homeland at risk by striking coastal targets from thousands of miles away.

The test of the Belgorod followed Russia's Arctic military exercise that included live-fire cruise missile launches designed to test Moscow's readiness for a conflict in the high north. Last fall, Russia added its first SEVERODVINSK-class conventional and nuclear capable cruise missile submarine to the Pacific Fleet, which poses a new challenge to our defense of the western approaches to North America. In October 2022, in the midst of elevated international tensions stemming from Russian threats to escalate its already brutal campaign in Ukraine, Russia chose to proceed with its annual strategic forces exercise, including demonstrations of multiple nuclear strike capabilities. Finally, in January 2023, a Russian GORSHKOV-class frigate transited the western Atlantic while armed with Tsirkon hypersonic cruise missiles.

I believe it would be shortsighted to view Russia's war against Ukraine as a limited regional crisis. Russia's actions increase the very real risk of miscalculation and the conflict's expansion beyond its current boundaries—scenarios that could rapidly increase the risks to North America and continental defense. If Russia should seek to compel allies to reconsider their support for Ukraine through escalatory actions or follow through with the desperate threats to use nuclear weapons in Ukraine, the risks to the Homeland would increase.

DPRK and Iran

The Democratic Peoples' Republic of Korea (DPRK) tested at least 65 conventional theater and long-range nuclear capabilities over the last year. That number includes the first tests of a new larger, longer range, and more capable ICBM, adding another missile that can likely reach the entire homeland and one the regime claims is capable of carrying a hypersonic glide vehicle payload. The DPRK tested more missiles in 2022 than any time in its history, showing that the regime will continue to prioritize military capabilities at the expense of needed food and pandemic relief for its people. Public reports of renewed nuclear test preparations further highlight the grave danger this regime poses to regional and global stability. We must remain ready for multiple contingencies and potential crisis on the Korean Peninsula.

The DPRK's reckless pursuit of advanced nuclear capabilities and robust ballistic missile research, development, and testing threatens regional stability, our allies and partners, and potentially the homeland.

Iran has not shied away from pursuing malign global activities, including in North America; the regime continues to pose a significant threat to the United States, as well as our partners in the Central Command region. The August 2022 disclosure of an Iranian plot to assassinate a former senior U.S. official on U.S. territory illustrated the brazenness of the Iranian government. The regime's decision to provide Russia with unmanned loitering munitions used to attack civilian infrastructure in Ukraine provides further evidence of Iran's embrace of destabilizing activity. A future decision by the regime to pursue an ICBM-class missile would add yet another threat vector capable of striking North America.

Where We Are Today: 20 Years of USNORTHCOM and 65 Years of NORAD

Multiple peer competitors and rogue states possess the capability and capacity to threaten our citizens, critical infrastructure, and vital institutions. These competitors possess, or are developing, the modern capabilities that limit the time and options available to decision makers responsible for defending our interests. In addition to destructive kinetic and cyber capabilities, malign actors actively exploit our democratic society by spreading disinformation that drives wedges between our citizens, undermines democracy, and weakens our alliances.

In crisis or conflict, potential adversaries will likely seek to interfere with the Department's ability to project power abroad. Disruptions of military and civilian transportation infrastructure in North America could impede the ability of the United States and Canada to project combat power. Today I assess, as I have for nearly three years, that homeland defense is a potential limiting factor to ensuring rapid and effective implementation and execution of global contingency plans. This is due to my lack of domain awareness, limited timely access to forces that are ready to operate throughout my areas of responsibility, including the Arctic, and a lack of resilient infrastructure enabling the Joint Force to fight in and from the homeland while ensuring forward power projection.

Russia has restored its capability to threaten North America with modernized bombers, surface ships, and submarines armed with long-range, highly precise nuclear and conventional cruise missiles. The PRC is making rapid progress in developing similar capabilities, which will further complicate NORAD's warning missions and affect national strategic decision making.

It is clear that our competitors possess long-range strike capabilities that could be used to attack the United States and Canada from outside the detection range of legacy sensors.

USNORTHCOM and NORAD Priorities

As competitors and potential adversaries continue to field advanced all-domain capabilities with the potential to create significant effects in the homeland, it is imperative that the United States and Canada move quickly to improve domain awareness from the seafloor to space and cyberspace for all approaches to North America.

U.S. Space Force investments in advanced space-based missile warning sensor capabilities show great promise with particular regard to hypersonic and advanced missile threats. These future systems will detect, track, and identify threats, including hypersonic threats, enable better warning and assessment, and develop actionable targeting solutions, at a much faster pace than we currently experience, while also delivering an inherent operational resilience. Given our competitors' advanced maritime domain capabilities, I fully support the Navy's investment in a modernized Integrated Undersea Surveillance System. These capabilities, in turn, will directly correlate to more time and options available to produce a favorable outcome for the United States and Canada.

In addition to the investment in OTHR, NORAD and USNORTHCOM have also demonstrated the potential for linking existing platforms and sharing data with multiple commands, interagency and international partners. By sharing data previously trapped in bureaucratic and organizational stovepipes through innovative programs like Pathfinder, Northstar, and the Global Information Dominance Experiments (GIDE), USNORTHCOM and NORAD have proven that it is possible to rapidly improve domain awareness and streamline global information sharing without the costs associated with fielding exquisite new capabilities. It is crucial that the Department of Defense and the Services, as well as the Canadian Department of National Defence, continue the work to unlock the remarkable potential of these initiatives.

The feasibility of every other Geographic Combatant Command's plans will require active campaigning in and from North America, and successful defense of the homeland is necessary to deter adversaries and assure allies and partners. Therefore, I have also directed that USNORTHCOM and NORAD prioritize homeland defense campaigning to demonstrate our readiness, capabilities, and resiliency. I am also operationalizing the commands to accelerate the flow of information from sensor to decision maker. Our competitors and potential adversaries have shown that they will hold the homeland at risk in a conflict, and USNORTHCOM and NORAD are acting today to ensure homeland defense plans are understood, exercised, and resourced.

At present, I am concerned for the commands' ability to execute assigned missions—including contingency and operations plans in support of homeland defense. I am limited by a lack of timely access to forces that are organized, trained, and equipped to operate throughout the NORAD area of operations and the NORTHCOM area of responsibility, as well as by insufficient supporting infrastructure.

Conclusion

The one constant throughout my time in command has been the extraordinary pace at which our competitors have advanced their capabilities to threaten the homeland. Despite those clear risks, the processes used by the Department of Defense and the Canadian Department of National Defence for planning, acquisitions, personnel hiring, technology development, and other activities necessary to the success of the defense enterprise remain largely unchanged from when I received my commission nearly 36 years ago.

As competitors develop greater capability, capacity, and intent to challenge the United States, Canada, and the rules-based international order, I believe that the greatest strategic risk for the United States stems from our own inability to adapt at a pace required by the changing strategic environment. In an era of incredible innovation and technological achievement, inflexible, outdated processes are a greater impediment to success than many of our competitors' capability advancements. We cannot continue to rely on Industrial Age practices and legacy platforms to compete in a digital age, and if we fail to evolve at the pace demanded by the strategic environment, our competitive advantage will continue to erode.

The Department and Congress must also be more willing to accept the relatively low risks associated with retiring legacy platforms in order to ensure our ability to fight and win against advanced and well-resourced competitors. Over the last decade, the PRC and Russia have made extraordinary technological advancements while the Department remains encumbered by obsolete capabilities and associated costs. To defend the homeland, USNORTHCOM and NORAD require a modern force with the capacity and capability to deter and if required defeat advanced peer competitors. Retiring systems that have exceeded their operational lifespans—to include fighters and command and control platforms at the end of their service lives—is necessary to accelerate the arrival of next generation capabilities.

The PRC and Russia have already fielded highly advanced hypersonic capabilities, while the United States' hypersonic program, although accelerating, still languishes well behind our competitors' efforts. Further, DoD faces operational challenges with civilian hiring processes for recruiting and hiring the innovative and experientially diverse workforce needed to drive innovation and advancement on pace with the civilian tech sector. Simply put, the Department must continue to strategically tackle hiring and personnel management improvements to move its workforce goal of being an employer of choice forward.

Finally, the PRC high altitude balloon (HAB) incursion into our national airspace was obviously a significant event that shined a light on the PRC's brazen intelligence collection against the United States and Canada. It was the first time USNORTHCOM conducted an engagement over the United States in our history, and it made it clear that our competitors

have the capability and intent to reach the homeland. The three Unidentified Aerial Phenomena (UAPs), also shot down days later by USNORTHCOM and NORAD, clearly demonstrated the challenges associated with detecting and identifying unmanned objects in U.S. airspace. As for NORAD and NORTHCOM, I commit to you that this event has already generated critical lessons learned for my commands and our mission partners, and I can guarantee that NORTHCOM and NORAD are going to continue to learn from it and do whatever is necessary to keep our country safe.

* * * * * * * * * *

Document No. 3. Excerpts from the Statement of General James H. Dickinson, Commander, United States Space Command before the House Armed Services Committee, Subcommittee on Strategic Forces on Fiscal Year 2024 Strategic Forces Posture, March 8, 2023.

U.S. adversaries are developing, testing, demonstrating, and fielding a wide range of counterspace capabilities to degrade or deny the ability for the U.S. military to leverage critical space-based services. As of this year there are 8,225 satellites in low Earth orbit and nearly 1,000 satellites in geosynchronous Earth orbit (GEO).

CHALLENGES IN SPACE

Challenges to a safe, secure, stable, and sustainable space domain are increasing. Both the People's Republic of China (PRC) and the Russian Federation are fielding capabilities that aim to hold U.S., Allied, and partner space assets at risk. North Korea and Iran are in the early stages of developing their space enterprise.

The PRC conducted the first fractional orbital launch of an ICBM with a hypersonic glide vehicle in mid-2021. This system could enable the PRC to rapidly launch weapons that challenge missile warning and missile defense architectures.

Russia's 15 November 2021 destructive anti-satellite (ASAT) missile test and its subsequent acts in connection with its further invasion of Ukraine threaten to foreshadow the future of warfare and national security. […] Russian interference with space-based capabilities during its invasion of Ukraine and continued threats to carry out "retaliation" against commercial satellite infrastructure demonstrate a willingness to employ counterspace capabilities to gain military advantage. Russia's cyber attacks in late February 2022 against commercial satellite communications networks to disrupt Ukrainian command and control during the invasion and spillover impacts into other European countries - highlighted an important nexus between government and private sector equities in space.

These events exemplify the PRC and Russian commitment to fielding diverse counterspace capabilities across multiple domains including cyberspace, electronic warfare, directed energy, anti-satellite missiles, and potentially even space-to-ground weapons.

Current PRC and Russian counterspace capabilities range from temporarily deceiving, disrupting, or denying space services, to permanently degrading or destroying space-based capabilities. All are designed to deter U.S. response to conflict or crisis and ultimately diminish U.S. influence and military effectiveness.

The Pacing Challenge—The People's Republic of China

President Xi views space power as a key to "great power status" and a cornerstone of the PRC's economic, political, and military ambitions. China expects its future wars to be fought mostly outside its borders and in the maritime domain. PLA strategy emphasizes the role spacebased systems will play in such conflicts. Chinese military doctrine states that space power is the essential "glue" that holds together air, sea, and land control and that "the dominance of space has been inseparable from the outcome of war."

The PRC continues to strengthen its military space capabilities, investing in space-based intelligence, surveillance, and reconnaissance (ISR), satellite communication, and navigation. It is also improving satellite meteorology, human spaceflight, and robotic space exploration.

The PRC employs a robust space-based ISR capability designed to enhance its worldwide situational awareness. Its ISR satellites provide electro-optical and synthetic aperture radar imagery as well as signals intelligence data. They are used for military and civilian remote sensing and mapping, terrestrial and maritime surveillance, and intelligence collection. The PLA owns and operates about half of the world's space-based ISR systems. These capabilities support the PLA's ability to monitor, track, and target U.S. and allied forces worldwide.

Today, China can hold U.S., Allied, and Partner assets at risk in all orbits. The PLA is specifically pursuing capabilities to counter U.S. space assets to achieve space superiority and enable PLA freedom of maneuver. Chinese military academics advocate for defeating adversaries' PNT, electronic warfare (EW), and ISR to "blind and deafen the enemy." The PLA has an operational ground-based ASAT missile for low Earth orbit satellites, and is pursuing additional anti-satellite weapons capable of destroying satellites up to GEO. The PLA has also tested hypersonic glide vehicles aimed at defeating traditional missile warning systems and ballistic missile defenses.

The PRC developed the Shenlong and Tengyun spaceplanes to explore reusable technology with enhanced maneuverability. The initial prototype, launched in 2020, stayed in orbit for two days before returning to Earth. A second Shenlong, launched in August 2022, remains on orbit today. Payloads on operational versions of these spaceplanes could provide enhanced space services that the PLA could integrate into its weapons and C2 systems to erode the information advantage of the United States and our Allies.

China launched its SJ-21 satellite on 24 October 2021 and reported in open press that its mission was "to test and verify space debris mitigation technologies." On 22 January 2022, SJ-21 rendezvoused with a defunct and fuel-depleted BeiDou satellite. By 26 January, SJ-21 had captured the defunct satellite and pulled it several hundred miles into a higher graveyard orbit. The SJ-21 subsequently released the defunct BeiDou satellite and returned

to geosynchronous orbit. While removing a defunct satellite to graveyard orbit may be innocuous, the SJ-21 could clearly serve in a counterspace role and hold our geosynchronous satellites at risk.

Russian Use of Space and Counterspace

Russia's use of space and counterspace capabilities during the Ukraine conflict validates the Department of Defense's (DoD) long-held understanding of Russian doctrine. Russian space capabilities have supported Russian military ground operations and enabled deep precision strikes against Ukrainian infrastructure. Media reported on Russian jamming of radar observation sites and navigation signals (including GPS) serving the region, as well as cyberattacks on Ukrainian and European space-enabled communications.

Russia has developed a suite of counterspace capabilities including EW and directed energy weapons to deny, degrade, disrupt, destroy, and deceive communications, navigation, and space-based ISR. Its directed energy weapons include several ground-based, low-power lasers intended to blind satellites temporarily, and high-power lasers developed to damage other U.S. satellites permanently.

Russian cyber attacks in late February 2022 disabled very small aperture terminals in Ukraine and across Europe. This included tens of thousands of terminals outside of Ukraine that, among other things, support wind turbines and provide internet services to private citizens.

PRC-Russia Cooperation

PRC and Russian cooperation on defense matters has increased in recent years. The PLA participated in Vostok last year – Russia's annual strategic forces exercise. Beijing has provided Moscow political and economic support throughout the full-scale invasion of Ukraine that began last year. In February 2022, the two countries announced 16 agreements including one to increase the interoperability of their respective nations' global navigation satellite systems. The new accord will align timing standards of China's BeiDou constellation and the Russian GLONASS architecture. A fully integrated system will provide greater precision, resiliency, and allow for more efficient allocation of service.

Russia possesses deep, decades long, expertise in space operations. Recently, however, its progress has been hampered by shortfalls in funding, a lack of qualified personnel, and other resource inadequacies. Dramatically reduced access to key electronic components from long standing international sanctions has negatively impacted Russia's aerospace industry.

Meanwhile, the PRC has committed considerable economic and technological resources to growing all aspects of its space program. It is operating a space station and is taking on a greater role in lunar and deep space exploration. In 2021, Moscow and Beijing agreed to an International Lunar Research Station and the PRC may attempt to conduct its first crewed landing on the surface of the Moon before 2030.

North Korean and Iranian Developments

North Korea has demonstrated non-kinetic counterspace capabilities including GPS and satellite communication (SATCOM) jamming. It likely intends to deny space-based navigation and communications during conflict. North Korea seeks to develop its space capabilities and has placed two satellites in orbit. North Korea's space program has provided it with data applicable to its long-range and multi-stage ballistic missile programs. Additionally, North Korea conducted a record number of missile launches last year including intercontinental and submarine-launched ballistic missiles and has continued these activities in 2023.

Iran demonstrated a growing commitment to space with the launch of the Khayyam sensing satellite. This system, developed cooperatively by Iran and Russia, was launched by Russia on behalf of the Iranian government. Similar to North Korea, Iran could apply data from its space program to further the development of long-range missiles.

* * * * * * * * * *

Document No. 4. Excerpts from the Statement of General Anthony J. Cotton, Commander, United States Strategic Command before the House Armed Services Committee, Subcommittee on Strategic Forces on Fiscal Year 2024 Strategic Forces Posture, March 8, 2023.

GLOBAL SECURITY ENVIRONMENT

For the first time in our country's history, the United States faces two major nuclear powers, the PRC and the Russian Federation, which have the capability to employ nuclear coercion as a way to achieve their national objectives. Russia presents a growing nuclear deterrence challenge centered on its potential perception that the threshold for regional nuclear employment is lower with low-yield systems. The PRC is also developing capabilities that would present a similar deterrence challenge, and it is unconstrained by any nuclear arms control treaty limitations. Additionally, the activities of the Democratic People's Republic of Korea (DPRK) are regionally destabilizing and have global implications.

In the longer term, emerging technologies—including HSWs [hypersonic weapons], fractional orbital bombardment (FOB) capabilities, anti-satellite capabilities, artificial intelligence (AI), autonomous systems, advanced computing, quantum information sciences, biotechnology, and advanced materials and manufacturing—pose a growing challenge to our national defense. Meeting these near-term and longer-term threats requires a globally focused national strategy and commitment that spans decades.

People's Republic of China

The PRC's rapid qualitative and quantitative expansion of military capabilities enables a shift in its strategy and requires the Department of Defense (DoD) to make immediate and significant alterations to plans and capabilities. The PRC is aggressively pursuing their global ambitions through a national strategy of "Military-Civil Fusion"—a comprehensive focus on advancing civilian research to develop and then apply new technologies towards military and defense innovations.

Correspondingly, the PRC seeks to match, or in some areas surpass, quantitative and qualitative parity with the United States in terms of nuclear weapons. The PRC's nuclear capabilities already exceed those needed for its long-professed policy of "minimum deterrence," but PRC capabilities continue to grow at an alarming rate. Additionally, the PRC is making substantial investments to expand its inventory of land-, sea-, and air-based nuclear delivery platforms and is constructing the infrastructure necessary to support the significant expansion of its nuclear forces. Notably, the PRC is developing capabilities inconsistent with its historical minimum deterrence posture.

Within the past three years, the PRC has built hundreds of new ICBM silos, further indicating a move away from a minimum deterrence posture. The PRC's three new missile fields collectively provide it with more than 300 silos. Each of these silos can be equipped with the CSS-10 Mod 2 ICBM, which is capable of ranging the continental United States (CONUS) with multiple independently targetable reentry vehicles (MIRVs). Additionally, the PRC maintains other ICBMs, some of which are road-mobile. Unconstrained by arms control treaty limitations, the PRC is fielding a new generation of mobile missiles, with MIRV and penetration aid capabilities. The PRC's most modern road-mobile and MIRV-capable ICBM advanced from concept to deployed system in only a few years. The PRC is now projected to have over 1,000 warheads by the end of this decade. In accordance with statutory requirements, I recently reported to Congress that the number of land-based fixed and mobile ICBM launchers in the PRC now exceeds the number of ICBM launchers in the U.S.

Just like the ground leg, the air and sea legs of the PRC's nuclear triad are now armed with newly developed weapon systems. The air-refuelable H-6N bomber is armed with new nuclear-capable cruise missiles and air-launched ballistic missiles that may be nuclear capable, and the PRC is building a new stealth strategic bomber with global reach. The PRC's six JIN class ballistic missile submarines (SSBNs) are now being equipped with the new third-generation JL-3 SLBM capable of ranging CONUS. PRC strategists also highlight their country's perceived need for lower-yield nuclear weapons. Significantly, the PRC's investment in lower-yield, precision systems with theater ranges points to investment in asymmetric capabilities that could be employed coercively during an escalation crisis, similar to Russia's irresponsible nuclear saber-rattling during its war against Ukraine. This presents the U.S. with a deterrence challenge that must be addressed with a range of U.S. capabilities, both conventional and nuclear. The PRC currently has an arsenal of approximately 1,000 medium- and intermediate-range ballistic missiles, many of which are

dual capable (i.e., able to be armed by either conventional or nuclear warheads) and able to inflict significant damage to U.S., Allied, and partner forces in the Indo-Pacific.

The trajectory of the PRC's nuclear advancements points to a large, diverse nuclear arsenal with a first-strike offensive capability and a high degree of survivability, reliability, and effectiveness. When considered in the context of its heavy investment in NC3, as well as increased readiness, the PRC's nuclear modernization highlights emergent capabilities that could provide it with a spectrum of first-strike offensive options before and during a crisis or conventional conflict. The PRC may believe that nuclear weapons represent a key component of its counter-intervention strategy and could use these weapons coercively against our Nation, Allies, or partners.

Russian Federation

Russia's brutal invasion of Ukraine is a violent attempt at territorial seizure that aims to undermine the rules-based international order with conventional force backed by nuclear coercion. Russia's nuclear rhetoric is underpinned by its nuclear arsenal, which is the largest and most diverse in the world. Russia continues to flight test its new heavy ICBM, the SS-X-29 Sarmat, with plans to begin fielding it in 2023 and eventually replace the legacy SS-18 heavy ICBM. With Sarmat, Russia joins the PRC in developing ICBMs that use at least partial orbital trajectories. Russia also continues to field new DOLGORUKIY-class SSBNs, armed with the new SS-N-32 Bulava SLBM, and SEVERODVINSK-class nuclear-powered cruise missile submarines.

Russia's significant investment in launch platforms and systems not subject to the New START Treaty (NST) provides it with increasingly diverse and flexible nuclear deterrence options. Russia now fields nuclear-capable hypersonic systems such as the Avangard HGV, the Tsirkon land-attack cruise missile, and the Kinzhal air-launched ballistic missile, the last of which Russia has employed in Ukraine with conventional warheads. Russia also has a stockpile of approximately 2,000 theater nuclear weapons that does not fall under the limits established by the NST.

The continued degradation of Russian conventional capability in Ukraine will likely increase Russia's reliance on its nuclear arsenal. This phenomenon, along with the PRC's rapid breakout and development of capabilities that present a similar deterrence challenge, underscores the increased perceived utility of nuclear weapons in the contemporary environment.

INTEGRATED DETERRENCE

The war in Ukraine, combined with the PRC's rapid nuclear arsenal expansion and the DPRK's growing nuclear capabilities, will likely make longstanding U.S. nonproliferation goals more challenging. For 70 years, U.S. extended deterrence commitments have functioned as one of the most important factors limiting the proliferation of nuclear weapons. In the current environment, the credibility of U.S. extended deterrence

commitments is even more vital to nuclear nonproliferation goals. Critically, there must be no perception of a threshold below which an adversary may believe it could employ nuclear weapons, such as non-treaty accountable, lower-yield, theater weapons, to obtain a benefit.

WHAT USSTRATCOM NEEDS TO ACCOMPLISH ITS MISSION

It is essential to sustain our current platforms until new systems are at full operational capability. Correspondingly, we are coordinating with the Services on efforts to mitigate operational impacts should delays occur in the delivery timeline for new capabilities.

Nuclear Command, Control, and Communications (NC3)

C3 Next Generation / Modernization

In the next five years, we will transition from Milstar to the Advanced Extremely High Frequency satellite constellation, gaining greater capacity, survivable worldwide NC3 reach, and the ability to provide direction to our forces in degraded environments. Our national leadership conferencing, currently using a voice-only legacy technology, will transition to voice and video displays. In our warning layer, we are moving away from the Defense Support Program and towards the Space Based Infrared System to maximize warning time. Efforts are already underway on our submarines, E-6B aircraft, and bombers to replace previous generation radios with improved systems that are more resilient to jamming and other electromagnetic effects.

In the next ten years, the launch and use of Next Generation Overhead Persistent Infrared geosynchronous and polar satellites will replace legacy systems with a space-based missile warning constellation to detect and track threats around the globe. The Space Development Agency's Proliferated Warfighting Space Architecture is aimed at building a constellation of satellites in low and medium earth orbit that can monitor maneuvering hypersonic missiles flying below the range of today's ballistic missile detection satellites and above the radar of terminal-phase targeting systems. These satellites will complement other efforts to detect and track maneuvering hypersonic missiles that are difficult targets for current missile warning capabilities. Finally, we will use polar satellite communications capability with the Enhanced Polar System Recapitalization program to provide message relay. Our submarines, E-6B aircraft, bombers, and missile fields will receive communication systems that increase survivability of weapon systems in a crisis situation. We are focused on achieving our vision—a modernized NC3 enterprise that remains resilient, reliable, and available at all times and under the worst conditions.

E-4B Nightwatch

The E-4B Nightwatch aircraft serves as the National Airborne Operations Center and is a key component of the National Military Command System for the President, Secretary of Defense,

and Joint Chiefs of Staff. The E-4B recapitalization program—the Survivable Airborne Operations Center—will serve as the next generation airborne command center platform. In case of national emergency or destruction of ground command and control centers, the aircraft provides a highly survivable command, control and communications center to direct U.S. forces, execute emergency war orders and coordinate actions by civil authorities. For these reasons, we must continue to develop and deliver this platform on time to prevent any capability gaps associated with this important national asset.

E-6B Mercury

The E-6B Mercury accomplishes two missions: Emergency Action Message (EAM) relay to all legs of the nuclear triad (Take Charge and Move Out/TACAMO) and an alternate USSTRATCOM command center providing EAM origination and ICBM secondary launch capability (Looking Glass). E-XX is the follow-on platform to the E-6B airframe and will execute the TACAMO mission only. In coordination with the Office of the Undersecretary of Defense for Acquisition and Sustainment and the Joint Staff, USSTRATCOM and the NC3 Enterprise Center are conducting an evaluation of alternatives (EoA) to consider all missions and platforms to deliver the Looking Glass capabilities currently performed by the E-6B. Recommendations from the EoA should be available by mid-summer. We must complete recapitalization by the E-6B's projected end of service life in FY38.

Land-Based Triad Component

The ICBM remains our country's most responsive option for strategic deterrence. The Minuteman III (MMIII) force provides a responsive, highly reliable deterrent capability, supported by a secure command and control system. Geographically dispersed ICBMs deny potential adversaries the possibility of a successful first strike.

MMIII's weapon system replacement, the LGM-35A Sentinel ICBM, will deliver MMIII's key attributes while enhancing platform security, streamlining maintenance processes, and delivering greater operational capability needed for the evolving threat environment. Sentinel's program scope and scale cannot be overstated—our first fully integrated ICBM platform includes the flight system, weapon system, C2, ground launch systems, and facilities. The Sentinel program is pursuing mature, low-risk technologies, design modularity, and an open system architecture using state-of-the-art model-based systems engineering. Sentinel will meet our current needs, while allowing affordable future technology insertion to address emerging threats. […] Sentinel will deploy with numerous advantages over MMIII and will provide a credible deterrent late into this century.

Sea-Based Triad Component

The Navy's OHIO-class SSBN fleet, equipped with the Trident II D5 SLBM, patrols the world's oceans undetected, providing an assured second strike capability in any scenario. Our SSBN

fleet continues to provide a resilient, reliable, and survivable deterrent. However, the life of the OHIO-class SSBN fleet has been extended from a planned 30 years to an unprecedented 42 years. The average age of the SSBN fleet is now 32 years. As the hulls continue to age, the OHIO-class will face sustainment and readiness challenges until it is replaced by the COLUMBIA-class. Similar to Minuteman III, we must maintain OHIO-class hulls until the COLUMBIA is available. The Navy has already invested in the Integrated Enterprise Plan to shorten construction timelines for COLUMBIA hulls two through twelve to meet USSTRATCOM at-sea requirements. Continued investment in revitalizing our shipbuilding industry is a national security imperative.

The first COLUMBIA-class submarine must achieve its initial strategic deterrent patrol in FY31 with an initial loadout of D5 LE missiles and a steady transition to the D5 LE2. The program of record delivers at least twelve SSBNs—the absolute minimum required to meet sustainment requirements. A life-of-hull reactor and shorter planned major maintenance periods are intended to deliver greater operational availability. COLUMBIA will deliver improved tactical and sonar systems, electric propulsion drive, and advanced hull coating to maintain U.S. undersea dominance.

The Trident II D5 LE2 program will field a modern, reliable, flexible, and effective missile capable of adapting to emerging threats and is required to meet COLUMBIA-class SLBM loadout requirements. Stable funding for D5LE2 is vital to maintaining program benchmarks and ensuring a viable SSBN deterrent through the 2080s. COLUMBIA's ultimate success depends on a missile that is both capable and flexible.

Additionally, shore infrastructure readiness is fundamental to supporting current OHIO-class SSBN and future COLUMBIA-class SSBN operations. Provision of military construction and operation & maintenance funding facilitates the Navy's modernization of shore infrastructure supporting the nuclear deterrence mission. One immediate example is the modernization and expansion of the SSBN training and maintenance facilities in Kings Bay. These facilities are critical for maximizing the combat readiness of SSBNs and their crews daily, requiring a commitment to multiple years of funding.

Anti-Submarine Warfare

Anti-submarine warfare threats continue to evolve. The Navy's Integrated Undersea Surveillance System (IUSS) provides vital information concerning adversary submarine and surface ship operations, enabling U.S. forces to maintain favorable tactical and strategic positions while supporting deterrent patrol operations. Surveillance performed by IUSS also provides the theater undersea warfare commander situational awareness required for maritime defense of the homeland. Advances in adversary submarine stealth underscore the importance of IUSS recapitalization.

Our submarines are formidable weapon systems; however, we must address potential adversaries' anti-submarine warfare advances to maintain an effective and viable SSBN fleet well into the future. Adversary investments in submarine quieting, acoustic arrays, and processing capabilities may challenge our acoustic superiority in the future and

consequently, SSBN survivability. Development and employment of advanced sonar sensors, advanced materials science and coatings, and other efforts within the Navy's Acoustic Superiority Program are vital to maintain our undersea advantage.

Air-Based Triad Component

The bomber fleet is our most flexible and visible leg of the triad. We are the only country with the capability to provide long-range bombers in support of our Allies and partners, enabling the U.S. to signal resolve while providing a flexible option to de-escalate a conflict or crisis. In a force employment model known as the Bomber Task Force (BTF), USSTRATCOM supports global deterrence and assurance objectives. BTFs allow dynamic employment of the Joint Force and clear messaging as potential adversaries watch these missions closely. As bombers conduct missions throughout the globe, they enhance national objectives by demonstrating unity with Allies and partners, and testing interoperability. As a complement to the Air Force's Agile Combat Employment (ACE) concept, we must consider increasing forward-based maintenance capability to support persistent, episodic global presence while retaining the ability to increase nuclear readiness posture as needed. As we sustain legacy systems and field new capabilities, it will be important to invest in bomber support forces and infrastructure to adequately sustain flexibility and effective nuclear deterrence posture.

B-52H Sustainment

The B-52H continues on as the workhorse of our bomber fleet. The B-52's longevity is a testament to its engineers and maintenance professionals, but it must be modernized to remain in service into the 2050s. Essential B-52 upgrades include the Commercial Engine Replacement Program (CERP), Radar Modernization Plan, global positioning system military code signal integration, and survivable NC3 communications equipment. These improvements will keep the B-52 flying and able to pace the evolving threat. CERP will replace the B-52's 1960s-era TF-33 engines, which will enable longer unrefueled range, reduce emissions, and address supply chain issues afflicting the legacy engines. The B-52's very low frequency and advanced extremely high frequency modernization programs will provide mission critical, beyond-line-of-sight connectivity.

B-2 Sustainment

The B-2 fleet remains the world's only low-observable bomber, able to penetrate denied environments while employing a wide variety of munitions against high-value strategic targets. The DoD must protect this unique operational advantage as the Air Force transitions from the B-2 to the B-21 fleet. Successful transition requires full funding for B-2 sustainment and modernization programs until the B-21 completes development and certification for

both conventional and nuclear missions, and is fielded in sufficient numbers to preclude any capability gap.

B-21

The B-21 Raider will provide both a conventional and nuclear-capable bomber supporting the triad with strategic and operational flexibility across a wide range of military objectives. The program is on track to meet USSTRATCOM operational requirements, and continues to successfully execute within cost, schedule, and performance goals. The B-21 will be the backbone of our future bomber force, providing a penetrating platform with the range, access, and payload to go anywhere needed in the world. Consistent funding of the Air Force's B-21 program is required to prevent operational shortfalls in the bomber force and ensure delivery of this critical combat capability.

Air-Delivered Weapons

The air-delivered weapons portfolio consists of the ALCM, the B83-1 gravity bomb, and the B61 family of weapons, providing a mix of standoff and direct attack munitions to meet near term operational requirements. The ALCM provides current stand-off capability to the strategic bomber force, but is reaching its end-of-life. LRSO will replace the ALCM as our country's sole air-delivered standoff nuclear capability. It will provide the President with flexible and scalable options, and is capable of penetrating and surviving against advanced air defenses—a key attribute and important component in USSTRATCOM operational plans. The LRSO is complementary to the ICBM and SSBN recapitalization programs and an important contribution to strategic stability. The B61-12 will soon replace most previous versions of the B61, providing a modernized weapon with greater accuracy and increased flexibility. Finally, USSTRATCOM is actively supporting the National Defense Authorization Act requirement to conduct a study on options to hold at risk hard and deeply buried targets.

Tanker Support

A robust tanker fleet is essential to sustaining global reach for all USSTRATCOM missions. The 65 year-old KC-135 is the backbone of the Air Force's air refueling force but is facing increasing maintenance and sustainment issues. Limited air-refueling aircraft increases bomber response timing and constrains bomber deterrence posture agility. Concurrent mission demands between strategic, theater, and homeland defense require continued tanker modernization and expansion efforts. […] A conflict with a peer adversary would put previously unseen demands on the tanker force.

Weapons Infrastructure and Nuclear Security Enterprise (NSE)

Stockpile and infrastructure modernization must ensure our systems are capable of pacing and negating adversary threats to our Nation, Allies, and partners. Over the past five years we have made significant investments in the NSE, but most programs take a decade or longer to field a meaningful capability.

There are many NSE programs with just-in-time schedules or that are late-to-need, including pit production, uranium processing, and radiation case manufacturing. Failure to execute and deliver timely NSE modernization programs results in accumulation of operational risk by requiring the retention of aging weapons and components in the stockpile decades longer than intended. […] Some areas—for example, the W93, B61-12, and W88 Alt 370—saw progress, while others such as the W80-4 and W87-1 stockpile modernization programs are experiencing milestone delays and increased schedule risk.

Production of essential components is a critical issue. […] It is also vital that the NSE re-establishes a plutonium pit manufacturing capability of no less than 80 pits per year as close to 2030 as possible. Weapon production is a multi-decade task that must address current enterprise limitations as we simultaneously modernize the stockpile, infrastructure, and platforms while sustaining the current force until it can be replaced.

For over a decade, our adversaries have dedicated significant resources to modernizing and expanding their nuclear capabilities.

Nuclear Security

MH-139A Grey Wolf Replacement Helicopter

The Joint Force achieved a significant ICBM security milestone with the Air Force's award of a contract to replace the UH-1N helicopter fleet with the new MH-139A "Grey Wolf." The MH-139A offers enhanced speed, range, endurance, payload, and survivability versus the UH-1N. We will continue to work with the Services to deliver this capability.

Countering Small Unmanned Systems

The rapid proliferation and growing technological sophistication of small unmanned systems is an increasing threat to the nuclear enterprise. To counter the threat, the Department continues to field Counter-small Unmanned Aircraft Systems (C-sUAS) capabilities and is refining tactics, techniques, and procedures. Similarly, the advancement of unmanned surface and underwater vehicles may soon emerge as a threat to our SSBNs and supporting infrastructure, requiring a comprehensive force protection system to defend both pier-side and in-transit SSBNs.

Weapon Generation Facility (WGF)

As we modernize nuclear weapons and platforms, the Air Force will replace aging weapon storage areas with new WGFs which are vital to security, sustainment, and fielding of the Sentinel, B-21, and LRSO triad modernization programs, and their associated weapons. The Air Force will conduct weapon maintenance, storage operations, and (as required) weapons generation activities in a single reinforced WGF facility at each strategic base. This will further increase security, recapitalize aging infrastructure, and enhance efficiency throughout the mission. The WGFs are a critical part of the larger nuclear modernization effort and must be fully funded to deliver on time in support of each program of record delivery schedule.

Joint Electromagnetic Spectrum Operations (JEMSO)

Multiple USSTRATCOM assessments have identified JEMSO readiness shortfalls, which are growing. Our adversaries have dramatically increased their offensive and defensive capabilities in recent years; the DoD must similarly improve our ability to operate in a degraded electromagnetic warfare environment.

Missile Defense

Cruise missiles continue to offer adversaries ways to generate strategic effects. USSTRATCOM is working closely with NORAD/USNORTHCOM, USINDOPACOM, and USSPACECOM to explore capabilities to enhance homeland defense and deter attack. Additionally, the Missile Defense Agency, Services, and CCMDs continue to develop and field defenses that protect the homeland and deployed forces while reassuring and defending our Allies and partners. We are committed to improving the Ground-based Midcourse Defense system and developing the Next-Generation Interceptor to augment and potentially replace the Ground Based Interceptor.

Hypersonic Weapons

Long-range conventional hypersonic weapons will provide senior leadership additional strike options to hold distant and/or defended high-value, time-sensitive targets at risk without crossing the nuclear threshold. Conventional HSWs ensure long-range power projection in contested environments and enables more efficient and effective application of the nuclear force. While HSWs are not a replacement for nuclear weapons, these systems show promise as the conventional complement that the nuclear force needs to expand integrated deterrence options.

Rapid development and fielding of conventional HSWs is a top USSTRATCOM priority. The goal of fielding the first offensive hypersonic strike system is on the horizon with the Army scheduled to field a Long-Range Hypersonic Weapon battery in late 2023, followed by

the Navy Conventional Prompt Strike program beginning in the mid-2020s. The Air Force has demonstrated successes in the Air-launched Rapid Response Weapon program and hypersonic cruise missile technology pathfinder efforts. A robust scientific and industrial base is vital to ensure that HSWs are fielded in sufficient quantities. Additionally, a program for continuous technological improvement is important to meet the evolving security environment over the coming decades.

To operationalize these new capabilities in the near term, we are working across the Department to develop a concept of operation for HSW support to integrated deterrence. USSTRATCOM is working through policy, planning, and C2 processes, and—in conjunction with the Services and other CCMDs—is testing HSWs through a rigorous exercise program. Hypersonic weapons will have an immediate impact to operational plans by deterring and holding adversaries at risk while providing the nation with credible, strategic, non-nuclear response options when faced with armed conflict. Additionally, HSWrelated agreements with Allies will further reinforce collective security, promote interoperability, and facilitate optimal deployment of these capabilities.

* * * * * * * * * *

Document No. 5. Testimony by Greg Weaver, Senior Associate (Non-Resident), Project on Nuclear Issues, CSIS, before the Senate Armed Services Committee on Regional Nuclear Deterrence, Subcommittee on Strategic Forces, March 28, 2023.

I believe improving our ability to deter and counter adversary limited nuclear use in regional conflicts is the most important challenge we face in US nuclear strategy. Let me explain why. It is broadly agreed the most likely path to nuclear deterrence failure is escalation in the context of a major conventional conflict between nuclear-armed adversaries. It is also broadly agreed the most likely path to a large-scale homeland nuclear exchange between major powers is escalation from limited nuclear use in the context of a large-scale conventional conflict. That is where broad consensus ends on how deterrence of limited nuclear use and large-scale escalation are related.

Some analysts and practitioners make two erroneous and dangerous assumptions regarding nuclear deterrence and nuclear escalation. First, they believe it is highly unlikely that nuclear deterrence will fail at any level, and under any circumstances, leading them to conclude that our planned capabilities are more than sufficient to deter limited use under any circumstances. Second, they also believe that if nuclear weapons are used at all, in any number or yield, the war will escalate rapidly out of control to a catastrophic large scale exchange almost automatically. These assumptions lead them to conclude that all that is needed to deter limited nuclear use is the latent potential for a large-scale US nuclear response, and that our current and planned capabilities are thus more than sufficient to deter limited use under any circumstances.

I think such a strategy is dangerously unsuited for credibly extending nuclear deterrence to US allies because I disagree with both of these assumptions, and so do Russian, and

possibly Chinese, strategists. As we consider how to deter limited nuclear first use we must first ask ourselves this question: Do we want to base our strategy to deter limited nuclear use on the presupposition that any limited nuclear use will result in uncontrolled escalation, and therefore such limited use won't happen if we rely on that threat? That is not a prophecy we want to become self-fulfilling if deterrence does fail in a limited way. But basing our strategy and force posture on these flawed assumptions risks making it just that.

In my view, central strategic deterrence of large scale homeland exchanges between nuclear-armed great powers is very stable, making limited use unlikely to escalate out of control rapidly. Note, I did not say that limited nuclear escalation cannot or will not escalate out of control. Of course it can, and our deterrence strategy should continue to leverage that risk without relying solely on it. But the decision to initiate a large-scale nuclear strike on the homeland of a nuclear-armed great power is clearly suicidal as long as both sides retain large-scale survivable second strike capabilities. Thus, leaders are likely to tolerate limited nuclear exchanges without conducting such a large-scale strike on the adversary's homeland. This is not because they want to wage limited nuclear war, but because the alternatives can be summarized as surrender or suicide. Deterrence is about what an adversary thinks, and how he calculates. There is no area of national security affairs in which the dictum "the adversary gets a vote" is more true. In a deterrence relationship, the adversary doesn't just have "a" vote, they have the only vote. It is our job to decisively influence how they cast it.

Deterring Russian limited use is the most immediate and challenging regional nuclear deterrence problem, so I will use the Russia problem to illustrate what we are up against. Putin's Russia cast their vote in favor of the use of large-scale military force against Ukraine, demonstrating both a high propensity to take risk, and to miscalculate in the process of doing so. That combination of risk-taking and miscalculation is extremely troubling, especially when paired with Russia's repeated brandishing of nuclear threats. Perhaps this dangerous propensity to take risk and miscalculate will be alleviated by Putin's eventual departure. But we can't count on that, and we don't know when that will be in any case. The Russian leadership's historical propensity to profoundly and repeatedly underestimate NATO's resolve and political unity under threat long preceded Putin, and will likely survive him, even if Russia's risk-taking propensity lessens somewhat in a post-Putin era. The dismal performance of Russian conventional forces in Ukraine is likely to lead them to further increase their reliance on nuclear weapons. This means that in a future war with NATO they could perceive the need to use nuclear weapons earlier in the conflict. If true, this means that once Russia reconstitutes its conventional forces, deterring Russian limited nuclear use will become even more important to deterring Russian conventional aggression than before Ukraine.

To formulate an effective regional nuclear deterrence strategy in Europe we must closely examine Russia's nuclear strategy and doctrine. Both are ultimately rooted in the assumption that limited nuclear use in theater is unlikely to escalate to a large scale homeland exchange, though I do not believe the Russians are certain they can avoid uncontrolled escalation. Based on the scope and content of China's ongoing nuclear buildup, their strategy and doctrine may be evolving based on this perception as well. Russian

conventional and nuclear strategy and doctrine are fully integrated. Their nuclear forces' role is to both deter large scale nuclear attacks on the Russian homeland and compensate for NATO conventional superiority through the limited use of nuclear weapons in theater through coercion if possible, but through defeat if necessary.

The coercive escalation option is to initiate limited first use of nuclear weapons to compel termination of an ongoing conventional war on terms acceptable to Russia. The defeat escalation option is to conduct large-scale theater nuclear operations against NATO's conventional forces if the Russian leadership assesses they pose a threat to "the very existence of the Russian state." This option is what drives Russia's force requirement for thousands of theater nuclear weapons embedded throughout their conventional forces. What, then, is required to deter Russian limited nuclear escalation in theater given their strategy and doctrine, their demonstrated propensity to take the risk of invading their neighbors, and their track record of miscalculating regarding NATO's will and cohesion?

Given that Russian strategy is based on the belief that mutual strategic deterrence of large-scale homeland strikes is very robust, deterrence of limited nuclear use requires the perceived ability of the US and our NATO allies to persevere in the face of Russian limited escalation without being politically coerced into accepting war termination on Russia's terms, and without being decisively militarily disadvantaged. That requires a set of US nuclear capabilities that are militarily relevant in such a conflict. Russian theater nuclear capabilities are designed to be just that: militarily relevant in a limited nuclear war. The evolution of Chinese theater nuclear capabilities seems to indicate they understand this as well.

In my view the core requirement for deterring Russian limited nuclear escalation in a war with NATO is a Flexible Response strategy that credibly convinces the Russian leadership that limited nuclear escalation does not provide effective insurance against miscalculating about NATO's resolve and cohesion, will not result in war termination on their terms, and does indeed run the risk of uncontrolled escalation because the United States and our Allies are visibly prepared for what Schelling called a "competition in risk-taking" to defend our vital interests.

Such a strategy must be enabled by US and Allied nuclear and conventional forces that are capable of three key things:

1. Providing a robust range of response options to restore deterrence by convincing Russian leadership they have miscalculated in a dire way, that further use of nuclear weapons will not achieve their objectives, and that they will incur costs that far exceed any benefits they can achieve.
2. Countering the military impact of Russian theater nuclear use.
3. Continuing to operate effectively to achieve US and Allied objectives in a limited nuclear use environment.

In sum, our strategy and capabilities must convince them with high confidence that nuclear escalation is always their worst option. And while there remains uncertainty about whether China's nuclear strategy and doctrine are shifting to match the comprehensive

nuclear buildup they are undertaking, we are likely to need to be able to do the same in the Asia-Pacific theater. Now for the nuclear capabilities bottom line: to meet the requirements for deterring limited nuclear use with high confidence we need a range of forward deployed, survivable theater nuclear capabilities that can reliably penetrate adversary theater air and missile defenses with a range of explosive yields and on operationally relevant delivery timelines. Based on these attributes, I do not believe that planned US nuclear capabilities are sufficient for the future threat environment we face. Strategic nuclear forces alone are insufficiently flexible and timely to convince a major power adversary that we are fully prepared to counter limited nuclear first use with militarily effective nuclear responses of our own. Given Russian strategy, doctrine, and capabilities, theater nuclear capabilities are required.

Completing the modernization of our dual capable fighter aircraft capabilities is necessary, but not sufficient. Our planned theater nuclear forces are too small, insufficiently survivable, and insufficiently militarily relevant. But they could be improved to be a much more credible deterrent to limited nuclear use without having to match Russia and China weapon for weapon. We should supplement dual capable fighter modernization with at least one more survivable, forward deployed, selectable yield delivery system with a higher probability to penetrate advanced defenses. There are several candidates that could meet this requirement, but I assess that SLCM-N deployed on attack submarines is the best solution for the following reasons:

It is highly survivable day-to-day, and thus not subject to preemptive strike.

It provides theater nuclear deterrent presence, whether it is actually present or not.

It provides an effective ability to penetrate, in part due to in some instances being capable of launch from inside the outer edges of an adversary's integrated air defenses.

It provides operationally significant promptness when compared to bomber-delivered ALCMs.

It exploits the attack submarine fleet's large pre-existing launcher infrastructure, reducing cost.

It has no ballistic missile launch signature that could be misinterpreted by an adversary.

It could leverage the LRSO program, reducing the impact on our nuclear weapons enterprise.

No other system I am aware of checks all those boxes. In conclusion, regional nuclear deterrence is not the place the US should choose to take risk, and not only because theater deterrence failure is the most likely path to large scale nuclear war that poses an existential threat to the United States, though that is a pretty good reason in and of itself. An inability to confidently deter or counter limited theater nuclear use will undermine the credibility of US capability and willingness to decisively project power against a nuclear-armed adversary in defense of US and Allied vital interests. Our Allies have not forgotten this. Neither should we.

The featured articles for this issue's "From the Archive" section are President Ronald Reagan's 1983 Strategic Defense Initiative (SDI) speech on the need to deploy ballistic missile defense (BMD) and Ambassador Henry Cooper and General James Abrahamson's September 1993 article titled, "What Did We Get For Our $30-Billion Investment In SDI/BMD?". The first famously outlined a vision of a world where modern technologies rendered ballistic missile threats "impotent and obsolete." The second, originally published by National Institute for Public Policy in 1993, was written by two former Directors of the SDI Organization when it was tasked with making this vision a reality, detailed the benefits of investments made in the pursuit of President Reagan's policy. Although SDI was never deployed, it paved the way technologically for today's missile defenses, space capabilities, and much more. President Reagan's speech, meanwhile, remains a timeless call for scientific advances in the service of deterrence and peace.

ADDRESS TO THE NATION ON DEFENSE AND NATIONAL SECURITY*

President Ronald Reagan, March 23, 1983

My fellow Americans, thank you for sharing your time with me tonight.

The subject I want to discuss with you, peace and national security, is both timely and important. Timely, because I've reached a decision which offers a new hope for our children in the 21st century, a decision I'll tell you about in a few minutes. And important because there's a very big decision that you must make for yourselves. This subject involves the most basic duty that any President and any people share, the duty to protect and strengthen the peace.

At the beginning of this year, I submitted to the Congress a defense budget which reflects my best judgment of the best understanding of the experts and specialists who advise me about what we and our allies must do to protect our people in the years ahead. That budget is much more than a long list of numbers, for behind all the numbers lies America's ability to prevent the greatest of human tragedies and preserve our free way of life in a sometimes dangerous world. It is part of a careful, long-term plan to make America strong again after too many years of neglect and mistakes.

Our efforts to rebuild America's defenses and strengthen the peace began 2 years ago when we requested a major increase in the defense program. Since then, the amount of those increases we first proposed has been reduced by half, through improvements in management and procurement and other savings.

* This speech is available at https://www.reaganlibrary.gov/archives/speech/ address-nation-defense-and-national-security.

The budget request that is now before the Congress has been trimmed to the limits of safety. Further deep cuts cannot be made without seriously endangering the security of the Nation. The choice is up to the men and women you've elected to the Congress, and that means the choice is up to you.

Tonight, I want to explain to you what this defense debate is all about and why I'm convinced that the budget now before the Congress is necessary, responsible, and deserving of your support. And I want to offer hope for the future.

But first, let me say what the defense debate is not about. It is not about spending arithmetic. I know that in the last few weeks you've been bombarded with numbers and percentages. Some say we need only a 5-percent increase in defense spending. The so-called alternate budget backed by liberals in the House of Representatives would lower the figure to 2 to 3 percent, cutting our defense spending by $163 billion over the next 5 years. The trouble with all these numbers is that they tell us little about the kind of defense program America needs or the benefits and security and freedom that our defense effort buys for us.

What seems to have been lost in all this debate is the simple truth of how a defense budget is arrived at. It isn't done by deciding to spend a certain number of dollars. Those loud voices that are occasionally heard charging that the Government is trying to solve a security problem by throwing money at it are nothing more than noise based on ignorance. We start by considering what must be done to maintain peace and review all the possible threats against our security. Then a strategy for strengthening peace and defending against those threats must be agreed upon. And, finally, our defense establishment must be evaluated to see what is necessary to protect against any or all of the potential threats. The cost of achieving these ends is totaled up, and the result is the budget for national defense.

There is no logical way that you can say, let's spend x billion dollars less. You can only say, which part of our defense measures do we believe we can do without and still have security against all contingencies? Anyone in the Congress who advocates a percentage or a specific dollar cut in defense spending should be made to say what part of our defenses he would eliminate, and he should be candid enough to acknowledge that his cuts mean cutting our commitments to allies or inviting greater risk or both.

The defense policy of the United States is based on a simple premise: The United States does not start fights. We will never be an aggressor. We maintain our strength in order to deter and defend against aggression—to preserve freedom and peace.

Since the dawn of the atomic age, we've sought to reduce the risk of war by maintaining a strong deterrent and by seeking genuine arms control. "Deterrence" means simply this: making sure any adversary who thinks about attacking the United States, or our allies, or our vital interests, concludes that the risks to him outweigh any potential gains. Once he understands that, he won't attack. We maintain the peace through our strength; weakness only invites aggression.

This strategy of deterrence has not changed. It still works. But what it takes to maintain deterrence has changed. It took one kind of military force to deter an attack when we had far more nuclear weapons than any other power; it takes another kind now that the Soviets, for example, have enough accurate and powerful nuclear weapons to destroy virtually all of our missiles on the ground. Now, this is not to say that the Soviet Union is planning to make war on us. Nor do I believe a war is inevitable—quite the contrary. But what must be recognized is that our security is based on being prepared to meet all threats.

There was a time when we depended on coastal forts and artillery batteries, because, with the weaponry of that day, any attack would have had to come by sea. Well, this is a different world, and our defenses must be based on recognition and awareness of the weaponry possessed by other nations in the nuclear age.

We can't afford to believe that we will never be threatened. There have been two world wars in my lifetime. We didn't start them and, indeed, did everything we could to avoid being drawn into them. But we were ill-prepared for both. Had we been better prepared, peace might have been preserved.

For 20 years the Soviet Union has been accumulating enormous military might. They didn't stop when their forces exceeded all requirements of a legitimate defensive capability. And they haven't stopped now. During the past decade and a half, the Soviets have built up a massive arsenal of new strategic nuclear weapons—weapons that can strike directly at the United States.

As an example, the United States introduced its last new intercontinental ballistic missile, the Minute Man III, in 1969, and we're now dismantling our even older Titan missiles. But what has the Soviet Union done in these intervening years? Well, since 1969 the Soviet Union has built five new classes of ICBM's, and upgraded these eight times. As a result, their missiles are much more powerful and accurate than they were several years ago, and they continue to develop more, while ours are increasingly obsolete.

The same thing has happened in other areas. Over the same period, the Soviet Union built 4 new classes of submarine-launched ballistic missiles and over 60 new missile submarines. We built 2 new types of submarine missiles and actually withdrew 10 submarines from strategic missions. The Soviet Union built over 200 new Backfire bombers, and their brand new Blackjack bomber is now under development. We haven't built a new long-range bomber since our B – 52's were deployed about a quarter of a century ago, and we've already retired several hundred of those because of old age. Indeed, despite what many people think, our strategic forces only cost about 15 percent of the defense budget.

Another example of what's happened: In 1978 the Soviets had 600 intermediate-range nuclear missiles based on land and were beginning to add the SS - 20—a new, highly accurate, mobile missile with 3 warheads. We had none. Since then the Soviets have strengthened their lead. By the end of 1979, when Soviet leader Brezhnev declared

``a balance now exists,'' the Soviets had over 800 warheads. We still had none. A year ago this month, Mr. Brezhnev pledged a moratorium, or freeze, on SS - 20 deployment. But by last August, their 800 warheads had become more than 1,200. We still had none. Some freeze. At this time Soviet Defense Minister Ustinov announced "approximate parity of forces continues to exist." But the Soviets are still adding an average of 3 new warheads a week, and now have 1,300. These warheads can reach their targets in a matter of a few minutes. We still have none. So far, it seems that the Soviet definition of parity is a box score of 1,300 to nothing, in their favor.

So, together with our NATO allies, we decided in 1979 to deploy new weapons, beginning this year, as a deterrent to their SS – 20's and as an incentive to the Soviet Union to meet us in serious arms control negotiations. We will begin that deployment late this year. At the same time, however, we're willing to cancel our program if the Soviets will dismantle theirs. This is what we've called a zero-zero plan. The Soviets are now at the negotiating table—and I think it's fair to say that without our planned deployments, they wouldn't be there.

Now, let's consider conventional forces. Since 1974 the United States has produced 3,050 tactical combat aircraft. By contrast, the Soviet Union has produced twice as many. When we look at attack submarines, the United States has produced 27 while the Soviet Union has produced 61. For armored vehicles, including tanks, we have produced 11,200. The Soviet Union has produced 54,000—nearly 5 to 1 in their favor. Finally, with artillery, we've produced 950 artillery and rocket launchers while the Soviets have produced more than 13,000—a staggering 14-to-1 ratio.

There was a time when we were able to offset superior Soviet numbers with higher quality, but today they are building weapons as sophisticated and modern as our own.

As the Soviets have increased their military power, they've been emboldened to extend that power. They're spreading their military influence in ways that can directly challenge our vital interests and those of our allies.

The following aerial photographs, most of them secret until now, illustrate this point in a crucial area very close to home: Central America and the Caribbean Basin. They're not dramatic photographs. But I think they help give you a better understanding of what I'm talking about.

This Soviet intelligence collection facility, less than a hundred miles from our coast, is the largest of its kind in the world. The acres and acres of antennae fields and intelligence monitors are targeted on key U.S. military installations and sensitive activities. The installation in Lourdes, Cuba, is manned by 1,500 Soviet technicians. And the satellite ground station allows instant communications with Moscow. This 28-square-mile facility has grown by more than 60 percent in size and capability during the past decade.

In western Cuba, we see this military airfield and it complement of modern, Soviet-built Mig-23 aircraft. The Soviet Union uses this Cuban airfield for its own long-range reconnaissance missions. And earlier this month, two modern Soviet antisubmarine

warfare aircraft began operating from it. During the past 2 years, the level of Soviet arms exports to Cuba can only be compared to the levels reached during the Cuban missile crisis 20 years ago.

This third photo, which is the only one in this series that has been previously made public, shows Soviet military hardware that has made its way to Central America. This airfield with its MI - 8 helicopters, anti-aircraft guns, and protected fighter sites is one of a number of military facilities in Nicaragua which has received Soviet equipment funneled through Cuba, and reflects the massive military buildup going on in that country.

On the small island of Grenada, at the southern end of the Caribbean chain, the Cubans, with Soviet financing and backing, are in the process of building an airfield with a 10,000-foot runway. Grenada doesn't even have an air force. Who is it intended for? The Caribbean is a very important passageway for our international commerce and military lines of communication. More than half of all American oil imports now pass through the Caribbean. The rapid buildup of Grenada's military potential is unrelated to any conceivable threat to this island country of under 110,000 people and totally at odds with the pattern of other eastern Caribbean States, most of which are unarmed.

The Soviet-Cuban militarization of Grenada, in short, can only be seen as power projection into the region. And it is in this important economic and strategic area that we're trying to help the Governments of El Salvador, Costa Rica, Honduras, and others in their struggles for democracy against guerrillas supported through Cuba and Nicaragua.

These pictures only tell a small part of the story. I wish I could show you more without compromising our most sensitive intelligence sources and methods. But the Soviet Union is also supporting Cuban military forces in Angola and Ethiopia. They have bases in Ethiopia and South Yemen, near the Persian Gulf oil fields. They've taken over the port that we built at Cam Ranh Bay in Vietnam. And now for the first time in history, the Soviet Navy is a force to be reckoned with in the South Pacific.

Some people may still ask: Would the Soviets ever use their formidable military power? Well, again, can we afford to believe they won't? There is Afghanistan. And in Poland, the Soviets denied the will of the people and in so doing demonstrated to the world how their military power could also be used to intimidate.

The final fact is that the Soviet Union is acquiring what can only be considered an offensive military force. They have continued to build far more intercontinental ballistic missiles than they could possibly need simply to deter an attack. Their conventional forces are trained and equipped not so much to defend against an attack as they are to permit sudden, surprise offensives of their own.

Our NATO allies have assumed a great defense burden, including the military draft in most countries. We're working with them and our other friends around the world to do more. Our defensive strategy means we need military forces that can move very quickly, forces that are trained and ready to respond to any emergency.

Every item in our defense program—our ships, our tanks, our planes, our funds for training and spare parts—is intended for one all-important purpose: to keep the peace. Unfortunately, a decade of neglecting our military forces had called into question our ability to do that.

When I took office in January 1981, I was appalled by what I found: American planes that couldn't fly and American ships that couldn't sail for lack of spare parts and trained personnel and insufficient fuel and ammunition for essential training. The inevitable result of all this was poor morale in our Armed Forces, difficulty in recruiting the brightest young Americans to wear the uniform, and difficulty in convincing our most experienced military personnel to stay on.

There was a real question then about how well we could meet a crisis. And it was obvious that we had to begin a major modernization program to ensure we could deter aggression and preserve the peace in the years ahead.

We had to move immediately to improve the basic readiness and staying power of our conventional forces, so they could meet—and therefore help deter—a crisis. We had to make up for lost years of investment by moving forward with a long-term plan to prepare our forces to counter the military capabilities our adversaries were developing for the future.

I know that all of you want peace, and so do I. I know too that many of you seriously believe that a nuclear freeze would further the cause of peace. But a freeze now would make us less, not more, secure and would raise, not reduce, the risks of war. It would be largely unverifiable and would seriously undercut our negotiations on arms reduction. It would reward the Soviets for their massive military buildup while preventing us from modernizing our aging and increasingly vulnerable forces. With their present margin of superiority, why should they agree to arms reductions knowing that we were prohibited from catching up?

Believe me, it wasn't pleasant for someone who had come to Washington determined to reduce government spending, but we had to move forward with the task of repairing our defenses or we would lose our ability to deter conflict now and in the future. We had to demonstrate to any adversary that aggression could not succeed, and that the only real solution was substantial, equitable, and effectively verifiable arms reduction—the kind we're working for right now in Geneva.

Thanks to your strong support, and bipartisan support from the Congress, we began to turn things around. Already, we're seeing some very encouraging results. Quality recruitment and retention are up dramatically—more high school graduates are choosing military careers, and more experienced career personnel are choosing to stay. Our men and women in uniform at last are getting the tools and training they need to do their jobs.

Ask around today, especially among our young people, and I think you will find a whole new attitude toward serving their country. This reflects more than just better pay,

equipment, and leadership. You the American people have sent a signal to these young people that it is once again an honor to wear the uniform. That's not something you measure in a budget, but it's a very real part of our nation's strength.

It'll take us longer to build the kind of equipment we need to keep peace in the future, but we've made a good start.

We haven't built a new long-range bomber for 21 years. Now we're building the B - 1. We hadn't launched one new strategic submarine for 17 years. Now we're building one Trident submarine a year. Our land-based missiles are increasingly threatened by the many huge, new Soviet ICBM's. We're determining how to solve that problem. At the same time, we're working in the START and INF negotiations with the goal of achieving deep reductions in the strategic and intermediate nuclear arsenals of both sides.

We have also begun the long-needed modernization of our conventional forces. The Army is getting its first new tank in 20 years. The Air Force is modernizing. We're rebuilding our Navy, which shrank from about a thousand ships in the late 1960's to 453 during the 1970's. Our nation needs a superior navy to support our military forces and vital interests overseas. We're now on the road to achieving a 600-ship navy and increasing the amphibious capabilities of our marines, who are now serving the cause of peace in Lebanon. And we're building a real capability to assist our friends in the vitally important Indian Ocean and Persian Gulf region.

This adds up to a major effort, and it isn't cheap. It comes at a time when there are many other pressures on our budget and when the American people have already had to make major sacrifices during the recession. But we must not be misled by those who would make defense once again the scapegoat of the Federal budget.

The fact is that in the past few decades we have seen a dramatic shift in how we spend the taxpayer's dollar. Back in 1955, payments to individuals took up only about 20 percent of the Federal budget. For nearly three decades, these payments steadily increased and, this year, will account for 49 percent of the budget. By contrast, in 1955 defense took up more than half of the Federal budget. By 1980 this spending had fallen to a low of 23 percent. Even with the increase that I am requesting this year, defense will still amount to only 28 percent of the budget.

The calls for cutting back the defense budget come in nice, simple arithmetic. They're the same kind of talk that led the democracies to neglect their defenses in the 1930's and invited the tragedy of World War II. We must not let that grim chapter of history repeat itself through apathy or neglect.

This is why I'm speaking to you tonight—to urge you to tell your Senators and Congressmen that you know we must continue to restore our military strength. If we stop in midstream, we will send a signal of decline, of lessened will, to friends and adversaries alike. Free people must voluntarily, through open debate and democratic means, meet the challenge that totalitarians pose by compulsion. It's up to us, in our time, to choose and choose wisely between the hard but necessary task of preserving peace and freedom

and the temptation to ignore our duty and blindly hope for the best while the enemies of freedom grow stronger day by day.

The solution is well within our grasp. But to reach it, there is simply no alternative but to continue this year, in this budget, to provide the resources we need to preserve the peace and guarantee our freedom.

Now, thus far tonight I've shared with you my thoughts on the problems of national security we must face together. My predecessors in the Oval Office have appeared before you on other occasions to describe the threat posed by Soviet power and have proposed steps to address that threat. But since the advent of nuclear weapons, those steps have been increasingly directed toward deterrence of aggression through the promise of retaliation.

This approach to stability through offensive threat has worked. We and our allies have succeeded in preventing nuclear war for more than three decades. In recent months, however, my advisers, including in particular the Joint Chiefs of Staff, have underscored the necessity to break out of a future that relies solely on offensive retaliation for our security.

Over the course of these discussions, I've become more and more deeply convinced that the human spirit must be capable of rising above dealing with other nations and human beings by threatening their existence. Feeling this way, I believe we must thoroughly examine every opportunity for reducing tensions and for introducing greater stability into the strategic calculus on both sides.

One of the most important contributions we can make is, of course, to lower the level of all arms, and particularly nuclear arms. We're engaged right now in several negotiations with the Soviet Union to bring about a mutual reduction of weapons. I will report to you a week from tomorrow my thoughts on that score. But let me just say, I'm totally committed to this course.

If the Soviet Union will join with us in our effort to achieve major arms reduction, we will have succeeded in stabilizing the nuclear balance. Nevertheless, it will still be necessary to rely on the specter of retaliation, on mutual threat. And that's a sad commentary on the human condition. Wouldn't it be better to save lives than to avenge them? Are we not capable of demonstrating our peaceful intentions by applying all our abilities and our ingenuity to achieving a truly lasting stability? I think we are. Indeed, we must.

After careful consultation with my advisers, including the Joint Chiefs of Staff, I believe there is a way. Let me share with you a vision of the future which offers hope. It is that we embark on a program to counter the awesome Soviet missile threat with measures that are defensive. Let us turn to the very strengths in technology that spawned our great industrial base and that have given us the quality of life we enjoy today.

What if free people could live secure in the knowledge that their security did not rest upon the threat of instant U.S. retaliation to deter a Soviet attack, that we could intercept

and destroy strategic ballistic missiles before they reached our own soil or that of our allies?

I know this is a formidable, technical task, one that may not be accomplished before the end of this century. Yet, current technology has attained a level of sophistication where it's reasonable for us to begin this effort. It will take years, probably decades of effort on many fronts. There will be failures and setbacks, just as there will be successes and breakthroughs. And as we proceed, we must remain constant in preserving the nuclear deterrent and maintaining a solid capability for flexible response. But isn't it worth every investment necessary to free the world from the threat of nuclear war? We know it is.

In the meantime, we will continue to pursue real reductions in nuclear arms, negotiating from a position of strength that can be ensured only by modernizing our strategic forces. At the same time, we must take steps to reduce the risk of a conventional military conflict escalating to nuclear war by improving our nonnuclear capabilities.

America does possess—now—the technologies to attain very significant improvements in the effectiveness of our conventional, nonnuclear forces. Proceeding boldly with these new technologies, we can significantly reduce any incentive that the Soviet Union may have to threaten attack against the United States or its allies.

As we pursue our goal of defensive technologies, we recognize that our allies rely upon our strategic offensive power to deter attacks against them. Their vital interests and ours are inextricably linked. Their safety and ours are one. And no change in technology can or will alter that reality. We must and shall continue to honor our commitments.

I clearly recognize that defensive systems have limitations and raise certain problems and ambiguities. If paired with offensive systems, they can be viewed as fostering an aggressive policy, and no one wants that. But with these considerations firmly in mind, I call upon the scientific community in our country, those who gave us nuclear weapons, to turn their great talents now to the cause of mankind and world peace, to give us the means of rendering these nuclear weapons impotent and obsolete.

Tonight, consistent with our obligations of the ABM treaty and recognizing the need for closer consultation with our allies, I'm taking an important first step. I am directing a comprehensive and intensive effort to define a long-term research and development program to begin to achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles. This could pave the way for arms control measures to eliminate the weapons themselves. We seek neither military superiority nor political advantage. Our only purpose—one all people share—is to search for ways to reduce the danger of nuclear war.

My fellow Americans, tonight we're launching an effort which holds the promise of changing the course of human history. There will be risks, and results take time. But I believe we can do it. As we cross this threshold, I ask for your prayers and your support.

Thank you, good night, and God bless you.

* * * * * * * * * *

James A. Abrahamson Henry F. Cooper, *What Did We Get For Our $30-Billion Investment in SDI/BMD?*, National Institute for Public Policy, September 1993.

SUMMARY AND CONCLUSIONS

The basic issue addressed by this paper has to do with the value added by the existence of the Strategic Defense Initiative (SDI), acknowledging that, during the same timeframe, something on the order of $30-billion would have been spent pursuing research on the same technologies somewhere in the Department of Defense (DOD) anyway. As is supported in detail in the following text, SDI has been enormously productive by many standards and from many perspectives.

From a geopolitical/geostrategic point-of-view, there is little question but that SDI induced the leadership of the former Soviet Union to return to the negotiating table after their 1983 walk-out and negotiate seriously toward deep reductions in nuclear arms, producing the first nuclear arms control agreements in history to do so. A number of authoritative sources, including former senior Soviet officials, have stated that Ronald Reagan's highly visible commitment to SDI was a significant factor in persuading Mikhail Gorbachev to give up the arms competition and change the course of the former Soviet Union from confrontation to cooperation with the West, hastening the end of the Cold War. What are these achievements worth? Certainly many times the $30-billion invested over the past 10-years. On January 29, 1990, Defense Secretary Dick Cheney announced a $167-billion reduction in the FY1990-94 Defense plan for the next 5-years alone.

From an acquisition management perspective, the SDI Organization (SDIO) created a very effective management team that, over the past 10-years, continuously integrated evolving advances of key cutting-edge technologies into field demonstrations and architectural options that, in turn, rapidly moved the technology out of the laboratory and into innovative acquisition programs. There is little question that the normal process of moving technology out of the laboratory was short-circuited and the "conceptualization-to-realization" time was reduced by years in the SDI program. In our judgment, SDIO's innovation translated into substantial savings—and, more importantly, will provide substantially more capable active defenses to our operational forces years sooner than would have otherwise been the case.

From a technical perspective, remarkable hardware advances, including ones in electronics, sensors and detectors, computers, propulsion, communications, and power, have resulted from SDIO's emphasis on integrating the research activities to maximize overall system performance by increasing critical element performance, miniaturization, producibility, survivability, and overall robustness. Unit size, weight and costs have been reduced, in many cases by orders-of-magnitude, while operational performance characteristics have also increased dramatically, in many cases also by orders-of-magnitude. These advances, which have numerous spin-off applications as well, were integrated into field demonstration experiments that improved the engineering state-of-

the-art sufficiently to move into the serious acquisition programs now being pursued to provide active defenses to our military forces.

These geopolitical, management, and technical innovations would never have happened in a program to build defenses against ballistic missiles with "business as usual" in the Pentagon's acquisition process. If the authors had not had the status that came from a very supportive Secretary of Defense with a clear Presidential mandate, efforts to provide effective defenses to protect the American people, our forces overseas, and our allies and friends would have surely been short-lived; they would have sunk under the weight of ideological opposition and an extremely risk-adverse, bureaucratic defense acquisition process.

Notwithstanding the controversy and perceived programmatic turbulence created by this process, the Department of Defense leadership would do well to pattern their efforts to reform the acquisition process after SDIO in order to reduce the costs and time for moving technology into the field. In particular, the Department should exploit SDIO's pioneering efforts to plan during the concept development stage to provide early operational capability through the exploitation of prototypical hardware. This could provide operational capabilities years before the normal acquisition process—which now takes an incredible 15-years or more for major defense acquisition programs, assuring that the technology is years and even entire technology generations out-of-date when systems are finally deployed. With this innovation and the necessary funding, effective defenses could be fielded to begin seriously to protect the American people in this decade.

The annual debate will soon determine how much the United States will spend to defend the United States, our troops abroad, and our friends and allies against ballistic missile attack. Regrettably, this debate will again be volatile, with continuing false "Star Wars" caricatures and even false public accusations in the media. These activities continue in spite of the Clinton Administration's effort to de-politicize the debate by renaming the Strategic Defense Initiative Organization (SDIO) as the Ballistic Missile Defense Organization (BMDO) and giving priority to ground-based systems—particularly Theater Missile Defense (TMD) systems.

In the midst of this debate, continued charges of wasted resources can be summed up in the question, "What have we got to show for the $30-billion we have spent on SDI/BMD?" This fair question deserves a direct answer.

It is appropriate for us, two former SDI Directors, to account for our stewardship. One of us directed the original SDI program to respond to Ronald Reagan's 1983 vision, and the other advocated that vision to the Soviets in Geneva and refocused SDI to account for post-Cold War realities—as directed by George Bush in January 1991, and as largely endorsed by the Congress in the Missile Defense Act of 1991. After discussing the proper framework for addressing this question in the context of the pre-existing programs and budgets that were integrated into the SDI program in 1984, we:

- Review the geopolitical, management and technical consequences of establishing SDI as a high-level organization to integrate all DOD programs in the context of a highly-visible Presidential mandate;

- Describe in some detail how the $30-billion was spent and what progress was made in each of the major elements of SDI research and development; and
- Discuss how the research activity was converted into a serious DOD acquisition program, and how that program evolved to the present day.

POSING THE QUESTION CORRECTLY

About $30-billion would have been spent on most, if not all, of the same technologies had there been no SDI. Thus, the pertinent question is, "What difference did SDI make?"

Programs for the critical technologies were "in the budget" long before Ronald Reagan's March 23, 1983, speech launched SDI. The Fiscal Year 1984 budget and the FY 1984-88 Five Year Defense Plan (FYDP) to support research on these technologies were already in place when Secretary of Defense Weinberger chartered the SDIO a year later on April 24, 1984.

About $1.8-billion in 1993 dollars of already appropriated FY1984 funds were transferred into the SDI budget (along with the corresponding on-going programs) from the Services, DARPA, and other government agencies, as the management of those BMD-related activities was centralized under the SDI Director, who worked directly for the Secretary of Defense. Of these funds, only $50-million was associated with SDI "new starts," primarily studies of system concepts and the critically important function of battle management, command, control and communications (BMC3). Furthermore, about $15-billion in FY1993 dollars was transferred from these pre-existing program plans to the SDI FY1984-88 FYDP—about 70-percent of what was eventually judged to be required and what the President requested for SDI's FY1984-88 funding.

Congress actually appropriated 70 to 80-percent of the President's request for SDI over this FY1984-88 FYDP—only slightly more than the $15-billion (in FY1993 dollars) planned funding level, had there been no SDI. Furthermore, the General Accounting Office reports that Congress appropriated almost 30-percent less than the President's budget request for the years FY1985-93,[1] i.e., throughout the Reagan-Bush era.[2] Because of the controversy regarding SDI, it is at least debatable that more than $30-billion might have been spent on these technologies had there been no SDI.

Thus, while it is certainly fair to ask what SDI achieved for $30-billion (of over $40-billion requested), a better question is whether focusing these technology efforts under a single coordinated program with the priority established by the President's personal interest, increased or decreased benefits from the $30-billion investment. Indeed, asking

[1] *Ballistic Missile Defense, Evolution and Current Issues*, GAO/NSIAD-93-229, July 1993. p.5.

[2] The Clinton Administration reduced the FY1994-99 SDI budget it inherited by about 50-percent (establishing a relatively flat budget profile at the FY1993 appropriated level), in part hoping to break with this unhelpful precedent which had dogged the SDI program. But Congress shows every sign of continuing to cut the FY1994 request by nearly the same percentage as in earlier years.

that question might provide insights to help frame future research activities—at a time when the DOD leadership is trying to improve significantly the Defense acquisition process.[3]

GEOPOLITICAL, MANAGEMENT AND TECHNICAL CONSEQUENCES OF SDI

From a geopolitical perspective, SDI led to a sea change in our negotiations with the former Soviet Union and, by informed and authoritative accounts, the end of the Cold War. From a management perspective, forming SDIO stimulated the DOD to integrate a number of existing technology programs and supplement them in the context of an identified goal—pushing already evolving technologies toward practical applications faster than would have been the case if the various programs had been pursued separately. From a technical perspective, significant advances have been achieved—not only enabling fielding of effective defenses in the near future, but also providing substantial spin-offs to the military, civil and commercial sectors.

Geopolitical/Geostrategic Benefits

The advent of SDI created a political firestorm at home and abroad. Because Ronald Reagan's stated objective, if realized, would require changes to the ABM Treaty and its underlying mutual deterrence theory, SDI created opposition in the arms control community which was wedded to both. Nevertheless, in the longer run, SDI precipitated a sea-change in US-Soviet relations and a fundamentally new, and by any reasonable measure, an improved geostrategic environment.

Of greatest importance was the impact of SDI on US-Soviet relations, then characterized by a large component of acrimony. Within three days of Reagan's March 23, 1983, speech, then-General Secretary Andropov declared in a flourish of overstatement that "Should this [SDI] conception be converted into reality, this could actually open the flood gates to a runaway race of all types of strategic arms, both offensive and defensive." This was to be a steady theme, echoed for the next five years, by arms control advocates, who argued (wrongly, it turned out) that SDI would destroy any potential for reductions in offensive nuclear arms.[4]

In fact, SDI was instrumental in creating the conditions that led to the very first arms control agreements to embody major reductions in offensive nuclear weapons—and even

---

[3] As discussed later, SDIO pioneered innovative acquisition strategies long advocated by the Defense Science Board and others to move rapidly improving technology from the laboratory to the field. Also as discussed later, the SDI Innovative Science and Technology program is widely recognized as one of the very best in government, and one of the few that has consciously and successfully transferred technology to the civil and commercial sectors.

[4] For example, in McGeorge Bundy, George Keenan, Robert McNamarah, and Gerard Smith, "The President's Choice: Star Wars or Arms Control," *Foreign Affairs*, Winter 1984/85, p. 264, the authors argue, "It is possible to reach good arms control agreements, or possible to insist on the Star Wars program as it stands, but wholly impossible to do both."

to the end of the Cold War. Soviet concerns about SDI, particularly the space-based defenses,[5] were a primary reason that the Soviets returned to the negotiating table in 1985. (They had walked out of all arms control talks when we began deploying the INF missiles in late 1983.) At the October 1986 Reykjavik Summit, it was this same concern that led General Secretary Gorbachev to offer major reductions in offensive nuclear weapons if SDI testing were limited to the laboratory. By some authoritative accounts,[6] it was Ronald Reagan's commitment to SDI that led Gorbachev to give up the race—contributing greatly to the end of the Cold War, producing historic reductions in offensive nuclear weapons and accelerating the democratization of the former Soviet Union.

With the end of the Cold War came a fundamental change in geopolitical realities—and a consequent redirection of the SDI program. The adversarial relationship between two superpowers began to shift, from confrontation to cooperation, as the former Warsaw Pact, and then the Soviet Union itself, dissolved into independent sovereign states. The US negotiating position since 1985 (deep offensive reductions and cooperation on building defenses) became much more palatable to our former Soviet counterparts and more credible to our allies and friends.

Fundamentally, defenses now can be considered in the context of shared problems rather than in the context of military competition. One common problem is the concern about the proliferation of ballistic missiles that can deliver to great ranges weapons of mass

---

[5] The Soviets had long understood the large force multiplier effects of space systems, and sought, with their "militarization-of-space" arguments, to impede progress in this important area of US technological advantage. This Soviet view was made public when, on June 7, 1989, then Prime Minister Ryshkov defended the budget for the Soviet "military space program" (after years of denying that the Soviet Union even had such a program) before the Congress of Peoples Deputies—live on Moscow television. He strongly advocated continuing such programs (which, from his and Gorbachev's budget numbers, composed over 5-percent of their total military budget), observing that Ministry of Defense studies had shown that military space programs "enhance the combat efficiency of our armed forces by 1.5 to 2 times." The Gulf War demonstrated that the force multiplier is, in fact, much higher.

[6] Marshal Sergei Akhromeyev (former Soviet Chief of Staff, close advisor to Gorbachev, and head of the Soviet Experts Group at Reykjavik) told Ambassador Vernon Walters (who was our Ambassador to the UN at the time of the Reykjavik Summit), that Reagan's refusal to give up SDI at Reykjavik was a "watershed event," by which Walters understood that Gorbachev was then persuaded that the Soviets could not compete. This view is shared by other world leaders, including former British Prime Minister Margaret Thatcher. At a February 1993 Princeton University meeting, former Soviet Foreign Minister Alexander Bessmertnykh (who was close to the US-Soviet negotiations throughout this period) and former Gorbachev aid Anatoly Chernyaev indicated that SDI had a decisive effect on Soviet political and economic calculations that hastened the end of the Cold War. (See press accounts in the February 27, 1993, *Washington Post* and *Washington Times*.) About the same time Russian Deputy Foreign Minister Grigoriy Berdennikov, in an ABC interview in Madrid, said, "The Soviet Union fell precisely because it could not afford 'star wars' and the arms race against the West." Finally, Ambassador Vladimir Lukin (Chairman of the Supreme Soviet Foreign Relations Committee during the 1980s and now Russia's Ambassador to the United States) has observed that SDI accelerated the end of the Cold War "by five years." Reported by Former National Security Advisor Robert McFarlane in his August 24, 1993, Op-Ed in the *New York Times*. (On January 29, 1990, Defense Secretary Dick Cheney announced a post-Cold War defense savings of $167-billion over 5-years.)

destruction, which are also proliferating throughout the world.[7] Several proliferant states are led by political regimes that are either unstable or driven by ethnic hostilities—or both. Also concerns continue about the accidental or unauthorized launch of ballistic missiles, many of which remain on alert and pointed at the United States.

Consideration of these uncertain conditions led to a Presidentially mandated Independent Review of SDI. It recommended in a March 1990 report to Defense Secretary Dick Cheney that SDI be refocused on these problems, with greater emphasis on defenses against theater ballistic missiles, to provide protection against limited ballistic missile strikes on the United States, our troops abroad, and our friends and allies. After DOD studies of policy and acquisition issues associated with accepting this recommendation, Secretary Cheney sponsored it to President Bush. The President then redirected SDI accordingly in his January 1991 State-of-the-Union message to Congress. This new SDI concept became known as GPALS, or Global Protection Against Limited Strikes.[8]

The wisdom of this redirection was validated by the Patriot-Scud duel of the Gulf War—witnessed first hand by several influential Senators who went into a bomb shelter while visiting Tel Aviv during a Scud attack. In response, Senator John Warner (R-VA), then the ranking minority member of the Senate Armed Services Committee, led in drafting the Missile Defense Act of 1991 which, when passed in late 1991, mandated the development for deployment of advanced Theater Missile Defenses, an initial "treaty-compliant" site of a US Limited Defense System (including space-based sensors), and robust funding for the Space-Based Interceptor (SBI) of the President's GPALS concept as a follow-on technology.[9]

These developments promoted a more positive view in the former Soviet Union regarding the role of ballistic missile defenses. A most significant event came on January 31, 1992, when Russian President Boris Yeltsin, in a speech to the United Nations,

---

[7] If anything, the former Soviet states should have greater motivation for cooperating in building defenses because most proliferant states are closer to them than to the United States.

[8] Regrettably, a misperception developed, exacerbated by SDI opponents, that the "global" emphasis of GPALS was associated with space systems—and, in particular, Brilliant Pebbles space-based interceptors. In fact, GPALS had to do with a shift in focus from almost total emphasis on defending the US homeland against long range missiles from the former Soviet Union to defending against missiles of all ranges launched from almost anywhere in the world toward our troops, allies and friends almost anywhere else in the world as well as the US homeland. So, the G in GPALS really had to do with the inclusion of theater missile defenses into the SDI primary architecture—it had nothing to do with space systems per se, although space systems can support theater missile defenses, as reported in Defense Secretary Cheney's March 1992 Report to Congress on *Conceptual and Burdensharing Issues Related to Space-Based Ballistic Missile Defense Interceptors*.

[9] In response, the Department of Defense provided its fully coordinated acquisition plan to implement the Missile Defense Act in its June 1992 Report to Congress. Although Secretary Cheney's cover letter stated this plan would be executed as a top national priority, the issue of precisely how to proceed remained controversial in the Congressional debate over the FY1993 SDI budget, and a significant cut from the President's request resulted, causing substantial delays as discussed in SDIO's January 1993 Report to Congress in support of President Bush's FY1994 budget request. Nevertheless, Congress reaffirmed the main elements of the Missile Defense Act of 1991 in the FY1993 Defense Authorization Act.

advocated even deeper reductions in strategic offensive arms (than in START I) and cooperation on what he referred to as a Global Protection System (GPS) to protect the world community from missile attack—urging that SDI be redirected to take advantage of Russian technology.[10] He and General Shaposhnikov (then Chief of Staff of the Commonwealth of Independent States) made clear in discussions with the press and allies that they intended GPS to be deployed in a multinational context to protect the world community against accidental, unauthorized, and rogue missile attacks.

Yeltsin's dramatic new position reversed the long-standing insistence that we could have offensive reductions or defenses, but not both (and laid waste to the claims of SDI opponents who had argued for years that a cooperative expansion of ballistic missile defenses was non-negotiable). Yeltsin essentially endorsed the formula proposed by US negotiators in Geneva for seven years—deep offensive reductions and cooperation on defenses.[11]

Yeltsin's proposal had a sobering effect on the already evolving views of our allies and friends, in the wake of the Gulf War and consistent with their growing concerns about proliferating weapons of mass destruction and missiles for delivering such weapons. Clearly, they too have accepted missile defense as a necessary element in the security calculus of the post-Cold War world.[12]

It is hard to argue that focusing a number of technology programs under a high-visibility, Presidentially-mandated SDI program was a bad idea—even if substantial new funding had been required. Without counting the value of the sweeping changes throughout Europe and with our former adversaries, the so-called "peace dividend" from ending the Cold War more than repaid the $30-billion investment of the past decade in just a couple of years and, in 5-years, was over 5-times the total 10-year SDI investment.[13]

---

[10] The former Soviet Union never opposed defenses per se, only US defenses. Throughout the Cold War, they always invested as much on defensive as offensive strategic systems (and much more than the US). And, as Mikhail Gorbachev admitted to Tom Brokaw on American TV in 1987, they were doing everything the US was doing with SDI

[11] As will be discussed later, several areas of technological cooperation have been identified, and active contracts are now in being which employ Russian and US scientists and engineers working side-by-side. Thus, Yeltsin's proposal, which is in the interest of both the US and Russia, is quite realistic—and the initiatives of the Bush Administration to respond favorably should be continued in active discussions with Russia, the other republics of the former Soviet Union and our allies and friends. Indeed, it is unfortunate that more progress was not made during the last Administration.

[12] Authoritative statements by senior European, Israeli and Japanese officials are discussed in depth in *Proliferation and Missile Defense: European-Allied and Israeli Perspectives*, a report by the International Study Group on Proliferation and Missile Defense under the auspices of the National Institute for Public Policy, June 1993. Also, recent Russian views are summarized in Keith B. Payne, Linda H. Vlahos, and Willis A. Stanley, "Evolving Russian Views on Defense: An Opportunity for Cooperation," *Strategic Review*, Vol. XXI, No. 1, Winter 1993, pp. 61-72.

[13] As specified in the *News Release*, Office of Assistant Secretary of Defense (Public Affairs), The Pentagon, January 29, 1990, the Bush Administration's FY1990-94 defense budget showed $167-billion saving as compared to previous 5-year plans. The saving each year after FY1991 exceeded the total 10-

When it is also understood that most of the $30-billion would have been spent developing most of the same technologies anyway, it is impossible to see how anyone could fault SDI—especially since there were clear management and technology dividends as well.

Management Benefits

Prior to the formation of SDI with the Presidential mandate, the various technology development activities were proceeding without an integrating focus. For over a decade prior to SDI, the Nation's program to develop ballistic missile defenses had been narrowly directed to develop systems for defending missile silos, not protecting people.[14] Sensor development had been focused almost entirely on providing reconnaissance, surveillance, tactical warning and attack assessment information—all in the context of a strategic concept that relied upon the threat of nuclear retaliation for deterring nuclear threats.

On April 24, 1984, SDIO was created, reporting directly to the Secretary of Defense, to manage the nation's most vigorous and diverse technology research effort. SDI was aimed at nothing less than providing the technical means to underwrite, as noted above, a fundamental shift in national security strategy. SDIO provided "bureaucratic" muscle, forcing the integration of complementary programmatic efforts, along with their supporting technologies, into a comprehensive activity aimed at realizing the President's vision. SDI became a national program for developing various technologies essential to ballistic missile defense, including programs that had been managed separately by the Military Departments, various Defense agencies, and Department of Energy Laboratories.

The nature of the President's challenge required integration of not only existing research and development programs, but also the inventive and innovative efforts of the most creative minds available. Thus, from the outset, SDIO sought a close alliance with academia and the commercial sector as well as the defense industry, establishing a vigorous Innovative Science and Technology program, involving about 1000 of the nation's best scientists and engineers.[15] This SDIO program was initiated 3-years before Congress (in Public Law 100-456, the FY1989 National Defense Authorization Act) sought "to ensure the long term qualitative superiority of US weapon systems"—and is widely acknowledged to be the most broad-based, far-reaching government program directed toward those ends.

---

year SDI investment and by FY 1994 the annual saving was projected to exceed $60-billion a year—over 10-times the planned annual budget for SDI.

[14] Indeed, the Army's BMD activities since the late 1960s had been focused almost entirely on the Minuteman survivability problem, but always, after the advent of the ABM Treaty, as a less-than-serious alternative to ICBM mobile basing options. Working on this problem simply provided a limited focus for the hundred million dollars or so that was dedicated annually, in effect, to maintaining an ABM technology base as an ABM Treaty safeguard activity.

[15] More generally, SDIO's investments have led to direct employment, on the average, for over 20,000 high technology workers and indirectly provided for many more.

From the outset in SDIO, those managing research at the cutting edge of technology worked in close proximity to managers exploiting technology to develop "architectures"—and execute major field demonstration experiments and acquisition programs as well. Thus, SDIO created numerous "feedback loops," expediting technology transfer from the laboratory to field demonstrations, to architectural exploitation, and to system applications.

A good example of the results of this management style is the 1986-89 series of orbital experiments designated as Delta 180, 181, and 183. Designed and built from scratch, these missions involved space vehicles in the roughly 6000-pound weight class, cost between $150-million and $250-million each, and were executed from concept-to- launch in 13, 18, and 30 months respectively. These experiments accomplished the first space-to-space intercept, the first measurements of realistic re-entry vehicles during the midcourse phase, and the first observations of booster rockets as targets seen from space. These experiments also flew the first space laser radars and orbited the first actively monitored space materials exposure experiment.

As illustrated in Figure 1, the number of tests and field experiments grew steadily throughout the decade as SDIO moved away from paper feasibility studies, laboratory work, and infrastructure development, toward field demonstrations of SDI-developed technologies, and ultimately toward the demonstration and validation of system concepts.

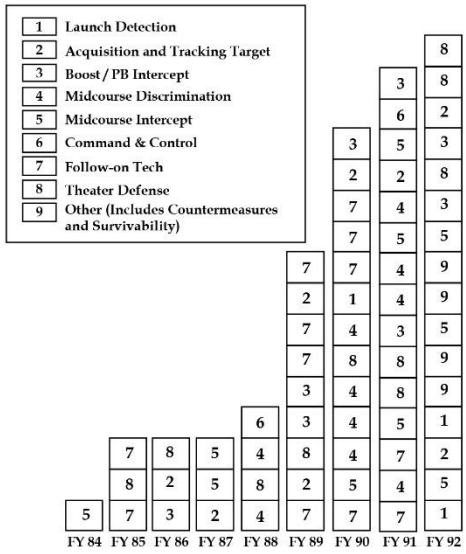


Figure 1. SDI Major Tests and Experiments FY1984-92

Source: Statement by Ambassador Henry F. Cooper before the Committee on Government Operations, US House of Representatives, May 16, 1991.

This process was very effective in adapting system architectures to take advantage of rapidly improving technologies.[16] SDIO pursued innovative management and technical

[16] However, the frequent changes in architectures and associated cost estimates suggested to those who were not close to the program that there were great programmatic instabilities, especially as the

approaches that could serve as models for the announced initiatives by Deputy Secretary Perry and Undersecretary Deutch to streamline the Pentagon's excessively bureaucratic acquisition process.

A particularly important innovation was SDIO's successful advocacy of an acquisition strategy by which prototypical hardware can be fielded to provide an early defense capability—many years before normal production lines can be started. Such a system, called a User Operational Evaluation System (UOES), would be developed, tested and evaluated by the operator during the Demonstration and Validation (or DemVal) phase of the normal acquisition process—years before engineering and manufacturing development is completed and production lines begin.

Although similar approaches exploiting prototypical hardware have been repeatedly advocated by the Defense Science Board and others for years, the Pentagon's acquisition community had never warmed to the idea. SDIO not only successfully advocated the UOES approach through a conservative Pentagon acquisition bureaucracy, but also with Congress, which, as part of the FY1993 Defense Authorization Act, approved this approach for the Theater High Altitude Area Defense (THAAD) system. Current plans call for a deployable THAAD prototype system in 1996, whereas the initial operational capability (IOC), using fully developed production line hardware, will not occur until about 2002.[17]

Although this idea may seem novel, it was validated by the common-sense exploitation of JSTARS during the Gulf War—SDIO simply has advocated planning to follow this course well in advance of the need rather than on a rushed, ad hoc basis as was the case in the Gulf War. This approach is entirely consistent with the Clinton Administration's interest in pursuing advanced technology demonstrators and has been welcomed by many in the Air Force and the Navy who are seeking to exploit SDI technology to achieve early theater missile defense capabilities.

SDIO's management approach, which produced management and technical innovations, is illustrative of Total Quality Management (TQM) approaches, and SDIO was doing it before TQM was in vogue. It was successful in producing innovative acquisition programs and stimulating research that benefited other defense programs, and the benefits have not been limited to applications in the defense sector. As discussed in the following section, substantial benefits from the SDI investments also have extended beyond the defense

---

program was directed toward entering the Pentagon's normal acquisition process. The public controversy that always surrounded SDI only exaggerated these perceptions of programmatic instability. Nevertheless, and in spite of the programmatic turbulence that resulted from the 20 to 30-percent Congressional budget cuts each year, SDIO made steady progress in moving toward serious acquisition programs, particularly following passage of the Missile Defense Act of 1991.

[17] SDIO also successfully advocated through the Pentagon bureaucracy the UOES approach for a US homeland defense and included it in the Secretary of Defense's June 1992 Report to Congress which laid out the plan for implementing the Missile Defense Act. Regrettably, this plan, which provided UOES options for fielding the initial US site as early as 1997, was not approved and funded by the Congress because of a lack of a perceived imminent threat to the United States. Given the Gulf War experience, the existing and growing threat to our forces abroad, friends and allies is undeniable—hence, Congress approved the early UOES option for THAAD.

sector, and SDIO's management style assured the civil and commercial sectors gained immediately from these investments.

It is not too much to suggest that SDIO provided the single greatest stimulus to aerospace R&D since the Apollo program. Indeed, SDIO adopted the management style that was routine during the heyday of space missions in the mid-1950s to the early 1970s. SDIO avoided problems associated with diffused responsibility and a lack of clearly defined goals that have plagued aerospace efforts during the past 20-years.

Technology Benefits

In 1983, the Fletcher Panel, chaired by former NASA Administrator James Fletcher, reviewed the feasibility of Ronald Reagan's challenge to the technical community and concluded that "powerful new technologies are becoming available that justify a major technology development effort offering a future technical option to implement a defensive strategy."[18] The Fletcher Panel recommended a 5-year research and development plan, estimated to cost $26-billion,[19] to push the key technology areas that are critical to building effective defenses—particularly in the context of defending the United States against massive missile attacks from the former Soviet Union. That plan served as SDIO's starting point.

Throughout the past decade, multiple approaches, many using different technologies, have been demonstrated for each of the critical missile intercept functions. Breakthroughs in miniaturization and weight reduction have increased the performance and reduced the cost of ground-based systems, high speed aerodynamic and exo-atmospheric vehicles, and spacecraft. Concerted efforts in developing manufacturing processes and improving producibility have made it practical to produce economically advanced components in quantity.

To reach this point, most of the $30-billion SDI investment has funded major hardware assembly and field experiments necessary to prove available technologies can be integrated together to operate as an effective defensive system in a hostile and reactive environment. This absolutely essential aspect of the SDI development process will be discussed in more detail in the next section, which gives an accounting for the $30-billion and seeks to rectify a number of misperceptions about the conduct of the program over the past decade and the maturity of demonstrated technologies.

The remainder of this section briefly discusses a few of the most important consequences of SDI's investment in the cutting edge technologies in several areas identified by the Fletcher Panel and other SDI studies as high leverage, or pay-off, areas for investments. The bottom line is that these cutting edge activities have provided key hardware and

[18] Specific "powerful new technologies" emphasized by Fletcher included BMC3, infrared sensors, hit-to-kill kinetic energy interceptor front- ends, and directed energy systems.

[19] As noted earlier, the actual appropriations for FY1984-89 was considerably less than (when inflation is accounted for, about half of) the $26-billion called for by the Fletcher Panel.

software innovations, demonstrated them in major hardware integration and field testing programs; such innovations are now being included by contractors in their bids and performance on major defense acquisition programs; and continuing research promises major innovations still to come—many of which also will be exploited by other defense programs and in the civil and commercial sectors.[20]

Electronics. SDIO investments in electronics (the building blocks of computers, guidance systems, sensor readouts, satellite control modules, etc.) have enabled major improvements in capability while reducing size, mass and cost of a variety of key system elements by factors of 20 or more—several new electronic materials promise even greater savings.

Silicon-on-sapphire radiation hard electronics is one example of an area where SDI investments are leading to promising devices and components for future military, civil and commercial satellites that will be exposed to large radiation doses over extended periods of time.

Another interesting example is the development of diamond film. With its $40-million investment in diamond film technology since 1986, SDIO is singularly responsible for fostering a new US industry with the potential of a multi-billion-dollar global market after the end of this century. In military systems, diamond semiconductors promise to outperform silicon, gallium arsenide, and even silicon carbide in almost every way: switching speed, temperature tolerance, breakdown voltage, radiation hardness, power output, ruggedness, etc. Because of diamond's large energy band-gap and other physical properties, diamond electronics have extremely high switching speeds. Also of particular note is that diamond is inherently more radiation-hard than other electronic materials—roughly 4-times the hardness of gallium arsenide.[21]

Sensors and Detectors. SDIO investments in sensors and detectors have produced major improvements. In particular, large (256x256) pixel arrays carrying over 65,000 individual photo-detectors are now manufacturable for mercury cadmium telluride (HgCdTe) and indium antimonide (InSb) focal plane arrays, enabling high signal-to-noise long wave infrared measurements at more practical and less expensive operating temperatures—and these sensors are now being exploited by industrial teams bidding on major defense acquisition programs. Over the past 8-years, the cost per pixel has been

---

[20] A more complete summary of "spin-offs" is discussed in the annual *SDI Technology Applications Report,* most recently published in August 1992. This report discusses spin-offs according to the categories of health; the environment; energy; consumer products; computers; communications; industry; military, security and aerospace; and scientific research. Also, many technologies developed by SDI were identified by the Synthesis Group led by former astronaut Tom Stafford as being crucial for achieving the goals of President Bush's Space Exploration Initiative. (See *America at the Threshold, Report of the Synthesis Group on America's Space Exploration Initiative*, US Government Printing Office, May 1991.)

[21] Diamond also has extraordinary features as a hard, erosion-resistant coating. For example, as a coating for sensor windows on high speed rockets, diamond is optically transmissive while being perfectly capable of handling high heat loads. With its unequaled physical hardness and a coefficient of friction less than Teflon, thin-film diamond coatings make cutting tools and bearings virtually indestructible.

reduced by a factor of 20 (and in some cases 100)—and there are prospects for another order-of-magnitude cost reduction.[22]

New InSb sensors give images of such quality and resolution that ground-based telescopes with 1-meter apertures can detect small rockets burning at distances of 2000 kilometers. Also, the 256x256 InSb detector has been integrated with a camera and cryocooler in a 3-pound space qualified package; and the US company that manufactures this technology has reduced the cost from $1M to $35K per unit and has already sold over $20M worth of these cameras in the commercial market.

In the future, four new SDIO-pioneered sensor types promise to further revolutionize the capability and cost of infrared detection for both military and commercial applications such as home protection, non-destructive evaluation on assembly lines, environmental monitoring, auto engine exhaust measurement, etc.

SDIO has also significantly improved adaptive optics to enable effective propagation of laser beams through the atmosphere. This same technology is now being applied on astronomical telescopes to correct for atmospheric turbulence which has long been the limiting factor in ground-based telescope performance—enabling ground- based telescopes to perform as if they were in space. A SDI-developed adaptive optic system has been successfully fitted to the Mt. Wilson 60-inch telescope in California; and that system has already taken images that approximate those that the $3-billion Hubble Space Telescope will be able to take after it is repaired.[23]

With regard to guidance and control, inertial measurement units (IMUs) that weighed over 5-pounds and cost about $100,000 a copy 10-years ago will shortly be replaced with more accurate SDI-developed IMUs that cost about $5000 a copy and weigh 1/4 pound—in a hardened configuration. And by the mid-1990s micro-mechanical

IMUs weighing less than half-an-ounce may be available at $500 a copy. A new cryogenic resonant fiber optic gyroscope will weigh less than 30 grams and have extremely low noise and drift rate. An innovative star tracker with wide field-of-view has just been integrated with a space platform and, with its associated advanced silicon charge-coupled device (CCD) detector, weighs less than half a pound. IMUs are, of course, a critical enabling technology for an entire spectrum of high-performance DOD platforms.

Many of these sensor and detector systems will be flown on CLEMENTINE, a SDIO-NASA joint deep-space probe which will expose such very recent innovative technologies to space radiation environments and gather unprecedented fundamental science data on the Moon and a near-Earth asteroid—satisfying many civilian space science objectives as well as performance-validating hardware that may be used in a wide variety of military applications. For a mission cost of only $50-million, CLEMENTINE is exploiting SDI

---

[22] Such sensors are critically important in assuring that the defense can stay ahead of the offense in the critical measure-countermeasure competition in which an effective discrimination capability is essential to the viability of, for example, exo-atmospheric interceptor systems.

[23] R. Jastrow and S. Baliunas, "Mount Wilson: America's Observatory," *Sky and Telescope*, March 1993, pp. 18-24.

technology and extending the approach of the earlier Delta Series of space experiments to establish a new standard for technically ambitious, low-cost, rapidly-executed, deep-space missions.

SDIO has also exploited the dramatic reductions in weight and cost of SDIO-developed sensors to demonstrate the feasibility of low-cost, low earth orbit space sensors in its Miniature Sensor Technology Integration (MSTI) program. The full-up MSTI demonstrators may, in addition to providing useful data for designing other SDI systems, also serve as a foundation for advanced civil and commercial space platforms upon which can fly a diverse set of high-performance payloads, including remote sensing, communications, scientific instruments, etc. During the past 2-years, SDIO has been exploring possible joint missions with Russia, France and the United Kingdom to exploit this technology in a dual use context—to support ecological monitoring and possible development of the Global Protection System proposed by Russia's President Yeltsin.

Computers. SDIO investments over the past decade have realized for defense applications the same reductions in size and costs, and increases in capability, that is evident in present-day personal computers. In addition, SDIO investments have produced major improvements in novel computers and signal processors that will be exploited by SDI, other military systems, and commercially. For example, the RH-32 (radiation-hardened 32 bit) processor, which is nearly completed, represents an order-of-magnitude increase in capability and reduction in weight from the best of its predecessors.

Still in development are processors that will revolutionize both space and terrestrial computing. For example, the Wafer-scale Associative String Processor (WASP), a complete computer on a 4-inch circle of crystalline silicon, won two DARPA image recognition competitions against the best of DARPA's own very impressive research computers. It is naturally reconfigurable and fault tolerant, meaning that some of its several thousand micro-processors can fail and the computer will continue to function, losing only a small percentage of its speed—with no human intervention necessary in the reconfiguration.

SDIO's artificial neural network (ANN) program has developed silicon chip sets which mimic the circuitry of the human brain, permitting special classes of processing to be done more rapidly than on standard parallel processors, e.g., image recognition, multiple-target tracking, and weapon-target assignment. A recent demonstration showed that the ANN was 100,000 times faster at completing weapon-target pairings than a state-of-the-art parallel processor.

The Nation's first general-purpose hybrid optical/electronic computer will emerge from SDIO's Photonic Computing Program in a few months—accelerating the advent of an era when optics and light will begin to supplant wires and electronics in lighter, less power-consuming, faster computers.

Exploitation of these cutting edge technologies will enable highly autonomous, very effective discriminating interceptor systems that will greatly reduce the logistics support requirements of current generation systems. And there assuredly will be many spin-off applications in the civil and commercial sectors, as well.

Propulsion. SDIO's focus on reducing the size and weight of all components of effective defensive systems has led to major reductions in the size and weight of rocket motors for interceptors. Representative of these advances is the late-1980s state-of-the-art Advanced Liquid Axial Stage (ALAS) axial engine (being used in, for example, in the Light-weight Exo-Atmospheric Projectile (LEAP) program), which is less than 1/10 the weight of the 1970s vintage technologies—with a corresponding reduction in cost. In addition, recent miniature divert propulsion motors fabricated by SDI-funded rocket scientists are 35-percent smaller than their late-1980s predecessors and also permit a 30-percent reduction in total interceptor weight since smaller amounts of higher performance fuels can be used.

SDIO's recent purchase of Russian electric thrusters is catalyzing US industry to make advances in the longevity and performance of such engines for military, civil and commercial space applications. For space missions of a non-time-urgent nature, orbital transfer and inclination changes can be accomplished for a small fraction of the weight and volume (and cost) taken up by today's solar-powered arcjets and Hall thruster propulsion systems.[24] With the Sun providing an inexhaustible supply of electricity, satellites can use these small engines to change orbits or to make up for orbital drag, enhancing and prolonging satellite life by many years and saving billions of dollars.

In the past two years, SDIO has invested $60-million in the Single Stage Rocket Technology (SSRT) program to design, fabricate and flight-test a low-cost reusable rocket, designed to minimize the requirements for costly, manpower-intensive launch support operations while also re-cycling the very expensive rocket systems themselves. If successful, this program will pay for itself many times over in reducing the costs of future SDI experiments. A milestone was reached on August 18, 1993, when SSRT made its very successful initial flight—the rocket lifted some 150 feet vertically, moved to the side some 350 feet and then returned softly to the ground—retaining a vertical orientation for the historic 60-second flight. The objectives of follow-on technology exploitation programs with orbital applications are nothing less than to revolutionize the US space launch industry and to retrieve world leadership in space launch services for the United States.

Communications. SDIO investments since 1984 in a free-space laser communications project have produced a 20-pound optical transceiver with wide field-of-view acquisition and narrow field-of-view transmission capability, enabling lower power highly jam-resistant communications systems. This system is now entering the field testing stage, intended to demonstrate the world's first high data-rate laser communications crosslink. The Air Force is also eager to exploit this SDI technology for rapid downloading of data (approaching data transfer rates of a billion bits per second) from one AWACS aircraft to another during "changing of the guard" procedures—having identified this as a significant issue during Desert Storm.

---

[24] About 25-percent of the weight of a geosynchronous telecommunications satellite is devoted to propulsion systems for orbit maintenance

In radio communications, SDIO's emphasis on moving transmission frequencies from the microwave up to the millimeter wave regime will potentially open new regions of the electromagnetic spectrum for communications and enable major hardware improvements. Communications at 300 GigaHertz up to 1 TeraHertz will reduce the size of satellite antennas by an order-of-magnitude from today's 22-60 GigaHertz systems. To achieve the high switching speeds necessary to move into this regime, SDIO has been sponsoring a major effort in superconducting digital electronics, which switch at clock rates up to 1 TeraHertz—a trillion switching operations every second. This is another high technology industry that has arisen primarily because of SDIO advocacy and support—an industry that will have spin-offs of superconducting electronics to the developers of commercial communications systems and high-speed main-frame computers, helping to keep the United States at the forefront in future telecommunications and processing markets.

Power. Over the past decade, the SDIO power community made major gains in understanding the generation and use of electricity in space, quantifying its improved knowledge with data from several highly successful Space Power Experiments Aboard Rockets (SPEAR) experiments and publishing a spacecraft design book to guide future engineers in managing high voltage and current on future space missions.

Solar cells from SDI research are increasing the efficiency of photovoltaic systems from around 10-percent, where it had hovered for years, to over 30-percent, using novel materials and new solar concentrator designs. When transferred to industry, these advances could significantly hasten the advance of solar power.

SDIO has achieved a four-fold reduction in size and weight of energy storage batteries used to power satellites during the orbital eclipse period. On the civil/commercial side, the resulting technology is a leading contender for use in emerging electric automobile applications. Similarly, SDI research has contributed to a 250-fold reduction in the size and weight of capacitors to store comparable amounts of electrical energy.

Finally, the recent SDIO purchase of the Russian TOPAZ II thermionic nuclear reactor, and continuing joint US-Russian research to exploit this technology that the Russians have already successfully flown in space, will for a relatively minor investment save US industry something in the neighborhood of a billion dollars and a decade of research. The Russians have long used this technology for military applications. Civil space exploration missions, perhaps conducted jointly with Russia (among others), could also exploit this technology. In any case, by "leapfrogging" the development process through this joint effort, US industry could rapidly establish a domestic source capable of producing space nuclear power generators to support either activity.

Closure. Aggressive SDI investments over the past 10-years have resulted in great leaps in capability and manufacturability for key defense system elements, with major reductions in cost, mass, and size. The sustained, focused SDI program challenged the US scientific and engineering communities to attain performance levels that would have normally taken decades under standard R&D investment strategies—and a significant

portion of the accelerated progress is in technologies which have multiple military, commercial and civil applications.

SDI technology investments support many of the 20 DOD critical technologies, essential for meeting future military needs, as well as key economic driver technologies in the commercial sector, as identified by the Department of Commerce. Thus, it is not surprising that SDI innovations promise support to other programs in the military, civil and commercial sectors.

SDIO has documented 97 commercial products which have emerged directly from its technology programs, 26 patents granted for commercial applications of SDI technology, 19 new spin-off companies founded to commercialize new products based on SDI technology, and 6 initial public offerings of stock in the last year by small companies productizing SDI technology.

It is ironic that now Congress is at the same time: 1) starting new civilian technology projects, bolstering other existing defense R&D, and encouraging closer links between military and civilian technology efforts and 2) imposing budget constraints that threaten to dismantle the tried-and-proven SDI technology program that rightly should be highlighted to serve as a model for these new initiatives. SDIO's cutting edge technology programs have an impressive track record illustrating how to assure our 21st-century military retains its traditional technological advantage—while also exploiting dual-use R&D and emphasizing the two-way transfer between the defense, civil and commercial sectors. This very constructive R&D leadership know-how should be exploited, not destroyed.

HOW THE MONEY WAS SPENT

In reviewing the programmatic advances of the past decade while considering whether the $30-billion investment in SDI has been justified, it is important to set the record straight on several misperceptions of how the $30-billion has been invested. (See Figure 2.) Then it will be easier to discuss the evolution of system concepts.

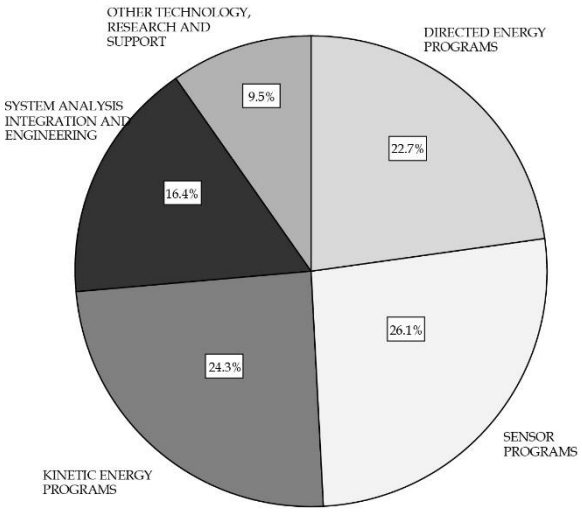


Figure 2. SDI Investments for 1983-1990

Directed Energy Programs

There is a general misperception that the bulk of the SDI program was directed toward work on Directed Energy (DE) systems, such as lasers and particle beams. This misperception conveniently supports the "Star Wars" caricature that has so well served the strategy of those who have wished to argue that an effective defense is a fantasy. In fact, between 20 and 25-percent of the total SDI funding has supported DE applications—and a very small portion of that investment has been on the x-ray laser, a favorite whipping-boy to which skeptics and critics have devoted entire books of ridicule and exaggeration.[25]

Figure 3 compares DE and total SDI funding histories for FY1985-93, which illustrates the sharp reduction in DE funding following the refocusing of the SDI program in 1991 (and the sharp increase in total funding after the Gulf War while DE funding continued to shrink). It should be understood that this reduction in funding for DE programs was not

[25] For example, *Teller's Wars—The Top-Secret Story Behind the Star Wars Deception* (Simon and Schuster, 1992) obviously presents only one side of a technical disagreement (the one opposing investments in the x-ray laser, of course) and uses it to ridicule SDI. The implied suggestion, widely amplified by SDI critics, is that all of SDI was and is a fantasy. Without debating whether the technical proponents of the x-ray laser have merit (they do), it is important to emphasize that President Reagan's instructions included directions that SDI was not to involve nuclear weaponry. In any case, less than 0.2-percent of SDIO's funds were spent researching the x-ray laser—and that work emphasized survivability matters because extensive Soviet research on the x-ray laser might someday have challenged non-nuclear SDI systems under development. It is remarkable that so much media attention has been given to such a minor aspect of the SDI program.

because of any technical failure—indeed the programs have generally been quite successful from a technical perspective.

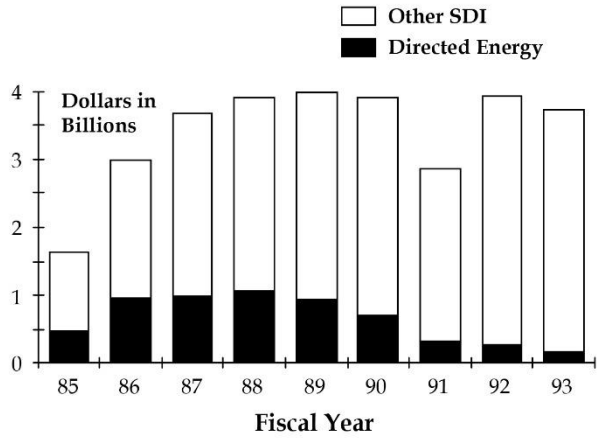


Figure 3. Directed Energy Funding Versus Total SDI Funding

In spite of the general perception that DE system applications can be realized only in the distant future (no doubt, a consequence of the "Star Wars" imagery), the truth is that the technology would support near-term DE deployment options. DE development has been severely restrained by budget realities—for the past three years Congress has reduced support for DE funding to levels below what the nation was spending on this technology before SDIO was formed in 1984. See Figure 4.

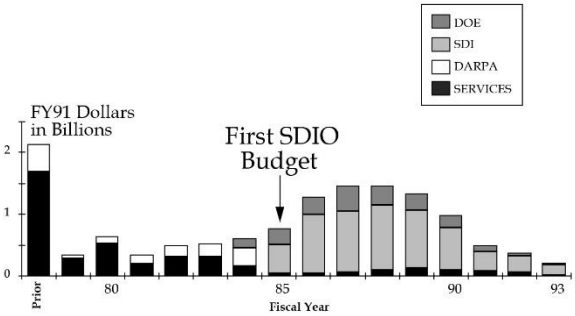


Figure 4. Directed Energy Funding History

Source: Testimony by Ambassador Henry F. Cooper, e.g., before the Committee on Appropriations, US House of Representatives, April 7, 1992.

It is also true that there were large persistent DE funding shortfalls as compared to the President's budget requests. And when Congress appropriated insufficient funds to sustain a planned research and development program, schedule delays and cost growth inevitably followed. This has been a chronic problem for SDI, and many other DOD

programs. Even so, as the GAO has reported, many original objectives in the FY 1984 SDI plans for DE technologies have been met.[26]

With the resources available, research is continuing to seek to carry SDI-development of DE technologies forward with a number of important applications in mind. The Air Force is exploring the possibility of using airborne lasers for several applications; possible cooperative research with Russia on solid state lasers (an area where they are the world's leaders) promises possible industrial applications such as in welding and material processing applications; and the Department of Energy is exploring ways to use Neutral Particle Beams to transmutate long-lived radioisotopes contained in nuclear waste into short-lived isotopes—easing nuclear waste storage problems.

Kinetic Energy Programs

There is a similar story for Kinetic Energy (KE) system applications—which were being studied before the advent of SDI and which were supported by about 25-percent of the SDI appropriations during the past 10-years. However, there is a general agreement, even among SDI critics and skeptics, that KE systems can be built in the near future—so there are much better near-term budget prospects for continued KE system development than for DE system applications.

Apparent funding support for theater missile defense (TMD) applications should enable effectively managed TMD acquisition programs. But severe budget constraints now being imposed on efforts to develop a US homeland defense will undoubtedly cause inefficiencies, cost growth, and major schedule slips in any seriously attempted acquisition program. Such inefficiencies imposed by funding constraints in no way reflect failure of the SDI/BMD KE development activities of the past decade.

Proof-of-principle demonstrations that such KE interceptors can be made to work were provided at the outset of the SDI program in 1984 and 1985 by the Homing Overlay Experiment (HOE) and the F-15 ASAT successful intercept of a satellite in low Earth orbit. In both cases, which exploited pre-SDI technologies in programs initiated in the late 1970s, there were successful intercepts in space of targets traveling at speeds of about 7 km/sec—the velocity of an Intercontinental Ballistic Missile (ICBM) and substantially faster than a Theater Ballistic Missile (TBM). The contributions of SDI since these proof-of-principle demonstrations, repeated with more recent vintage technologies during the ERIS tests in the early 1990s, now make it practical and affordable to use modern KE interceptors in building an effective defensive system against ballistic missiles of all ranges.[27]

---

[26] *Ballistic Missile Defense: Information on Directed Energy Programs for Fiscal Years 1985 Through 1993*, US General Accounting Office Report to the Chairman, Legislation and National Security Subcommittee on Government Operations, US House of Representatives, GAO/NSIAD-93- 182, June 1993.

[27] Notwithstanding the allegations propagated recently by the New York Times, these experiments were not influenced by any deception program intended to fool the former Soviet Union, the Congress or anyone else. They were conducted in the spirit acknowledged by a 1988 Office of Technology Assessment

For example the HOE interceptor, exploiting early 1980s technology, weighed over a ton, whereas today's technology (which exploits the developments summarized in the previous discussion of the technology benefits of the SDI program) makes feasible much more capable interceptors weighing a few tens of pounds. Modern interceptors, now sufficiently mature to enter the demonstration and validation (DemVal) phase of the formal DOD acquisition process, incorporate sophisticated miniaturized sensors and computers, permitting autonomous endgame maneuvers to discriminate and intercept without guidance from a centralized battle manager. These characteristics permit light and mobile, or transportable, wide-area defensive systems with substantially reduced logistics requirements, and perhaps most importantly, open BMC3 architectures that can be easily adapted, modified, tested and exercised on a global basis.

These technological advances, as they have arisen over the past decade, were incorporated into various system architectures that were conceived and evaluated during the first several years of the program. Although the variety of system concepts considered (as technological advances were incorporated) led to the perception of programmatic instability, technological innovation substantially improved prospective system capabilities and reduced estimated costs for a given level of system capability.

In 1988, the creators of the Brilliant Pebbles concept were the first to exploit these advances to design a space-based interceptor system which, for the first time, gave real near-term promise of meeting the so-called Nitze Criteria of being survivable from direct attack and cost-effective at the margin in the face of attempts to exhaust the defensive system by increasing the number of offensive warheads it was designed to defeat.[28] Subsequently, these Brilliant Pebbles innovations (which cost just over $1-billion, or about 3-percent of the total SDI funding to date) were incorporated into and benefited all system architectures, including those for theater and US homeland defenses. Furthermore, these technological developments are generally available and will inevitably be exploited to great advantage by other military, civil, and commercial interests.[29]

(OTA) in-depth review of SDI experiments conducted until that time. As stated in a footnote on page 162 of OTA's May 1988 Report to Congress (*SDI: Technology, Survivability and Software*), "These comments on the SDI validation experiments should not be considered as criticism of SDI management. These are all sound experiments, properly designed to collect bits of information necessary on the path to developing a working system. At this time we have no major element of a non-nuclear ballistic missile defense system which has been tested in a system mode with equipment suitable for actual operation." Indeed, the first such tests will be conducted as part of Congressionally-approved programs now in the formal DOD acquisition process.

[28] These criteria were stipulated as a necessary condition for the deployment of a defensive system in the FY1986 Defense Authorization Act, and repeatedly referred to in subsequent Congressional hearings. While arguably of critical importance in building defenses to counter a determined adversary, there is no particular reason to require such a condition in the current geopolitical conditions where we are seeking cooperation with the former Soviet Union, arguably the only potential adversary that could compete in an offense-defense race with the United States.

[29] For example, the Space Marketplace Supplement to the June 25, 1993 edition of *Aerospace Daily* (p. 525) contained an article, "Brilliant Pebbles Inspired First Commercial Sensing Venture," which reported

Sensor Programs

Over 25-percent of the SDI funds have been invested in sensor applications and to support ballistic missile phenomenology experiments to develop a viable discrimination capability, which is critically important to assuring that any theater or US homeland defense can remain viable in the face of offensive countermeasures. With one exception, every investment made in SDI sensor programs continues to contribute to on-going viable DOD acquisition programs.

Because of the critical requirement to provide the necessary data to prove that the discrimination problem can be solved, almost 70-percent of the sensor account has been dedicated to gathering and evaluating target, clutter, and space or atmospheric background data. This research was (and is) necessary to support defensive systems of all basing modes and was initiated as a major investment activity in 1984, before specific system concepts were seriously pursued.

The remaining 30-percent of the SDI sensor funds were devoted to system applications—with space-based sensors receiving about $2 for every $1 spent on ground based sensors.

The largest single sensor system investment (about 3-percent of the total SDI investment) was in the Boost Surveillance and Tracking System (BSTS), which was derived from the Air Force's Advanced Warning System program in 1984—and which is now continuing in the Air Force's Follow-on Early Warning System (FEWS) program.

The Space Surveillance and Tracking System (SSTS) originated from the Air Force's Space Surveillance System in 1984 and has evolved into the Brilliant Eyes system, which will provide improved tracking and discrimination data for both theater and US homeland defenses, as well as accomplish most of the Air Force's wide-area space surveillance missions. The combined investment in SSTS and Brilliant Eyes has constituted under 10-percent of the SDI sensor budget.

Of the 10-percent of the SDI sensor funds spent on ground-based sensors, about $2 was spent developing the Ground-Based Radar (GBR) for each $1 spent on the Ground-based Surveillance and Tracking System (GSTS). While the GBR remains an integral part of both theater and US homeland defense architectures and acquisition programs, the GSTS, which was created in the context of the Phase I architecture, is no longer a priority objective after the Cold War.

---

that WordView Imaging Corporation, financed with venture capital from Silicon Valley, has the first ever Commerce Department license to launch in 1996 and operate two remote sensor satellites with 3-meter or better resolution, exploiting the same technologies and innovative design concepts that made Brilliant Pebbles a cost-effective concept.

Systems Analysis, Integration and Engineering

Over 15-percent of the total SDI investment, went to support essential systems analysis and architectural studies, system engineering and integration, and system test and evaluation activities. Systems analysis and architectural studies, which have been carried out throughout the entire life of the SDI program, have provided the basis for evaluating the potential of various system options that could be supported by the rapidly evolving technological base. These study efforts have provided the intellectual basis for prioritizing numerous research options on the one hand and, on the other hand, for planning serious acquisition programs that could realize the timely benefits of rapidly evolving technologies—for systems to defend the US homeland and our troops, allies and friends.

Although this activity sometimes resulted in the perception of program instability because of highly publicized changes in direction, it, in fact, was very effective in assuring that cutting edge technologies were directed toward high-payoff system needs—and when R&D succeeded in meeting those needs, the results were rapidly incorporated into serious acquisition planning. Rather than leading to programmatic inefficiencies, as has often been charged,[30] these architectural changes have more than paid for themselves by producing major improvements in the operational effectiveness of evolving system concepts and substantial reductions in cost estimates for a given effectiveness. For example, Figure 5 illustrates dramatic reductions in formal DOD cost estimates associated with the evolution of the Phase I architecture and the 1991 redirection of the SDI program by President Bush. The US-homeland defense cost estimates are reduced by almost a factor of 5.

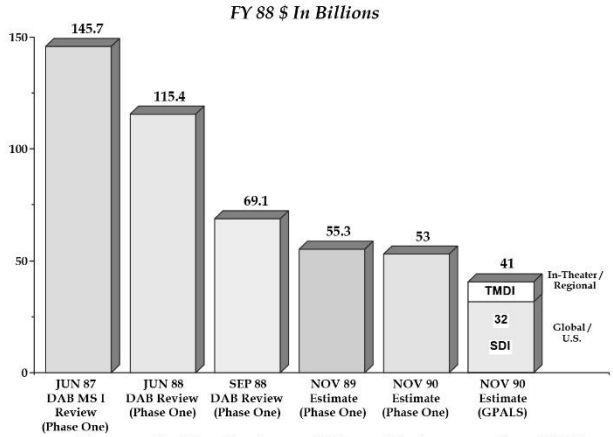


Figure 5. Evolution of Cost Estimates for SDI Acquisition Programs

Source: Testimony by Ambassador Henry F. Cooper, e.g., before the Committee on Government Operations, US House of Representatives, May 16, 1992.

[30] See, for example, discussion in the General Accounting Office Report, *Ballistic Missile Defense: Evolution and Current Issues,* GAO/NSIAD-93-229, July 1993—and references to earlier GAO reports.

Perhaps the most important single innovation was Brilliant Pebbles, which in 1990 became the space-based interceptor component of the Phase I architecture. Because of Brilliant Pebbles' autonomous operational capabilities, its inclusion reduced the cost estimate for the space-based interceptor component by about $20-billion—and Brilliant Pebbles would be far more survivable, testable, and reliable than its predecessor space-based interceptor system.[31] Furthermore, the technological and architectural innovations that made Brilliant Pebbles viable have been exported to all other SDI systems in an outstanding example of the "open-system" architecture that has driven the personal computer revolution to such a history-making rate of advances. This approach, novel for DOD systems, will lead to less expensive and more robust theater and US homeland defensive systems.

Systems engineering and integration is the glue that holds any serious acquisition program together—and it is far more important for the complex "system-of-systems" called for by the Missile Defense Act to defend the American people, our forces abroad, and our friends and allies around the world. At the heart of making such a system-of-systems viable is a sound Battle Management Command, Control and Communications system, fully tested and demonstrated via rigorous system test and evaluation programs. To accomplish this objective, SDIO has made major investments in the National Test Facility in Colorado Springs, Colorado, numerous test beds around the nation (and abroad), and numerous simulation experiments. If the Nation is to realize the potential benefits of the $30-billion investment, these activities must succeed. Thus, a major investment on this aspect of the SDI program can be criticized only by those who are not serious in seeking to acquire effective defenses against missile attack.

Other Technology, Research and Support

About 10-percent of the total SDI investment has been on research and development for survivability of defensive system elements, lethality (or target kill) technology, advanced power sources for SDI sensors and weapons, innovative launch capabilities, innovative science and technology, advanced materials research, and threat and countermeasures research. As discussed earlier, much of this research has enabled (and will enable) system designers to "leap-frog" over key problem areas—and, in addition, have paid for themselves many times over in commercial spin-off applications alone. Survivability, lethality, threat and countermeasures research provides assurance that defensive systems—and many other DOD systems—can remain effective in the face of stressing countermeasures.

[31] Indeed, were it not for political inhibitions regarding space-based defensive systems, even more substantial cost reductions could result from exploiting Brilliant Pebbles technology to provide a US homeland defense sooner and for substantially less money than the ground- based homeland defenses now being pursued—with, we might add, funding inadequate to create a defense for the American people in this decade.

As a consequence of these investments, we are confident that, with the necessary funding, serious acquisition programs can be sustained for both theater and US homeland defenses—and advancing technology can keep the advantage for defensive systems in the inevitable measure-countermeasure competition.

CONVERGENCE ON VIABLE DEFENSIVE SYSTEM CONCEPTS

A high level organization like the SDIO, whose Director had immediate access to and the personal support of the Secretary of Defense, was essential to gaining acceptance of serious ballistic missile defense acquisition programs within the Pentagon's acquisition community.

In his March 23, 1983, speech Ronald Reagan challenged the US scientific and engineering communities to give priority to creating and proving out technologies that could be exploited in developing effective defenses against ballistic missiles—the most dangerous weapons of the modern era. After about four years of research and experimental work, guided by numerous architectural studies, including ones conducted with our allies, SDIO entered a new stage—one moving deliberately toward formal development with the objective of deployment.

In late 1986, architectural studies focused on a "phased approach" to deploy effective defenses in stages with ever increasing capabilities. Phase I would use Kinetic Energy systems as the first step—and that first step was the smallest judged by the Joint Chiefs to be of real strategic significance. Phase II and subsequent phases would lead to ever increasing capabilities, drawing upon continuing SDI technology advances—particularly those based on Directed Energy systems.

By mid-1987, the Joint Chiefs had agreed on requirements for Phase I that had as their primary objective to enhance deterrence by denying Soviet planners confidence that they could execute any successful war plan based on attacking the United States with ballistic missiles. Deterrence was to be achieved by destroying a significant percentage of a massive attack on the United States involving thousands of nuclear weapons.[32]

The Phase I concept was approved at a Milestone I Defense Acquisition Board review in June 1987, and the SDI program entered a new stage with increasing oversight from the Pentagon's formal acquisition bureaucracy. Although the bulk of the SDI research still continued to press forward the state-of-the-art in the technologies that are critical to building affordable and effective defensive systems, the focus of the program shifted to meeting the rigid demands of the Department of Defense system acquisition process. Over the next 3-years, steady progress was made in refining the Phase I system architecture in

[32] In conjunction with achieving the Phase I "deterrence" objectives, the Joint Chiefs called for providing very effective protection to the United States against attacks of limited scope— perhaps with tens or hundreds of nuclear weapons. Here, as in the later GPALS concept, the objective was to destroy all of a limited number of attacking warheads.

directions that increased its survivability and effectiveness—and reduced its cost by nearly two-thirds, as indicated in Figure 5.

Meanwhile, SDI technologists made significant strides forward, particularly in areas that increase the cost-effectiveness of space-based systems. As mentioned earlier, Brilliant Pebbles, as it emerged in 1988, revolutionized the architectural possibilities—and not only for space-based systems. Brilliant Pebbles enabled a much simplified space-based interceptor system which could operate in an autonomous fashion once authorized by an appropriate authority—and it was clear that the electronics, computers, sensors, etc. that had emerged from the SDI technology programs over the intervening years (and had been first expressed in the Brilliant Pebbles concept) would enable substantial improvements in ground-based systems, as well. The SDIO version of TQM (having SDI managers of rapidly advancing technology, architectural studies, and formal acquisition programs working together in very close proximity) was paying major dividends.

At the same time, the major geopolitical changes then apparent to all had a major influence on refocusing the SDI acquisition efforts. The Soviet threat was shrinking as the Warsaw Pact and then the Soviet Union dissolved. President Bush formally directed that an independent review of the SDI program be undertaken—integrating the impact of changing geopolitical/ geostrategic realities, US arms control objectives, and the prospects of rapidly evolving technologies. He also made clear that he believed that SDI was "more important than ever."

The independent review drew upon studies by the Defense Science Board (among others) and of the possible threats to stability in a "new world disorder" that would undoubtedly challenge US security interests in a regional context—as had been stated in the *President's National Security Strategy for FY 1990*. In particular, a 1988 Defense Science Board report had identified as urgent the growing problem of the proliferation of weapons of mass destruction and ballistic missiles. This problem existed in a number of regions around the world—and while the threat did not immediately extend to the US homeland, it was understood to be just a matter of time before new nations gained ballistic missiles with sufficient range to do so.

The independent review recommended that this problem be addressed directly by an increased architectural emphasis on defending against theater ballistic missiles[33] i.e., on theater missile defenses. Furthermore, since it is very difficult to predict when or where such defenses would be needed, it was recommended that SDI be focused of achieving a continuous worldwide, or global, defensive capability. It was recommended that the US homeland defense acquisition activities be integrated into this global architecture and focused on the Joint Chiefs' objective of defending against attacks of limited scope rather

[33] SDIO had initiated architectural studies concerned with theater missile defenses with several of our allies in 1986 and had sponsored limited associated development activities for several years. Improvements to the Army's Patriot system had been sponsored by the Army (with considerable help from a few highly dedicated Senators and Congressmen) rather than SDIO since Patriot was already in production.

than a massive attack from the then-dissolving Soviet Union.[34] Since it was anticipated that theater missile defenses would have to defend against only a few missiles at a time as well, this recommended new architectural mission area was referred to as Global Protection Against Limited Strikes, or GPALS.

In December 1990, after SDIO and the Undersecretary of Defense for Policy reviewed the independent review recommendations, and after a Congressional initiative increased the Department's theater missile defense programs, Secretary Cheney recommended to President Bush that SDI be redirected to meet the GPALS mission. The President thereupon announced in his January 1991 State of the Union speech:

Looking forward, I have directed that the Strategic Defense Initiative program be refocused on providing protection from limited ballistic missile strikes, whatever their source. Let us pursue an SDI program that can deal with any future threat to the United States, to our forces overseas, and to our friends and allies.

Almost immediately, the wisdom of this new direction was evident as the world watched the Patriot-Scud duels on CNN each evening in mid-winter 1991. SDIO received a major boost from Congress in its deliberations on the FY1992 Defense budget—providing both funding (which more than recovered from the major FY1991 cuts shown in Figure 3) and direction in the Missile Defense Act. This unprecedented Act, with a sense of urgency, directed development for deployment of both theater and US homeland defenses. With that mandate, SDIO pressed the Pentagon bureaucracy throughout the Spring and Summer of 1992 for streamlined acquisition programs to obtain both theater and US homeland defenses as soon as technically feasible—and with considerable success, as discussed earlier.

In achieving this success, a number of obstacles had to be overcome in a risk-adverse acquisition bureaucracy wedded to the security of meeting administrative milestones, one seemingly: oblivious to the Congressional mandate or the directions of the Secretary of Defense; ignorant of the potential of the cutting-edge technologies to achieve design objectives at reduced costs; committed to sustaining ongoing approaches and programs; and hostile to the innovative design and management concepts being pursued by SDIO.[35] Nevertheless, SDIO persevered and ultimately an agreed acquisition strategy and

---

[34] While it was generally agreed that the changing geopolitical environment would make a massive attack out of the former Soviet Union very unlikely, the growing and apparent instabilities in the former Soviet Union increased concern about the possibility of an accidental or unauthorized launch of one or some of the missiles carrying these nuclear warheads. Consequently, defending against limited attacks was adopted for the GPALS mission. Given that a single submarine commander could arguably gain and exercise control of the 100-200 nuclear weapons under his immediate command, this was assumed as the basic threat size against which a high degree of protection would be sought.

[35] For example, there was considerable resistance to proceeding with the Theater High Altitude Area Defense (THAAD) system on an accelerated schedule, in spite of explicit guidance from the Congress and publicly stated support from the Secretary of Defense and the Chairman of the Joint Chiefs—not to mention common sense, after seeing the need demonstrated during the Gulf War. Even providing a meaningful set of requirements was difficult—and a major debate was needed to gain approval of an acquisition strategy that planned for the possibility of fielding prototypical hardware early.

associated programs responsive to the Missile Defense Act were successfully staffed through the acquisition bureaucracy from the bottom-up, approved by the all of the Defense acquisition principals, and transmitted to Congress in a June 1992 report. Defense Secretary Cheney's cover letter indicated his directions to the Department that these plans to implement the Missile Defense Act be executed as a "top national priority."

Regrettably, leaks to the press while these plans were being formulated exaggerated the programmatic and technical risks of fielding the initial site of a US homeland defense in the mid-1990s—creating considerable Congressional confusion and hostility to these plans even before they were completed. Thus, they were "dead on arrival" and SDIO's FY1993 budget request was severely cut, causing significant programmatic turbulence, delay and cost growth in what, a year before, had been a Congressionally-mandated program to develop a US homeland defense. Substantially increased budgets were approved for the theater defense programs; so Congress sustained viable acquisition programs for defenses to protect our troops overseas and our friends and allies.

As the SDI baton was passed from the Bush to the Clinton administration, substantial SDI budget increases were proposed to support acquisition plans modified to move ahead as rapidly as feasible with both theater and US homeland defenses, relative to the FY1993 Congressional cuts. Since then, Defense Secretary Aspin has renamed the SDIO as the Ballistic Missile Defense Organization (BMDO) and reduced its previously planned outyear budget by about 50-percent.[36] The top priority theater missile defense programs can remain viable with the acquisition strategies developed over the last several years, provided Congress provides sustained support. However, with the indicated reduction in the level of funding, a new acquisition strategy will be required to sustain any meaningful development of a US homeland defense.

CLOSURE

The SDI program has repeatedly run the political and bureaucratic gauntlet, survived and even prospered thus far because of high-level attention and support. Had not the authors the status that came from reporting directly to supportive Secretaries of Defense, armed with a repeatedly-updated Presidential mandate, the program would have sunk under the weight of the DOD acquisition bureaucracy, whose impeding efforts were egged on and exploited by external political opposition. With that support, we have passed on the technologies and plans to support viable acquisition programs—if the Administration advocates them and if Congress funds them.

The SDIO/BMDO program is now more mature than it was on our watch and, as discussed above, many important milestones have been met. Perhaps it can now proceed successfully as a more traditionally managed program—particularly given Defense

[36] Based on June 1993 briefings to Congress by BMDO Acting Director MG Malcolm O'Neill, e.g., *Ballistic Missile Defense, Information for the Committee on Armed Services,* a briefing to the Subcommittees on Military Acquisition and Research and Development, 10 June 1993.

Secretary Aspin's stated support for ballistic missile defenses and the interest of Deputy Secretary Perry and Undersecretary Deutch in streamlining the acquisition process for all DOD programs. We wish them and our successor well.