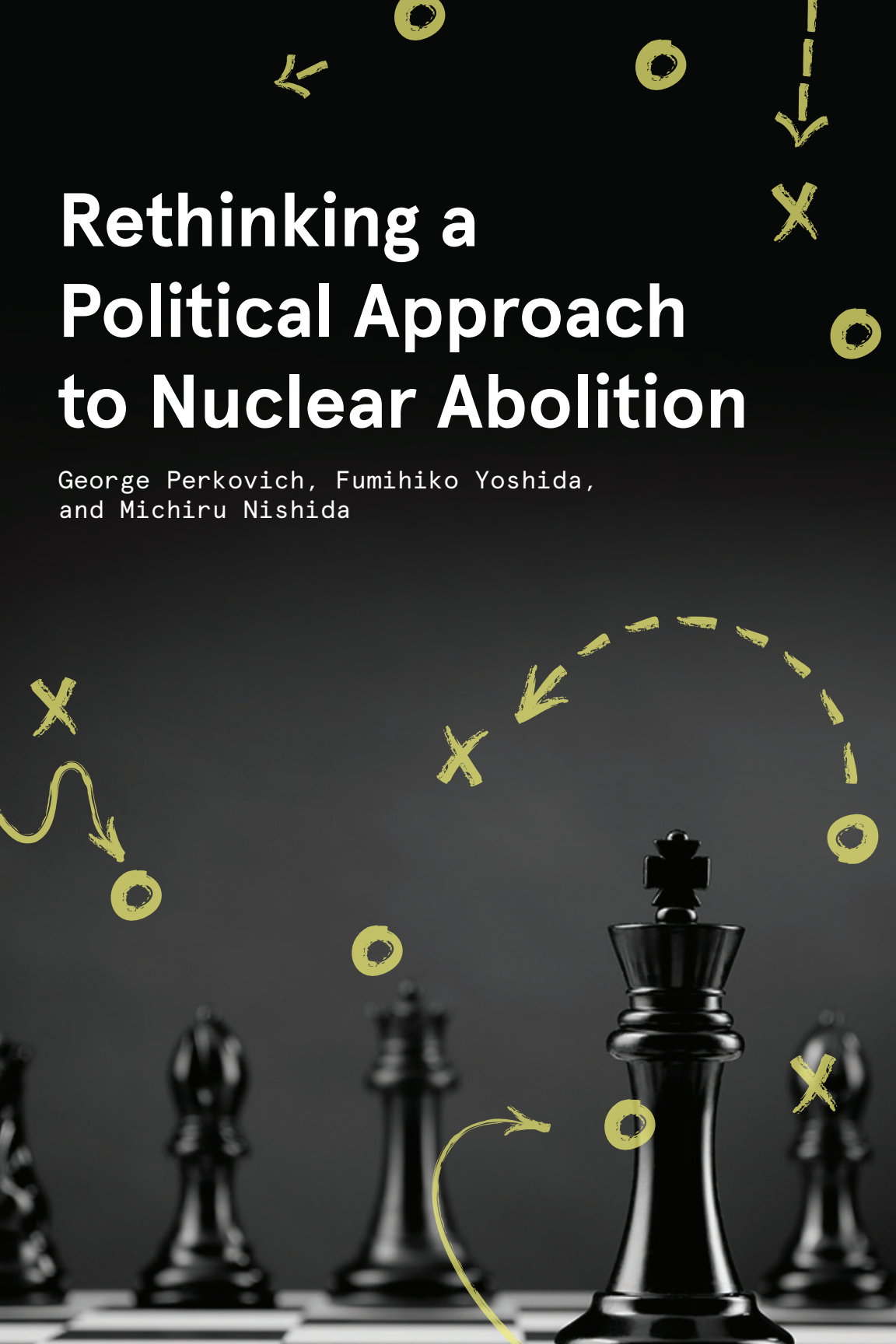
Rethinking a Political Approach to Nuclear Abolition

George Perkovich, Fumihiko Yoshida, and Michiru Nishida



CARNEGIE
ENDOWMENT FOR
INTERNATIONAL PEACE

RECNA
長崎大学核兵器廃絶研究センター
Nagasaki University
Research Center for Nuclear Weapons Abolition

Rethinking a Political Approach to Nuclear Abolition

George Perkovich, Fumihiko Yoshida,
and Michiru Nishida

Carnegie Endowment for International Peace
Publications Department
1779 Massachusetts Avenue NW
Washington, DC 20036
P: + 1 202 483 7600
F: + 1 202 483 1840
CarnegieEndowment.org

ISBN: 978-0-87003-005-5

Table of Contents

About the Authors

GEORGE PERKOVICH is Japan Chair for a World without Nuclear Weapons and Senior Fellow at the Carnegie Endowment for International Peace. Among other publications, he is co-author with James Acton of *Abolishing Nuclear Weapons: A Debate*, and author of *India's Nuclear Bomb*. He has been a member of the U.S. National Academy of Science's Committee on Arms Control and International Security, the Council on Foreign Relations Task Force on Nuclear Policy, and was a principal adviser to the International Commission on Nuclear Nonproliferation and Disarmament, a joint initiative of the governments of Japan and Australia.

FUMIHIKO YOSHIDA is the director of the Research Center for Nuclear Weapons Abolition (RECNA) at Nagasaki University and the editor-in-chief of the *Journal for Peace and Nuclear Disarmament*. Previously, he served as deputy director of the editorial board of the Asahi Shimbun and was a member of the Advisory Panel of Experts on Nuclear Disarmament and Non-Proliferation for Japan's Minister of Foreign Affairs.

MICHIRU NISHIDA is a professor at the School of Global Humanities and Social Sciences and the deputy director of the Research Center for Global Risk, both at Nagasaki University. He is also an affiliated professor at the university's Research Center for Nuclear Abolition (RECNA), and a member and senior research adviser of the Asia-Pacific Leadership Network (APLN). Previously, he was a special adviser for arms control, disarmament, and nonproliferation at Japan's Ministry of Foreign Affairs.

Foreword

Where has that dazzling era of the 1990s gone—the time when the Cold War ended, the Soviet Union collapsed, and hopes for nuclear disarmament soared? Today, world politics are in turmoil, nuclear arms expansion is accelerating, and concerns over nuclear proliferation and even potential use are growing. Nearly eighty years after the first use of nuclear weapons, where are we headed? What guiding principle—what North Star—can help us navigate the future?

It is with these fundamental concerns in mind that the Carnegie Endowment for International Peace and the Research Center for Nuclear Weapons Abolition at Nagasaki University have embarked on a joint research initiative. This volume is the culmination of extensive discussions and collaborative efforts.

Looking around the world today, opinions on nuclear weapons remain sharply divided. Some nations continue to rely on nuclear deterrence for security, while others, driven by humanitarian concerns, call for immediate abolition. Meanwhile, authoritarian states such as Russia, China, and North Korea are expanding and bolstering their arsenals, leaving the international community struggling to find a breakthrough in arms control.

Russia's leaders relentlessly practice nuclear intimidation, and North Korea has formalized its nuclear strategy—making the dangers of nuclear conflict feel more real than any time since the Cold War. If this divide between proponents of nuclear deterrence and advocates of nuclear abolition remains unbridged, it will ultimately serve to perpetuate nuclear armament rather than reduce it.

Recognizing this reality, this book calls for a shift in thinking. Rather than clinging to Cold War-era arms control focused solely on numbers—warheads and missiles—it proposes a pragmatic approach that acknowledges the reality of nuclear deterrence while working to reduce both intentional and accidental risks. It also emphasizes raising the threshold for nuclear use based on humanitarian and environmental concerns, limiting nuclear weapons to deterrence roles only. Crucially, it outlines ways for key nuclear states—such as the United States, Russia, and China—to stabilize their nuclear competition and build trust in ways that benefit all parties, not just one side. Drawing on historical lessons, it underscores the vital role of high-level political dialogue in advancing nuclear disarmament. Furthermore, we call upon nuclear abolitionists to engage with the proposed political strategies, lest continued division only serve to hinder progress toward a world free of nuclear weapons.

Our original goal was to create a book accessible enough to be used as a university textbook. If it reaches not only experts but also young people beginning to explore nuclear issues, that would be more than we could have hoped for.

George Perkovich
Japan Chair for A World without Nuclear Weapons, Sr. Fellow
Carnegie Endowment for International Peace

Fumihiko Yoshida
Director
Research Center for Nuclear Weapons Abolition
Nagasaki University

"Both governments were driven by nightmares of inferiority (reinforced by the political influence of the military), not by hopes for gain. . . . The process of acquiring additional arms generated conflict rather than merely reflecting it, and great empathy and political ingenuity on both sides could have moved them toward a common interest."[1]

Executive Summary

At a 2022 summit in Bali, Indonesia, leaders from the Group of Twenty (G20) declared that "the use or threat of use of nuclear weapons is inadmissible." Their statement echoed the 1986 declaration by then U.S. president Ronald Reagan and Soviet leader Mikhail Gorbachev in Geneva, when they said that "a nuclear war cannot be won and must never be fought." At the outset of this book, it is prudent to reinforce their judgment. No one knows if a limited nuclear war can be kept from escalating. And if an all-out nuclear war occurs, everyone will lose devastatingly. It is asking too much of twenty-first-century humans and machines to believe that nuclear deterrence will work without fail over the next eighty years.

Preventing nuclear war and other existential military threats requires nations today to focus more on politics than on the qualities or quantities of weapons. Yet, many participants in nuclear policy debates do the opposite. They demand abolition without addressing political-security conditions, or they advocate force building without fully acknowledging the risks of inadvertent nuclear escalation or making genuine efforts to mutually stabilize relations.

Today—and for the foreseeable future—Russia, North Korea, Pakistan, Israel, and several U.S. allies feel too threatened to consider relinquishing their nuclear deterrence. Meanwhile, the United States feels it needs poten-

tial recourse to nuclear weapons to defend itself and its allies from possible attacks by Russia, China, or North Korea. None of these states can be forced to give up their nuclear weapons. Their leaders feel they would be destroyed politically if they pursued unilateral nuclear disarmament.

The political aversion to nuclear disarmament or even balanced mutual restraint reflects a reluctance of adversaries to compromise with each other domestically *and* internationally. It also reflects fear that one nuclear power will seek to remove or control the regimes of others, perhaps abetted by new technologies that they hope will allow them to win a war without causing all-out nuclear escalation. Military-industrial complexes and worst-case policymaking also militate against the type of balanced dealmaking with adversaries that is necessary to stabilize competitions short of war and, after that, to pursue disarmament.

Most of these drivers are not new. But today's political and civil society leaders must understand and manage them in more difficult circumstances than their predecessors did. Compared with the bipolar Cold War, the number of variables and political leaderships that now need to be brought into alignment to negotiate durable restraints appears overwhelming. Picture Russia's Vladimir Putin, China's Xi Jinping, North Korea's Kim Jong Un, the United States' Donald Trump, India's Narendra Modi, Israel's Benjamin Netanyahu, France's Emmanuel Macron, the United Kingdom's Keir Starmer, and Pakistan's Shehbaz Sharif and Asim Munir all negotiating nuclear disarmament with each other.

The most avid proponents of nuclear weaponry and military supremacy use the specter of nuclear abolition to gain or hold power by branding advocates of nuclear restraint as naïfs who will make their nations vulnerable to predators. Meanwhile, the United States and Russia have broken, withdrawn from, or suspended all but one arms control agreement. China is undertaking an unprecedented expansion of its nuclear arsenal. North Korea continues to diversify and increase its arsenal while blustering an aggressive nuclear doctrine.

Most of these drivers are not new. But today's political and civil society leaders must understand and manage them in more difficult circumstances than their predecessors did.

And India and Pakistan compete without even dialogue on nuclear stability. These governments engage in unstabilized nuclear competition even though it is futile, wastefully expensive, and excessively dangerous. (Chapter 6 details eight major liabilities of such competition: arms racing; crisis instability and conflict escalation; cost; futility; overkill; absence of positive incentives for adversary restraint; and disjuncture from top leaders' likely approach in a war.) Each says it is for deterrence, but if an opponent were doing the same thing, each would say the opponent is seeking advantages for offensive purposes.

To eventually overcome the political forces of unstabilized competition, this book suggests that governments and civil society organizations who advocate nuclear disarmament will need to join with those who see value in nuclear deterrence (for now, at least) to build the case for negotiating measures to stabilize it as much as possible and eventually pursue disarmament.

Deterrence cannot be completely stabilized—it is premised on the possibility that one or more competitors might act violently to change the status quo, and that opponents might respond to escalating violence by using nuclear weapons. But measures can be taken to make deterrence of conflict more rather than less stable, and to lower the costs and risks that nuclear competition imposes on everyone. Stabilized nuclear competition means the competitors have acknowledged they cannot escape from mutual vulnerability—they explicitly recognize that offensive first strikes and missile defenses cannot adequately negate adversaries' capacity to inflict unacceptable damage on them. Politically, it will be easier for people to recognize the problems with unstabilized nuclear deterrence if the alternative is not seen as unilateral nuclear disarmament—at least in states where political parties compete in projecting their strength vis-à-vis international adversaries. Political coalitions can be more readily built if a large number of other governments actively advocates for stabilization measures even though they fall far short of nuclear abolition.

Stabilization, as conceived here, entails one large goal and six guidelines to reduce nuclear risks so long as politics preclude abolition (as discussed in Chapter 7.)

The large goal is to end nuclear overkill. Overkill arsenals are defined as those whose size and potential destructiveness are dictated more by bureaucratic interests and processes than by rational considerations of what would deter major aggression by each adversary; whose use would cause more death and destruction than the aggression they are supposed to stop; and whose harm to noncombatant nations and the environment would be unjustifiable morally, politically, and under international law. In other words, overkill arsenals are those that, if fully used, would violate legal principles of necessity (no other weapons would suffice), discrimination (sparing civilians), proportionality, and avoidance of undue suffering. Defining which force postures are not overkill will always be debatable. But nuclear-armed states and alliances should engage themselves and the rest of the international community in assessing the likely effects of various nuclear war scenarios—as a new United Nations–mandated expert group is now slated to do—and then invite (or challenge) each other to adjust their nuclear postures accordingly. To advance this process, top leaders of nuclear-armed states should be asked by leaders of other states and, when possible, media and civil society to specify whether and how their nuclear postures and plans are overkill or not. Leaders responsible for ordering nuclear use historically have thought differently about whether and how to use nuclear weapons than military planners and deterrence theorists often do.

The six guidelines for making nuclear forces and policies more stabilizing and accountable to humanity—thereby strengthening the "nuclear taboo" urged by many leaders of global civil society, including Nobel Peace Prize recipient Nihon Hidankyo—are:

1. Base nuclear policymaking on mutual vulnerability as a matter of fact, recognizing that quests for nuclear supremacy will stimulate countermeasures that ultimately leave everyone worse off than they would be if stabilized policies and postures prevailed.

2. Eschew plans and capabilities to preemptively destroy adversaries' nuclear forces and command-and-control systems, if such nuclear counterforce targeting will stimulate destabilizing

countermeasures such as arms racing and launch-on-warning or launch-under-attack plans. This need not lead to increased targeting of population centers.

3. Limit homeland missile defenses against adversaries' second-strike nuclear deterrents to the degree necessary to avoid counter arms racing and preemptive attacks on missile defense warning and command-and control-capabilities.

4. Plan to use nuclear weapons only on targets that cannot be destroyed by other means with the militarily available time.

5. Reduce risks of inadvertent escalation, especially by understanding how multiple-use command-and-control and weapon delivery systems could make the targeted country mistakenly conclude it is under nuclear attack and respond accordingly.

6. Bolster confidence in the political intentions of competitors by codifying restraints and devising ways to assure each other of compliance.

Admittedly, there is little political hope for much of this today (though still more than for abolition). Similar despair beclouded the early 1980s too, after the demise of détente. Then, civil society organizations in Europe and the United States joined to challenge the renewed U.S.-NATO-Soviet arms race, initially with little success. A few years later, leadership changed in Moscow, heads of states confidentially sought to reassure each other, and, within a decade, whole categories of nuclear weapons were eliminated or removed from deployment and strategic forces were significantly reduced. True, those were simpler times and there were fewer actors. Even then, an attachment to a fantasy missile defense technology precluded deeper progress. Thirty-five years later, much of that nuclear risk reduction has been undone. Still, it is possible that societies and some leaders will recognize the unnecessary danger of current trends and begin laying the groundwork for mutual restraints to be built when political changes allow more reasonable policies. U.S. presidents, in particular, can be surprising: Richard Nixon and Ronald

Reagan were staunch anticommunist defense hawks, yet they concluded far-reaching nuclear arms control agreements (that began through secret communications with their communist counterparts).

To begin altering the politics of nuclear debate, governments and civil society actors dissatisfied with current trends should ask leaders of nuclear-armed states and alliances fundamental questions that will not be easily or immediately dismissed. Will nuclear-armed states foreswear initiating the use of force to take disputed territory or impose changes of government on populations?[2] And, in the face of the unstabilized nuclear competition today that alarms much of the world, how do leaders of these governments justify not sustaining high-level dialogues on stabilizing strategic relations with each other and reducing the risk of nuclear war? It is especially important that leaders of countries that do not possess nuclear weapons ask these questions, as they could be most unjustly harmed by escalated nuclear conflict. Leaders who refuse to answer these questions should be asked over and over again.

The more directly, discreetly, and repeatedly that leaders talk with each other, the more likely some clarity will emerge, either to assuage worst-case assumptions or to validate them and prepare defensive actions. While it may be impossible to accurately understand competitors from vastly different cultures and systems of government, it should be possible through dialogue to assess whether their intentions are tolerable enough to pursue mutual restraint in the development and deployment of nuclear weapons. This will be as important for Xi Jinping, Vladimir Putin, and Kim Jung Un as it should be for Donald Trump.

Introduction

Maybe it is human nature to be allured by technical achievements and avoid the difficult, often dispiriting politics involved in managing their risks.

People dream aloud of colonizing Mars. "You want to wake up in the morning and think the future is going to be great," Elon Musk has said, "and that's what being a spacefaring civilization is all about. It's about believing in the future and thinking that the future will be better than the past. And I can't think of anything more exciting than going out there and being among the stars."[3] Musk's company, SpaceX, continues in this vein: "Mars is about half again as far from the Sun as Earth is, so it still has decent sunlight. It is a little cold, but we can warm it up. Its atmosphere is primarily CO2 with some nitrogen and argon and a few other trace elements, which means that we can grow plants on Mars just by compressing the atmosphere."[4]

This is a picture of the stars and the red planet, the spaceships that will transport people there, and the gadgets that will make them comfortable. There are no politics and no competing nations in the frame.[5] There is no discussion of the many political processes and decisions necessary to get human civilization to Mars—for example, to prevent the proliferation of space debris that can destroy spacecraft or to manage tensions after more than one group

lands there.[6] Surviving in space requires clear, efficient command structures and perfect security to protect life-supporting infrastructure. How will that align with individual freedom, democracy, and the diplomatic resolution of differences among groups and colonies that follow different principles?[7]

Closer to Earth, at the cellular level of life, biotech researchers and companies enthuse about creating effective and ethical treatments for birth defects and diseases. But there is little discussion of who will be able to pay for them, or how countries and individuals who cannot afford them will cooperate in preventing misuse of biotechnology.

So, too, it is with nuclear weapons. Some people dream about nuclear disarmament and work hard to promote it. Others fixate on new weapons that can deter or win wars and work hard to promote their deployment. Either way, we tend to think and talk much more about the weapons than about the domestic and international politics surrounding them.

People who believe nuclear weapons are an ideal deterrent rarely address what would happen if real-life political leaders don't behave as rationally as the deterrence model assumes, or if small conflicts escalate in unintended ways. Obsessions—like Russian President Vladimir Putin's with Ukraine—can drive leaders to places they should not go. Frenzied political contests can make them refuse to back down. Intelligence agencies can give mistaken warnings. Military officers can order the use of conventional weapons in ways that their adversaries will mistake for nuclear attacks. Many human and technical failings can degrade the ideal rational process of nuclear deterrence. Even a "small" attack of eighteen weapons against nuclear weapon storage and other military targets mainly in Northeast Asia with relatively low yield could produce blast, fire, and radiation that could kill 2.1 million people within a few weeks, and many more from radiation over a longer term.[8] The risks of nuclear catastrophe are considerably higher than many nuclear deterrence proponents wish to acknowledge, let alone reckon with.

Similarly, people who now demand the elimination of nuclear weapons often don't explain how, after nuclear disarmament, weaker nations are to be confident that their adversaries will not attack them, take disputed territory, depose their government, or commit atrocities against their people. How will

Pakistan, for example, be reassured about the intentions and future actions of Hindu-nationalist governments in India? How will Estonians feel about a non-nuclear North Atlantic Treaty Organization (NATO) protecting it from Russia? How does a world without nuclear weapons look to Russians who believe that the United States seeks to impose a new government and new values in their country?[9] Whatever the desirability or technical feasibility of nuclear disarmament, advocates often fail to adequately address the political risks to those who feel the need to deter bigger powers. This, too, is part of the political challenge surrounding nuclear weapons today.

Some take a middle view. Former U.S. senator Sam Nunn said, "The goal of a world without nuclear weapons is like the top of a very, very tall mountain. . . . We have to reach base camp before we have a clear view of [it] . . . There are also a number of 'end state' issues that must be carefully considered," including how to ensure that no one will remake nuclear weapons in a crisis or conflict.[10] But centrists also tend to focus more on technical challenges than on the political changes necessary to get competing parties and governments to the base camp.[11] Of course, the actors and the world will be different by the time the base camp is reached. New political strategies and arrangements will be required to go from there to the summit of disarmament. But what political processes are necessary to move from where we are today to the base camp? Under what conditions would the relevant political systems choose and support leaders who would pursue the compromises necessary to climb together?

No one can be forced to give up nuclear weapons. This means that arguments for deterrence will prevail until governments see greater security and political benefits in relinquishing their nuclear arsenal. Yet, as the chair of Japan's Group of Eminent Persons for the Substantive Advancement of Nuclear Disarmament has noted, "Although nuclear deterrence may arguably enhance stability in certain environments, it is a dangerous long-term basis for global security and therefore all states should seek a better long-term solution."[12] To move in this direction, the political, economic, and psychological drivers of security policymaking must be the focus more than weaponry per se. Politics within and between nations is paramount—that is, the interests of influential actors and their willingness (or lack thereof) to resolve differences through negotiation and compromise.

Improvement in political relationships leads to military restraint and arms reductions, and such restraints help improve political relationships. Conversely, deterioration of political relationships weakens restraints, and the absence of arms control further degrades political relationships.

In focusing on people and politics first, rather than the numbers and types of weapons and plans for their use, this book will not ignore relevant technical objects. But it will assume that preventing nuclear war and achieving nuclear disarmament are politically more difficult than the most avid proponents and opponents of nuclear weapons tend to recognize. This book's premise is that synergy operates here, either in a positive or negative direction: Improvement in political relationships leads to military restraint and arms reductions, and such restraints help improve political relationships. Conversely, deterioration of political relationships weakens restraints, and the absence of arms control further degrades political relationships.

(Anatoly Dobrynin, Soviet ambassador to the United States from 1962 through May 1986, summarized this synergy well. "For many years," Dobrynin wrote in his magisterial memoir, negotiations on limiting nuclear arms "became a barometer of our relations with the United States. They had their ups and downs and were often postponed, delayed, or in recess, but they were the one important area in which our two countries were directly and continuously engaged."[13] Former U.S. president George H.W. Bush noted similarly in his memoir co-authored with Brent Scowcroft that arms control evolved "into a vehicle of dialogue and cooperation in the overall improving US-Soviet relationship."[14] As the historian Marc Trachtenberg put it, "major political understandings could be reached in the guise of arms control agreements."[15])

This book is addressed primarily to readers in the United States, in Japan and other allied nations, and in the Global South, where open debate on these issues is permitted. These people and their governments might have some influence on what the United States does, which in turn could affect

what Russia, China, North Korea, and Iran might do. Policymaking in the United Kingdom, France, India, Pakistan, and Israel also could be affected directly or indirectly.

The United States is central in much of this discussion because, despite its many flaws and disappointments, it retains more hard and soft power than any other single country. It has an incomparably large number of allies in Europe and Asia and partners in the Middle East and South Asia, which puts it at the center of nuclear policymaking. It has been a leading rule maker and exception taker in the nuclear nonproliferation regime, and a leading technology innovator in arms racing. Its history of intervening in other countries to foster regime change (sometimes in the name of nonproliferation) makes it appear as an existential threat to some, and a potential liberator to others. U.S. government and business cannot solve all problems, and they cause more than most Americans typically recognize, but no other state and society has the capabilities and willingness to diplomatically and technologically affect global nuclear dynamics—for good or ill—like the United States does.

This book will resonate most with people who are frustrated by current trends regarding nuclear weapons and wonder what can and should be done to reverse them. The ideas in this book will not directly influence Russia's Putin, Chinese President Xi Jinping, or North Korean leader Kim Jong Un. But if the United States, allied countries, and influential actors in the Global South were to coalesce around policies urged here, they could test whether Moscow, Beijing, and/or Pyongyang are willing to assure their neighbors that they will not initiate use of force to expand the territory or population under their control. If these states and the United States say they will not use force to change the status quo, then leaders of other countries could ask whether they are willing to mutually limit military capabilities to reflect this non-expansionist intention. By the same logic, Putin, Xi, and Kim could test the intentions of their neighbors and the United States by offering discussions or negotiations to mutually limit or reduce weapons that appear most destabilizing to them, or to adopt other measures to allay their worst fears about U.S. intentions. It is hard for anyone to know what U.S. President Donald Trump will do regarding nuclear weapons, and whether others in his

administration will fulfill or counter his desires. Putin, Xi, and Kim would be foolish not to explore possibilities of making deals to stabilize their relations with him. Indeed, it might be easier for autocrats who face no free media or organized opposition to offer reassuring gestures to test the intentions of the United States and allied countries. Either way, if competitors, including U.S. and allied governments, reject offers to negotiate balanced proposals to restrain forces, their counterparts will reasonably conclude that they need to deploy more robust capabilities.

Inevitably, Russia, China, the United States, and perhaps others have mixed intentions, or intentions which are genuinely defensive in their minds but partially offensive to their competitors. The United States promotes human rights and regime change in some countries and not others, and its covert actions may differ from overt declarations. All this may appear threatening to leaders of some states. Putin's expressed desire to reintegrate areas with large Russian populations—such as Ukraine, Moldova, and Narva—back into Russia appears threatening. China's projection of historic sovereignty over Taiwan and outcroppings and waters of the South and East China Seas threatens many neighbors.

When more than two states are in contest—as now appears to be the case with the United States, Russia, and China, and with China, the United States, India, and Pakistan—it is even more difficult to clarify their intentions. If the United States fears Russia and China, it will likely feel the need to deploy more capabilities than it would to deter or defeat only one of them. But those capabilities will then be alarming to both Russia and China. One or both of them may feel the need to counter in suit. A spiral of worst-case arms building and military preparedness can ensue. The resulting insecurity and instability will be still worse if one or more of the states feels that another seeks to subvert or attack its regime. All this will be more difficult to untangle than is the case when only two states clash.

Meeting the analytical, policy, and diplomatic challenges sketched here is complicated further by questions about the rationality or irrationality of decisionmaking and decisionmakers. The few crises or conflicts that conceivably could have escalated to nuclear use were initiated by rather impulsive

leaders without prior rigorous debate and analysis: the Cuban Missile Crisis, the 1973 Middle East War (and U.S. nuclear alert), the Indo-Pak Kargil War in 1999, and Russia's 2022 invasion of Ukraine. If decisions to undertake major aggression backed by nuclear weapons can be made without checks and balances or evidence-based debates, humanity is less likely to avoid nuclear war than theories of deterrence and histories of the Cold War would suggest. This, too, highlights the importance of politics and political leaders relative to technology.

For example, Putin invaded Ukraine and sought to take Kyiv without evident awareness of the risks involved. He thereby imposed much greater costs—on his soldiers and their families, and on Russia and Ukraine—than he expected, which has made Russia even more subject to the idiosyncratic rationality of one leader—himself—with no apparent checks and balances. China has moved to centralized, personalized rule. It is not clear how the leader, Xi, is informed on nuclear policy issues and whether he welcomes and is briefed on debates over policy options.[16] "The United States is not immune to such nuclear dangers," as Scott Sagan notes. "Donald Trump was a wannabe personalist dictator. He tried to surround himself with yes-men, made belligerent threats to attack North Korea with 'fire and fury,' and didn't bother to read intelligence reports."[17] He was reelected, this time by more votes than his leading opponent received. Such leaders, and the politics that produce and maintain them in power, prioritize looking uncompromisingly strong in defense of national interests. Although, as Trump's former national security advisor John Bolton feared, narcissistic leaders can be eager for the spotlight and applause that comes from dramatic deals with counterparts, and they may override their more bellicose or suspicious bureaucracies.[18]

(Anyone curious to see irrational nuclear policymaking behind the scenes should read *The Achilles Trap*, Steve Coll's book about Saddam Hussein and several U.S. administrations' efforts to remove him; *The Room Where It Happened*, John Bolton's memoir of the Trump administration; and *Minds at War*, Steven Kull's volume of interviews with U.S. nuclear policymakers and strategists in the early 1980s. No doubt the flaws revealed in these books exist in other states where researchers and former officials are not free to expose them.)

The challenge today is to motivate leaders with different—often opposed—values and historical scars and neuroses to negotiate reasonably and create fair compromises that will last long enough to build confidence that a more secure, less violent world can be organized.

The challenge today is to motivate leaders with different—often opposed—values and historical scars and neuroses to negotiate reasonably and create fair compromises that will last long enough to build confidence that a more secure, less violent world can be organized. First, leaders must clarify in words and deeds that they will not act to take control over territory or people that are not clearly theirs under international law.[19] Second, recognizing that intentions can change and deterrence can fail, competing governments with truly defensive intentions should demonstrate a willingness to negotiate measures to stabilize nuclear competition, including mutual restraints on capabilities and practices that threaten the viability of opponents' nuclear deterrents. Such nuclear counterforce arsenals and operational plans—that, for example, pose first-strike threats against their opponents' nuclear deterrents, whatever technology they employ—drive arms racing, crisis instability, and potential escalation in war. They are both dangerous and futile. Third, to respect the rest of the world and solidify the nonproliferation regime, leaders should revive prospects of arms reductions that would end overkill. There can be no justification for arsenals and plans so destructive that, if deterrence fails, they would leave many millions of innocent people unable to feed, shelter, and medically care for each other—not only in the warring countries but in nonbelligerent nations too.[20]

Part One of this book begins by describing threat perceptions that motivate some states to rely on nuclear deterrence today. Chapter 2 gives special attention to how the risks of nuclear proliferation have engendered reliance on extended nuclear deterrence. Extended nuclear deterrence is central to the most likely scenarios of nuclear conflict today. Chapter 3 explores some underlying causes of the threat perceptions that animate nuclear-armed states and their resistance to stabilizing restraints.

Part Two analyzes three broad alternative responses to perceived threats: abolition, unstabilized nuclear competition, and stabilized nuclear competition. These chapters seek to demonstrate that all nuclear-armed states have interests in stabilizing relations and moving to eliminate overkill and existential threats to each other and to nonbelligerent non-nuclear-weapon states—whether they act accordingly today or not. To become more secure, states need to reverse the world's—including their own—current trend toward unstabilized competition. For this to happen, governments and civil society organizations who advocate nuclear disarmament will need to join with those who find value in limited forms of nuclear deterrence (for now, at least) to build the case for negotiated measures to stabilize nuclear competition as much as possible. This can and should create a foundation on which nuclear disarmament could be built.

The political argument here is that it will be easier to highlight the danger, expense, and futility of unstabilized nuclear competition if the alternative cannot be portrayed as unilateral nuclear disarmament. The aim is to restore the stabilizing logic of the Nuclear Non-Proliferation Treaty (NPT): the world, and all states within it, will be safer and more secure if states do not race against each other to acquire nuclear weapons or compete for illusory first-strike advantage. This requires an effective nonproliferation regime, which in turn requires the few states possessing nuclear weapons to pursue policies and force postures that end arms racing and reduce risks of nuclear war.

Those two objectives—ending arms racing and reducing risks of nuclear war—are enshrined in the NPT and salutary in and of themselves. They are also necessary steps to foster equitable nuclear disarmament. Political leaders of states that currently rely on nuclear deterrence (whether via alliance or their own possession) will require settled sovereignty over all disputed territory and populations, and thoroughly implemented and monitored controls on military forces, before they risk their political futures on dismantling their last nuclear weapons.

Part One: Where Are We and How Did We Get Here?

01

Setting the Politics of the Nuclear Scene Today

Each nuclear-armed government is nearly unique in its military capabilities, doctrines, and practices. Yet, they all say that their intentions are legitimate and essentially defensive rather than aggressive. Unfortunately, as Stephen Walt has noted, "when leaders believe their own motives are purely defensive and that this fact should be obvious to others . . . they will tend to see an opponent's hostile reaction as evidence of greed, innate belligerence, or an evil foreign leader's malicious and unappeasable ambitions. Empathy goes out the window, and diplomacy soon becomes a competition in name-calling."[21]

When a new major power arises, like China, it naturally wants influence and deference that the incumbent powers do not want to cede.[22] Displaced or declining powers, like Russia, may be tempted to subvert competitors or sow turmoil and conflict to bring others down to their level. Rule-setting powers resisting relative decline, like the United States, may act in an ad hoc manner, adapting or changing rules to benefit themselves and their friends before rising powers can rally enough support to displace them as rule setters. All feel they are acting to defend their legitimate interests.

The United States wants governments in Russia, China, North Korea, and Iran that do not threaten the territorial integrity or sovereignty of its allies,

do not threaten to attack the United States or its foreign military bases, and do not extensively violate human rights. If deterrence or compellence of those governments fails, the United States wants to defeat them with allies and without using nuclear weapons.

Protecting allies and partners from coercion or aggression by Russia, China, North Korea, and Iran has been the driving challenge facing U.S. policymakers and taxpayers since World War II. This extended deterrence challenge (discussed more fully in Chapter 3) is inherently quite difficult because the presumed aggressors—Russia, China, North Korea, or Iran—would be acting adjacent to their homelands on matters that they probably care more about than do the American people thousands of miles away. These adversaries may be tempted to use nuclear threats, brinksmanship, or limited attacks to make the United States withdraw from the fight or at least de-escalate. More mundanely, they can supply each other with weapons and/or weapons-production capabilities and help each other evade sanctions.

"Russia, the PRC and North Korea are all expanding and diversifying their nuclear arsenals at a breakneck pace—showing little or no interest in arms control," Pranay Vaddi, then a U.S. National Security Council official, remarked at an Arms Control Association conference in June 2024. "Those three, together with Iran, are increasingly cooperating and coordinating with each other—in ways that run counter to peace and stability, threaten the United States, our allies and our partners, and exacerbate regional tension. They are also freely proliferating advanced missile and drone technology among one other, and around the globe."[23]

Efforts by the United States and its allies and partners to shift the balance of risk are complicated by several factors. Adversarial states and their proxies now project conflict into outer space and cyberspace, where corporate actors also are heavily involved in unprecedented ways.[24] The interests of multiple sellers, buyers, and users of cyber and space assets complicate efforts to fight in and through these environments and to establish norms or rules to preserve them in the event of war. Meanwhile, some members of U.S.-led alliances are unwilling or fiscally unable to mobilize funding and leadership resources to bolster allied conventional military capabilities for war on land and at sea.

The United States' capacity to compensate by expanding its nuclear arsenal—if this were desirable—is severely limited by problems in the weapons-production complex. For examples, the estimated cost (in 2024) of the silo-based Sentinel intercontinental ballistic missile (ICBM) force has risen 37 percent over what Congress was told in 2022, while the timeline for the missiles' deployment has slipped at least two years.[25] Meanwhile, construction of facilities in Savannah River, South Carolina, and Los Alamos, New Mexico, to enable production of eighty plutonium pits for thermonuclear warheads per year, continually falls behind schedule and way over budget. In 2017, the facility in South Carolina was slated to produce eighty warhead cores per year at a construction cost of $3.6 billion. In 2023, the plan was revised downward to produce fifty cores per year, but the claimed cost rose to $11.1 billion. By 2024, the cost was estimated to be $25 billion.[26]

Shifting to China, the Ministry of Defense insists:

> China must be and will be reunited. . . . The PLA will resolutely defeat anyone attempting to separate Taiwan from China and safeguard national unity at all costs We make no promise to renounce the use of force, and reserve the option of taking all necessary measures. This is by no means targeted at our compatriots in Taiwan, but at the interference of external forces and the very small number of "Taiwan independence" separatists and their activities.[27]

More broadly, China will resist U.S. hegemony and related efforts "to stage 'color revolutions,' instigate regional disputes, and even directly launch wars under the guise of promoting democracy, freedom and human rights," in the words of *China Daily*.[28] Nuclear weapons are vital to this political agenda led by Xi Jinping, as Tong Zhao writes in *Foreign Affairs*:

> A staunch advocate of the notion that the United States is hostile to China's rise, Xi assigns great geopolitical significance to nuclear weapons as a means of showcasing Chinese power. . . . Rather than aiming to achieve clearly defined military objectives, such as deterring an enemy

> from undertaking specific military activities, Beijing sees nuclear weapons as symbols of military strength and believes that they wield a particular influence on an adversary's perception of the power balance. This notion underpins what Chinese officials refer to as the "strategic counterbalance" mission of their nuclear forces—a bid to force the United States to take a more accommodating stance toward China.[29]

Russia, similarly, feels threatened by "a small group of states" that seeks to impose "rules, standards and norms that have been developed without equitable participation of all interested states."[30] According to the "Concept of the Foreign Policy of the Russian Federation," published March 31, 2023, the United States and its allies pursue regime change through "coercive measures (sanctions) in circumvention of the UN Security Council, [provoking] coups d'etat and military conflicts, threats, blackmailing, manipulation of the consciousness of certain social groups and entire nations, offensive and subversive actions in the information space."[31]

In the years when Russia's conventional military capabilities have been clearly inferior to those of the United States and its allies, Russian leaders have highlighted the variety and innovative power of Russia's nuclear weapons. When Putin announced the development of five new nuclear weapon systems in 2018, he declared: "I want to tell all those who have fueled the arms race over the last 15 years, sought to win unilateral advantages over Russia, introduced unlawful sanctions aimed at containing our country's development: Everything that you wanted to impede with your policies has already happened. . . . You have failed to contain Russia." Putin claimed Russia had warned of this in 2004, two years after the administration of former U.S. president George W. Bush withdrew from the Anti-Ballistic Missile (ABM) Treaty, but, he said, "No one listened to us then. So listen to us now."[32]

The leaders of North Korea (formally the Democratic People's Republic of Korea, or DPRK) have given up on the goal of Korean reunification as "one nation, one state with two systems," as Kim Jong Un announced at the end of 2023. Instead, North Korea must strengthen itself to resist South Korea's effort to pursue "'unification by absorption' and 'unification under liberal

democracy,'" according to Kim.[33] "South Korea at present is nothing but a hemiplegic malformation and colonial subordinate state whose politics is completely out of order, whole society tainted by Yankee culture, and defense and security totally dependent on the U.S.," Kim said, according to the *Rodong Sinmun*.[34] As the United States and South Korea strengthen their military-security cooperation, including its nuclear deterrence element, North Korea continues to enhance its nuclear capabilities and threats to impose military defeat on South Korea.[35]

It should be noted that the security concerns of the United States, China, and Russia summarized in this chapter have some basis in fact. Each wishes the others were weaker, less inclined and able to impose their will. The questions this book comes back to repeatedly are whether and how these competitors (and others, including North Korea) can demonstrate that their intentions and capabilities will not start wars that could plausibly go nuclear and, if so, whether they are willing to negotiate restraints and progress toward eliminating overkill, which by definition is unnecessary, irrational, and unjust to the majority of nations who would suffer from nuclear war not of their making.

Japan's National Security Strategy of 2023 puts many states' concerns well:

> Across the globe, historical changes in power balances, particularly in the Indo-Pacific region, are occurring. In addition, in the vicinity of Japan, military buildups, including of nuclear weapons and missiles, are rapidly advancing, coupled with mounting pressures by unilaterally changing the status quo by force. Moreover, grey zone situations over territories, cross-border cyberattacks on critical civilian infrastructures, and information warfare through spread of disinformation, are constantly taking place, thereby further blurring the boundary between contingency and peacetime.[36]

Much attention has recently focused on the two-peer challenge that Russia and China pose.[37] One overly fearsome scenario is that Russia and China will coordinate the timing and conduct of armed operations against U.S.

allies in Europe and Asia and disrupt U.S. mobilization to these distant battlegrounds. U.S. leaders could likely perceive the need to initiate regional use of nuclear weapons, which Russia and China together could match or defeat with their buildup of regional and strategic nuclear and dual-use weaponry that surpasses that of the United States.[38] In the words of the U.S. Strategic Posture Commission, "these threats are such that the United States and its Allies and partners must be ready to deter and defeat both adversaries simultaneously."[39] Defining what "defeat" and "not defeat" mean in a situation where nuclear weapons are being detonated is difficult. For China and/or Russia, defeating the United States could entail making it cease attacks that are destroying their forces that are advancing on or occupying territory of U.S. allies. For the United States, defeating China and/or Russia could mean causing them to cease fire before they destroy or take over the heartland and capital of the people they are attacking.

The U.S.-Russia-China challenge also connects to the India-Pakistan-China competition. If the United States builds up and worsens its imbalance with China, Beijing may decide to revise its force requirements even further upward. India will then have to ignore or try to partially balance China's additional capacity, which will cause Pakistan to respond. India and the United States will then explore more intensive military cooperation to counter China, while Pakistan will turn to China for more help to balance India and the United States. Thus, the three-actor competition is also a five-actor competition—at least at the level of arms building and anxiety, which will undermine the prospects of negotiating restraints to build mutual confidence that force will not be used.

However—and fortunately—there is no evidence to conclude that Russia and China would join together to fight the United States and its allies in Europe and Asia, or that Russia, China, and the United States would fight each other on behalf of India or Pakistan in South Asia.[40] It is similarly hard to imagine Pakistan fighting on China's behalf against India and/or the United States. Nor will India fight on the United States' behalf against China.

The other nuclear-armed states—the United Kingdom, France, and Israel—are unlikely to face aggressions severe enough to motivate their leaders to

launch nuclear weapons. The two European powers share commitments to defend NATO allies against aggression by Russia (or anyone else). Yet, it is difficult to foresee how an escalating conventional war on NATO's eastern periphery would lead Russia to conduct nuclear first strikes against the United Kingdom and/or France. Such Russian strikes would be the only move that would practically guarantee nuclear attacks against Russia by London or Paris. (Russia lacks the motive and capability to invade the French or English homeland.) Israel, for its part, faces internal and borderland threats, but so long as no adversary takes steps to initiate use of nuclear or biological weapons against it, Israel will wisely refrain from raising the salience of nuclear weapons. For, if Israel were to flex its nuclear status, its neighbors would feel much greater political pressure to seek similar status and/or could more effectively mobilize international opposition to Israel's nuclear deterrent.

Finally, much of the rest of the world, predominantly in the Global South, is increasingly dismayed at the violent degradation of international relations, the return of nuclear threat making and arms racing, and the dismal prospects of nuclear disarmament. More than 150 nations perceive little direct benefit from nuclear deterrence but would suffer food and energy crises if nuclear-armed states attacked others. In the event of nuclear exchange, these nations could suffer severely—from radiation, food insecurity, economic disruption, refugee flows, and more—even if they had no role in the war.[41] Dissatisfaction among most of the world's countries can become a material problem for at least some nuclear-armed states if it weakens cooperation in preventing the further spread of nuclear weapons, which would compound all of the problems detailed in this book. It will be more difficult to expand nuclear energy production around the world to stem climate change if confidence is lost in the treaties and institutions that are supposed to prevent that technology from being used to develop weapons.

The preceding sketch of the threatening environment affecting nuclear weapons politics and policymaking is quite discouraging. Competing nuclear-armed states and alliances each feel they are acting defensively. The net effect is a widespread sense of instability and potential war of some kind. The rest of this book focuses on how to improve this environment.

02

The Complications of Proliferation and Extended Nuclear Deterrence

Nuclear competitions among the United States, Russia, China, and North Korea stem from regional tensions and potential conflicts where the United States has long extended nuclear deterrence to its allies and partners who face nuclear-armed adversaries. These are the situations that pose the most immediate obstacles to nuclear disarmament today. The main scenarios involve a nuclear-armed state threatening or attacking a non-nuclear-armed neighbor to take disputed territory. This is happening in Ukraine today and could happen with China and/or North Korea in northeast Asia. The United States extends security pledges to more than thirty countries in Europe and East Asia. Germany, South Korea, Japan, and Australia are among the many states that joined the Nuclear Non-Proliferation Treaty (NPT) and foreswore nuclear weapons in large part because the United States extended nuclear deterrence to them.

Nuclear proliferation was a huge concern in the 1950s and 1960s—and also a temptation. The Soviet Union deeply feared that West Germany would acquire these weapons and knew that the United States could influence that outcome. The United States was most worried about China. In the 1950s, the Soviets had assisted Chinese scientists and engineers in developing nascent nuclear weapon capabilities. To counter China's emerging threat, U.S.

officials in 1964 considered providing so-called tactical nuclear weapons to India and other countries in the Asia-Pacific, including Japan, South Korea, and Australia. American military advisors would prepare infrastructure and aircraft and train personnel in India (and other participating countries) to receive U.S. nuclear weapons and use them to attack Chinese targets as directed.[42] This idea, favored by then secretary of state Dean Rusk and some staff in the U.S. Department of Defense, was ultimately rejected by then secretary of defense Robert McNamara. Instead, as recommended in January 1965 by the secret Committee on Nuclear Proliferation led by former deputy secretary of defense Roswell Gilpatric, then president Lyndon Johnson agreed that "preventing the further spread of nuclear weapons is clearly in the national interest despite the difficult decisions that will be required."[43] (U.S. officials at this time deflected a subtle, secret request by the leader of India's nuclear program, Homi Bhabha, to provide India with blueprints for a nuclear explosive.)[44]

By the end of 1965, leaders in the United States, the Soviet Union, and elsewhere were concluding that the dangers of nuclear war would grow more difficult to prevent or manage if more actors possessed these weapons. Ireland's minister of external affairs, Frank Aiken, had initiated an effort in 1958 through the United Nations (UN) to negotiate an international agreement to prevent the spread of nuclear weapons.[45] Aiken judged that if the number of nuclear-armed states grew, "control over nuclear weapons will have become impossible," and the probability of nuclear conflict would increase geometrically. The United States and the Soviet Union supported an Irish-sponsored UN resolution to begin negotiations on what would become the NPT.

The two superpowers evolved a two-part approach to manage the shared challenge of proliferation. To constrain *capabilities* to develop nuclear weapons, the United States and the Soviet Union along with the United Kingdom signed the Partial Test Ban Treaty in Moscow in 1963.[46] To constrain other states' *intentions*, a U.S. nuclear umbrella would cover West Germany, including Berlin in the middle of East Germany, and other NATO states rather than those states acquiring nuclear weapons of their own. (The United Kingdom and France already possessed nuclear weapons.) This clear resolu-

tion of Soviet fears about West Germany's potential possession of nuclear weapons opened the way for the completion of the NPT in 1968.

There have always been tensions in the arrangement whereby nuclear deterrence is extended as an incentive for nonproliferation. Yet, the combination of extended nuclear deterrence and the nuclear nonproliferation regime has been remarkably effective for sixty years. Unfortunately, the durability of the arrangement is now unclear. Emerging threats may be less deterrable, the material capabilities necessary for nuclear weapons may be more available, and the extended deterrer may be less reliable (or less concerned about allies acquiring nuclear weapons).

Russia's war against Ukraine demonstrates that any nuclear-armed state can feel emboldened to violate its commitments under the UN Charter to "refrain . . . from the threat or use of force against the territorial integrity or political independence of any state." (The 1994 Budapest Memorandum did not create any new obligations for Russia, the United Kingdom, and the United States.)[47] Nuclear-armed states' promises under the NPT not to use or threaten to use nuclear weapons against non-nuclear-weapon states are ambiguous, limited, and/or not legally binding.[48] States on Russia's periphery worry they may be the next victim of Russian aggression. Given the disparity between their individual military capacities and Russia's, will NATO or anyone else defend these people fully? Previous U.S. interventions in Iraq, and with France in Libya, raised similar worries among some countries that the United States may intervene in *their* affairs, confident that nuclear weapons would deter counteraction by the weaker states. This perspective also increases some actors' desire for nuclear weapon capabilities, and other actors' ambivalence about bearing the inconvenience and expense of strengthening and enforcing the nonproliferation regime.

Taiwan and China's other neighbors, along with the United States, worry that Xi intends to use China's growing military capabilities to "reunify" the island's population with the mainland government, or to take other disputed land or oceanic resources. Some observers argue that Russia's difficulties in Ukraine will make Xi more cautious and the Taiwanese more prepared to defend themselves. Others argue that Beijing may see an opportunity to

move against Taiwan now, while democratic countries are diverted by supporting Ukraine.

North Korea and Iran also appear more threatening to neighbors and to some U.S. or other observers. Here, too, a concern is that the United States, as the main provider of extended deterrence, doesn't have the resources and leadership resolve necessary to defend all its allies and partners against all these possible threats in Europe, East Asia, and the Persian Gulf.

Doubts about the reliability of extended nuclear deterrence have always existed. Would any government risk its people's lives by using nuclear weapons to defend an ally or partner knowing that the adversary can respond with nuclear attacks of its own? Who would trade the lives and property of their most important, beloved cities for the sake of an ally thousands of miles away?

One way to try to make this prospect credible is by targeting an adversary's nuclear deterrent to limit the expected damage they could inflict on the United States as it defends an ally. But forces and perceived intentions to conduct damage-limiting first strikes (backed by unbound missile defenses) motivates adversaries to deploy more survivable nuclear forces and launch-under-attack plans in order to defeat first strikes. Damage-limiting counterforce capabilities and plans, which cannot be highly effective without alarming adversaries into taking countermeasures, raise rather than lower the risks and burdens of nuclear competition. Trump and his followers in U.S. politics and society underscore these eternal questions about the willingness of Americans to run such risks. In Trump's inimitable all-caps style, one could ask: WILL THE UNITED STATES RETAIN THE RESOLVE AND SUFFICIENT CAPABILITIES TO DEFEND ALLIES AND PARTNERS?

Meanwhile, as previously noted, regimes in Moscow, Beijing, Pyongyang, and Tehran fear the United States will use its combined military, economic, and political power to block them from pursuing their national interests and, ultimately, will try to remove their regimes. Threats of U.S.-driven regime change make nuclear weapons—or, in the case of Iran, nuclear weapon capabilities—increasingly important to these governments.

From multiple directions, then, the motives for proliferation are growing, raising fundamental political questions. Will countries that the United States (and other allies) are supposed to protect remain confident enough to forego seeking their own nuclear weapons? Will the United States agree that preventing nuclear proliferation is more important than winning friends to contain China's or Russia's power? And if the United States might accommodate proliferation by its friends—as it did with Israel and, later, India—could this further destabilize relations with Russia, China, North Korea, or Iran, who neighbor these friends?

From 1968 onward, the United States tended to initiate international efforts to strengthen the rules-based nonproliferation regime. For example, Washington pressured suppliers of nuclear reactors and related equipment and material to require that importers apply full-scope safeguards on all their facilities, not merely facilities where specific imports would be sent. The United States also led efforts to block transfers of fuel-cycle capabilities—especially uranium enrichment and plutonium production and separation. Washington applied various forms of pressure to motivate technology providers and recipients to adopt and accept these rules.

But, in 2005, the George W. Bush administration proposed to drop full-scope safeguard requirements for India, as part of what became known as the U.S.-India nuclear deal. This arrangement also departed from past U.S. positions by accepting Indian enrichment of uranium above 20 percent and separation of plutonium from spent fuel. The proposed exceptions to norms and rules of the Nuclear Suppliers Group, the International Atomic Energy Agency (IAEA), and the U.S. Congress were to improve strategic relations with India in the contest with China. In 2021, the United States undertook with Australia and the United Kingdom a similar departure from longstanding export controls when it announced the AUKUS partnership to provide Australia with nuclear-powered attack submarines and related weapons systems, among other capabilities. China denounced the program as the product of "typical Cold War mentality which will only motivate an arms race, damage the international nuclear nonproliferation regime, and harm regional stability and peace."[49] In 2024, reliable sources reported that U.S. president Joe Biden's administration was negotiating a complicated arrangement

through which Saudi Arabia seeks to acquire uranium enrichment capabilities in an unprecedented departure from earlier nonproliferation norms.[50]

Moving from a universal rules-based nonproliferation approach to a competitive strategy of using nuclear exports to strengthen friends against adversaries may bolster deterrence, but it could undermine nuclear nonproliferation. Unlike the proliferation threats that captured most attention in the 1990s and early 2000s—Iraq, North Korea, Iran, Libya, and Syria—the countries most likely to break from the NPT now are South Korea and Saudi Arabia, perhaps followed by Turkey, Egypt, or Indonesia. These countries do not threaten the United States and its allies, but their acquisition of nuclear weapons could unnerve Russia, China, North Korea, and Iran.

How all this ultimately will affect international security is impossible to predict with confidence. Optimists could say that the spread of nuclear weapons would deter armed conflict. History suggests this could be true, but that the first decades after adversaries acquire nuclear weapons can be especially dangerous. It takes time for political and military leaders to learn how to manage temptations—both their own and their adversaries'—to change the status quo in the belief that nuclear weapons will keep the other side from fighting back. The Berlin Crisis (1958–1961) and the Cuban Missile Crisis (1962) between the United States and the Soviet Union as well as the Pakistan-initiated Kargil War of 1999 and subsequent 2001–2002 Indo-Pak standoff are leading examples of "nuclear learning" that ended well. But, again, it is impossible to know the outcome of future cases involving leaders and circumstances of different character.

On the capabilities side of proliferation, hope has sprung that nuclear fission can be affordably, safely, and securely produced, this time, in small modular reactors. The huge computing centers required by cloud computing, by artificial intelligence, and by cryptocurrency mining make businesses and governments wish for new reactor technologies that are affordable and do not exacerbate climate change or other environmental problems. Discussions among new reactor proponents and investors tend to gloss over proliferation risks.

Several proliferation risks would arise if a small modular reactor boom occurred. Most likely, fuel for such reactors would involve enriched uranium. In some cases, this would include high-assay low-enriched uranium (HALEU) fuel enriched to 20 percent, which increases proliferation risks.[51] If the number and location of enrichment facilities grows, it would challenge the IAEA or any other provider of safeguards against proliferation. National intelligence services also would fret the increased difficulty and expense of detecting clandestine enrichment. Some governments then would suspect or at least worry that adversaries were secretly developing capabilities to break out of the nonproliferation regime. If the nonproliferation regime's fairness, universality, and effectiveness were coming under question for other reasons, as previously noted, the dispersal of fuel-cycle capabilities could be further destabilizing. These concerns are exacerbated by the ignorance that many of the companies touting new reactors display toward the challenges of proliferation.

Meanwhile, a few governments are increasingly interested in nuclear propulsion to enable their submarines to patrol farther, longer, and more quietly than diesel-electric engines allow. Brazil has long justified its indigenous uranium enrichment program as a necessary source of fuel for its forthcoming nuclear-powered submarine. Iran has, at various times, said that naval propulsion would justify its enrichment of uranium to levels above 60 percent.[52] And, with the AUKUS deal, Australia would acquire a submarine program that later could justify indigenous enrichment of uranium.[53] There are two primary concerns with nuclear naval propulsion. One is that it will be impossible to adequately safeguard and account for fuel going into and coming out of naval submarines. Australia—and its suppliers in the United States and the United Kingdom—have worked with the IAEA to develop a plan that would give high confidence that fuel would not be diverted. A second concern in the AUKUS case is that after acquiring the submarines and related capabilities, Australia could renege on commitments not to indigenously enrich uranium or reprocess spent fuel to produce weapons. Many countries fear a similar scenario in Iran.

If some states lose confidence in extended deterrence and gain confidence in new technical pathways to acquiring nuclear weapon capabilities, those states' neighbors will feel threatened. Japan has enrichment and reprocessing facilities that could enable it to produce nuclear weapon materials if it wished to do so. Seoul has asked Washington to welcome South Korea's acquisition of similar capabilities. This would alarm not only North Korean leaders, it could also create a crisis in Japanese politics. Meanwhile, in the Middle East, Saudi acquisition would alarm Iran as well as Israel, the United Arab Emirates, and Egypt. It could lead to the region going from one nuclear-armed state (Israel) to five, with quite unpredictable consequences along the way. Whether regional proliferation like this would leave any of these states more secure than they are today deserves careful consideration and debate among knowledgeable officials and others in the region and, for example, within the UN Security Council, the UN Institute for Disarmament Research, and other research centers.

Leaders in the United States, Russia, China, and Israel would have to seriously consider whether to try to physically stop any country in Asia, the Middle East, or Europe that moves to acquire nuclear weapons. In some cases, such interdiction would likely be infeasible or too costly. For example, the United States would not try to militarily or cybernetically sabotage South Korea; China would not run the risks of doing so either. North Korea is harder to predict, but it probably would not have the capability to destroy a South Korean nuclear program without inviting a very destructive response. But would Israel and Iran sit by and let Saudi Arabia build a nuclear arsenal without trying to sabotage it? It is difficult to go from zero nuclear weapons to one reliable nuclear weapon. Going from one bomb to a survivable second-strike nuclear deterrent, like North Korea has, would require many more years and much expenditure and economic sacrifice through sanctions. Whether the United States would continue to extend nuclear and other security protections to an ally that departs from the NPT is highly questionable.[54] This is one reason why retaining alliance or close security relations with the United States *and* supporting a strong nonproliferation regime has appealed to countries in Europe, East Asia, and the Middle East.

For the sake of international stability and avoidance of catastrophic warfare, concerned governments and citizens should do five things.

First, as emphasized throughout this book, *adversaries need to clarify to each other whether they are in security dilemmas and spirals or, instead, whether they face threats of territorial aggrandizement and/or coerced regime change*.[55] Communicating and clarifying intentions is difficult today, but it is more manageable now than it would be if further proliferation occurs.[56] Nearly the whole world understands that Russia committed aggression against Ukraine; the question now is whether Russian leaders will try something similar toward Moldova, Estonia, or other neighbors. Will China act militarily to displace the elected government in Taiwan? Will it physically take control of disputed islands, outcroppings, and waterways in the East and South China Seas. If North Korea's leadership is not threatened, will it not act violently against South Korea? Will Iran desist from making and deploying nuclear weapons and from facilitating attacks against Israel and others? Will the United States reassure any or all of these four governments that if they verifiably restrain their most alarming weapon capabilities and behaviors, then Washington will stop trying to strangle their economies and will not preemptively attack their nuclear deterrents? Another challenge is for allies to reassure each other that they will not be dragged into fights that they do not approve. If the provider of nuclear deterrence—the United States—empowers a president whose judgment allies do not trust, allies should be expected to consider whether and how to acquire their own nuclear deterrents.

Second, where threats of territorial aggression remain plausible, the better way to deter them is for U.S. allies and partners in Europe and Asia to *strengthen non-nuclear forms of deterrence and warfighting*.[57] Allies will need to make equitable contributions to collective defense. Otherwise, politicians campaigning for office in Washington will find it increasingly difficult to sustain expensive U.S. commitments. Greater allied investment in defense, paired with a demonstrated willingness to peacefully coexist with non-democracies, could have the added value of showing Chinese, Russian, and North Korean leaders that they will be better off demonstrating that they do not intend to initiate changes in the status quo of the territory around them. This could reduce pressures to arms race and to engage in inflammatory nationalistic politics—two phenomena that often coincide. To prevent conventional military buildups from being perceived as offensive, capabilities to

deny power projection should be favored while capabilities to take and hold foreign territory should be eschewed.

Third, concerned countries should *cooperate in bolstering Ukraine's capacity to preserve the freedom and independence of its European heartland and to defend against further Russian aggression*. The effectiveness of the nuclear nonproliferation regime and of extended deterrence will be enhanced if people recognize the huge cost Russia has paid in lives, money, future economic potential, and political standing for taking borderlands. People around the world need to see that Ukrainians and their international supporters have protected the country's European heartland and will continue to do so, no matter what peripheral territory Russia controls. This, in turn, requires bolstering NATO's and Ukraine's conventional deterrent capabilities over time, a task that becomes much more difficult to accomplish if the United States excludes itself.

A related message to promote is that when the Soviet Union collapsed in the early 1990s, Ukraine did not really have an option to keep nuclear weapons left on its land. It desperately needed economic assistance from the West; the long-range nuclear weapon systems left in Ukraine would not have been suitable for deterring Russia; Ukraine lacked the resources to make its own arsenal of more suitable weapons before the Russian military could have intervened to stop it; and the rest of the world would not have tolerated Ukraine keeping nuclear weapons. As Mariana Budjeryn eloquently concluded in her excellent history *Inheriting the Bomb*: "If Ukraine had refused to join the NPT and kept a part of its nuclear inheritance, it would not be the same country it is today but with nuclear weapons. Indeed, it is doubtful it would be a country at all."[58]

Fourth, *the norms and rules of the nuclear nonproliferation regime need to be updated*. If affordable, safe, and secure nuclear electricity generation becomes feasible, norms and rules for producing fuel and managing spent fuel will need to be developed and enforced in ways that give confidence that weapons proliferation will not result. Such norms could include not stockpiling enriched uranium or separated plutonium in amounts that exceed likely civilian use, and designing reactors and fuel-cycle capabilities to facilitate transparency and IAEA safeguards. Japan declared such a policy

since 2018.[59] The challenges of nonproliferation (and nuclear waste management) are not adequately appreciated by promoters of potential new reactor technologies.[60]

The process of developing and negotiating rules internationally is excruciatingly long and complicated. Recognizing this, leading countries and potential technology suppliers should be working collectively with staff from the IAEA to chart best practices and other useful steps forward. Given the historic importance of the United States to the nuclear nonproliferation regime and extended nuclear deterrence, Washington must also step back and seriously assess the costs versus benefits of making exceptions to the rules-based nonproliferation regime. The 2005 India deal, AUKUS, and a potential arrangement with Saudi Arabia indicate a pattern that many observers expect from great powers and do not like: making rules that everyone should follow, and then making exceptions for themselves when it serves them. Now, Russia is doing this with regard to Iran and North Korea, and China does not appear to object. What are the implications of this approach for the future? How should the United States (and others) engage with South Korea, Saudi Arabia, and any other country that may contemplate acquiring nuclear weapons? Should such proliferation be accommodated? Or should it be resisted with sanctions, the withdrawal of security guarantees, or other measures?

Fifth, the international community, including nongovernmental organizations that advocate nuclear abolition, should *acknowledge (at least for now) that extending nuclear deterrence to weaker states facing hostile neighbors can help prevent them from seeking their own nuclear weapons*. The Soviet Union recognized this when West Germany committed to not acquire nuclear weapons after NATO was created. China, Russia, and North Korea could face more challenging security environments if South Korea, Japan, Australia, Taiwan, and NATO lacked security commitments from nuclear-armed allies and partners. Extended deterrence provided by the United States, therefore, makes the security environments of China, Russia, and North Korea more stable than if U.S. allies were to seek their

Washington must also step back and seriously assess the costs versus benefits of making exceptions to the rules-based nonproliferation regime.

own nuclear weapons. Greater international acknowledgement of this fact could bolster deterrence *and* support for the nonproliferation regime, both of which help create conditions necessary for nuclear disarmament.

The five steps discussed here reinforce the valuable relationship between extended deterrence and nuclear nonproliferation. And that relationship—providing states sufficient security and reassurance to make them forego acquisition of nuclear weapons—is a necessary condition to create political support for nuclear disarmament. Taking any or all of these steps could clarify whether competitors intend to reduce or increase the salience of nuclear weapons in world politics.

03

The Underlying Causes of Nuclear Insecurity Today

Requirements for nuclear deterrence are infinitely elastic. No one knows precisely where the line is between a nuclear arsenal that will deter an adversary from starting or escalating a war and one that will make them feel they are soon going to be attacked so they should attack first. Various interest groups and political factions can always argue that more would be better and less is worse.

Identifying and prioritizing the factors that most heavily influence the intentions, capabilities, and behaviors of states is very difficult and subjective. Factors are likely different in each country, and between different administrations over time. It is even more difficult to identify changes that would greatly improve the political dynamics that heighten nuclear anxieties today. With moderate confidence, we suggest five factors that are especially important drivers of U.S. nuclear policy today and could be operating similarly in other states. The hope is that readers can assess whether and how these factors do or do not apply to other countries of concern.

Diminished Support for the Art of Give-and-Take Compromise

In democracies, the disappearance of compromise reflects and exacerbates populism and polarization. The party or leader that wins typically does so by demonizing the opposition: compromising with the devil is heavily discouraged. Refusal to compromise with domestic opponents easily becomes the norm regarding foreign adversaries.[61] This is especially so when leaders have won election by focusing campaigns against an "other," whether that means immigrants, religious or racial minorities, or foreign countries.[62] A major, if not dominant, strand in U.S. foreign policy making insists that the only treaties or agreements worth supporting are those in which the United States gets much more of what it wants than the adversary does. Indeed, the long list of treaties the United States has not ratified or has withdrawn from reveals a deep reluctance to accommodate the interests of competing states and to give up its freedom of action. The politically produced preference is to outcompete others through arms building, sanctions, and alliance making.[63]

In six of the nine nuclear-armed states, autocratic tendencies continue to expand. France and the United Kingdom are democratic exceptions for now, while North Korea has been completely autocratic for decades. In autocratic or authoritarian states, apex leaders control media and political activity. Such leaders could compromise with adversaries if they wanted to—they control the media and prohibit organized opposition. But these leaders often rise to power by promising to build national strength to correct historical slights or regain lost territory or independence. They often keep power at home by imprisoning, repressing, or killing opponents. These traits may not heighten their capacity for empathy and compromise. If leaders like Putin, Xi, Kim, and Iran's Ayatollah Ali Khamenei do not want to pursue the give and take required to negotiate agreements with adversaries like the United States, they can block others in the society who might favor accommodation. (These leaders surely doubt that the United States would keep its side of any bargain. They also may fear that relaxing the sense of hostility with other countries and reducing barriers to exchange could encourage their populations to demand more domestic freedom, which agents of regime change would then exploit.)

Thomas Schelling and other theorists of deterrence understood that success would require not only threats but also benefits if the adversary complied by not taking a threatened action (deterrence) or by ceasing such action (compellence).[64] What rewards are the United States, Russia, China, and North Korea offering each other for eschewing or ceasing hostile actions? This is far from clear today.

A longtime U.S. nuclear weapon policymaker was asked in 2023, "What are we offering Xi, in particular, as a reward/benefit these days?"

"You got me!" he responded.[65]

A U.S. official involved in diplomacy regarding North Korea acknowledged in private that Pyongyang would not denuclearize and could not rely on receiving proffered benefits if it did denuclearize. Sanctions, the official said, were to slow down North Korea's technical progress, weaken the country, and show the resolve of the United States and its allies.[66]

Similarly, regarding Iraq between 1991 and 2003, the United States had no intention to remove sanctions even if Iraqi president Saddam Hussein fully complied with the demands of international inspectors.[67] Journalist Steve Coll recounts from tape recordings of a meeting that Saddam told a colleague in August 1991:

> One of the mistakes some people make is that when the enemy has decided to hurt you, you believe there is a chance to decrease the harm by acting in a certain way, but . . . The harm won't be less. What did the Americans show' after the war in Kuwait 'as a possible sign for partially decreasing their harm? He continued. 'We didn't see anything. . . . I have given them everything: the missiles, and the chemical, biological, and nuclear weapons. They didn't give us anything in exchange. . . . Well, they have come worse.[68]

Arms control can be a reward. Mutual restraints or reductions in the development, testing, and deployment of designated weapons systems, and/or eschewing designated types of behavior, benefit all parties. But if adversaries

have reason to think that the terms are leading to power imbalances over time, or that one or more of the parties will cheat on agreements or withdraw from them, then they will resist because the benefits disappear. This resistance is all the greater when the proposal is to eliminate one's ultimate deterrent, the nuclear arsenal.

New or expanding nuclear weapon programs could be bargaining chips. However, today's governments in Beijing, Moscow, Pyongyang, and Washington (as well as New Delhi and Islamabad) do not communicate clearly what, if anything, they are prepared to negotiate on or for.

U.S. president Ronald Reagan, the great cold warrior, eventually understood this problem. Reagan initially "proceeded from the notion that the United States should gain advantages at all costs and not necessarily yield anything in return to its opponent,"[69] as a senior State Department official told Soviet ambassador Anatoly Dobrynin in 1982. The Soviet leadership perceived "that the United States would only agree with such a situation where it would be militarily ahead of the USSR." Meanwhile, Reagan believed that "when the Soviets refer to maintaining stability they mean superiority and they have it."[70] But Reagan soon began reaching out to Soviet leaders. "Because arms reduction was so important," Reagan's memoir reports, "I decided in this instance to switch to a more hands-on approach—without help from the bureaucrats." In a letter to Soviet general secretary Konstantin Chernenko, Reagan recalls saying, "it would be advantageous for us to communicate directly and confidentially. I tried to use the old actor's technique of empathy: to imagine the world as seen through another's eyes and try to help my audience see it through my eyes."[71]

It is perhaps not an accident that Republican presidents in the United States have been freer to limit or reduce nuclear forces, though this has only been done with the former Soviet Union and Russia. Nixon and Reagan rose to power as rather extreme anticommunist cold warriors who favored building new nuclear weapon systems and ballistic missile defenses. Beyond helping win elections, this helped them neutralize conservative or xenophobic opposition to their arms control initiatives. Voters and members of Congress could trust that these men would prevent lying and menacing communist leaders from taking advantage of them. It may similarly be the case in India

and Pakistan, for example, that hardline leaders would find it easier to negotiate diplomatic breakthroughs. The question, of course, is whether such leaders, who have spent years demonizing adversaries, would be motivated to compromise with them sufficiently to make lasting deals.

Reagan knew that his Democratic Party competitors would not oppose him on this. Yet, he did feel a need to hide his outreach to Soviet leaders from his own Defense and State Department officials! Later, U.S. president Bill Clinton realized it could be useful to talk with Saddam Hussein in 1998 but feared the domestic costs of doing so. "'If I weren't constrained by the press, I would pick up the phone and call the son of a bitch'" to address the mess of weapons of mass destruction (WMDs) in Iraq, Clinton told British prime minister Tony Blair privately in 1998, according to Steve Coll. "'But that is such a heavy-laden decision in America. I can't do that,'" Clinton concluded.[72] As Coll rightly noted, although "success was improbable, . . . in an arena of only bad choices, it was self-defeating to foreclose secret diplomacy. It deprived the administration of a chance to probe Saddam's motivations and claims about WMD up close, ultimately contributing to America's blindness to the truth" that there were no WMDs in Iraq anymore.

Politics within the Republican Party today, and between Republicans and Democrats, is more polarized than when Reagan and Clinton were in office.[73] (Polarization within the Republican Party is reflected, among other ways, by the number of moderates who have not run for reelection or have vowed not to serve in a Trump-led administration.)[74] The virtue of empathetic compromise appears more like a vice. When polarization (or sectarianism) renders the "other side" in your own state evil—let alone the other country across the world—negotiating to restrain nuclear arms building may not appear as courageous leadership. Instead, you are giving evil opponents power to inflict damage across an entire range of issues, not only international security. During U.S. president Barack Obama's tenure in office, all but a handful of Republicans senators united against any agreements Obama would negotiate with Russia, Iran, or any other adversary. As Robert Soofer, a senior advisor to Republican senators during ratification of the New START Treaty in 2010, observed, "If the [Obama] administration found it difficult negotiating the treaty with the Russians, they must surely have sunk into despair upon seeking Senate advice and consent."[75] Soofer

candidly acknowledges that Republican senators resisted Obama's nuclear handiwork for reasons unrelated to nuclear policy.

In the United States today, there is little chance that the Senate would consent to ratify any agreement that the leaders of Russia, China, or North Korea would be willing to sign.[76] At least one former senior Republican official privately suggests that limits on some U.S. offensive forces and homeland defenses could be acceptable if Democrats would agree in return to support big increases in spending on other offensive forces. This would extend a long tradition of, essentially, paying for arms control with spending on new weapons capabilities. It remains unclear how such domestic compromises create incentives for foreign adversaries to negotiate and maintain restraints on their weaponry. Yet, if nuclear-armed countries are not willing to negotiate arrangements that satisfy each other's interests in some sustainably balanced way, confidence-building agreements will not be made—or they will be made and then cheated on. In the words of a Chinese correspondent, "arms control that aims at increasing one's own security at the expense of the security of others is neither acceptable nor sustainable."[77]

Trump cultivates an image as a dealmaker, but he made no significant deals with China, Russia, North Korea, or Iran in his first term. As former national security advisor John Bolton's memoir reports, Trump sought very one-sided terms, for example in his dealings with North Korea. He insisted on full denuclearization before North Korea would receive significant sanctions relief. North Korea had previously experienced U.S. refusal to pay promised benefits under the 1994 Agreed Framework. Now Kim was being asked to trust that after giving up his leverage, the United States would still pay as promised—and he would live to collect.[78] Kim, unsurprisingly, was not ready to accept. Regarding Iran, Trump pulled the United States out of the Joint Comprehensive Plan of Action (JCPOA) while Iran was complying with it, denying Iran most

If nuclear-armed countries are not willing to negotiate arrangements that satisfy each other's interests in some sustainably balanced way, confidence-building agreements will not be made—or they will be made and then cheated on.

of its promised benefits. Trump, it seems, likes to be televised taking meetings with other leaders to discuss possible deals. But he rarely is willing to come to mutually acceptable terms with them.

For their part, Xi, Putin, Kim, and Khamenei are not known for being empathetic. They have done no better than recent U.S. administrations in proposing possible mutual restraints or other confidence-building measures that would be attractive enough to pursue negotiation. They do not allow competing political actors, civil society, or free media to question them on these issues, so it is left to other governments to encourage them to say what restraints they might be prepared to offer and under what conditions.

The Regime Change Problem

When a president who champions American values declares that another government is "evil," as Reagan said of the Soviet "empire" in 1983 and as George W. Bush said of the Iraq, Iran, and North Korea "axis" in 2002, he creates expectations in his own party and abroad that his government should try to replace that evil regime with a better one. Governments that are denounced as evil (or similar invectives) naturally draw the conclusion that they should prepare for the worst, especially after the experiences of Libya, Iraq, and, by some readings, the aftermath of the Soviet Union. Thus, leaders of Russia, China, and North Korea retain nuclear weapons as an ultimate defense against regime change. (This fear of regime change is largely why Saddam did not cooperate to prove that he did *not* have nuclear weapons, all of which enabled the George W. Bush administration to justify its invasion of Iraq in 2003. "Saddam thinks he's going to be toppled if he doesn't have weapons," an Iraqi general who had defected told Charles Duelfer, the deputy chief UN weapons inspector.)[79]

If all nuclear-armed states supported free speech and political association and conducted free and fair elections, each would be less likely to feel that the others seek to subvert its government or take its territory. They would feel that the others' basic openness would give them sufficient warning of any threats of aggression, and that leaders proposing to spend heavily for military supremacy when facing no clear threat of aggression by others

would encounter effective opposition. Compared with today, U.S. leaders would not have had to take the political risk of compromising with "bad guys." The political differences among democratic or quasi-democratic governments would be relatively minor. But today, when some nuclear-armed states do not allow free speech and free and fair elections, there is a circular problem: attempts to democratize other countries through subversion or coercion would intensify their leaders' attraction to nuclear weapons and increase risks of conflict that could escalate.

Tong Zhao aptly describes an important asymmetry in how U.S. officials think about their own nuclear posture and decisionmaking compared with that of China, Russia, and North Korea: "The U.S. perspective holds that authoritarian countries are more inclined to initiate unjust wars and pursue revisionist objectives, more impulsive in their threats of nuclear first use, less reliable in adhering to international norms and ethical standards, and more unpredictable in their strategic decision-making. Consequently, the United States sees valid grounds for adopting a different nuclear policy standard toward authoritarian adversaries, underpinned by these perceived distinctions in governance and international behavior."[80]

The regime change problem appeared vividly on March 26, 2022, when Biden gave a speech in Warsaw. "For God's sake," Biden exclaimed, "this man [Putin] cannot remain in power." Then secretary of state Antony Blinken soon tried to clarify: "We do not have a strategy of regime change in Russia or anywhere else. . . . It's up to the Russian people," Blinken said.

Two days later, Biden tried again. Putin, he said, "shouldn't remain in power. Just like . . . bad people shouldn't continue to do bad things. But it doesn't mean we have a fundamental policy to do anything to take Putin down in any way," Biden emphasized. "The last thing I want to do is engage in a land war or a nuclear war with Russia."[81]

Clarifications like this may or may not reassure leaders like Putin, Xi, and Kim that the United States is not actively seeking to bring them down. Liberal democracies tend (for good reason) to focus on threats of physical attack and invasion. But non-liberal governments feel very threatened by

the power that U.S. financial institutions, tech and media companies, and nongovernmental organizations project into their societies. As Putin told the Munich Security Conference in his famous February 2007 speech, "One state and, of course, first and foremost the United States, has overstepped its national borders in every way. This is visible in the economic, political, cultural and educational policies it imposes on other nations. Well, who likes this? Who is happy about this? . . . Of course such a policy stimulates an arms race."[82]

There are always enough voices in Washington calling for regime change that worst-case-thinking adversaries can always make an argument that this is the United States' intention.[83] For example, in an April 2024 *Foreign Affairs* article, Trump's former deputy national security advisor, Matt Pottinger, and former congressman Mike Gallagher argued that regime change should be the driving goal of U.S. policy toward China.[84] Nor do champions of regime change offer to remove sanctions or relieve pressure if the adversary restrains some particular behavior or capability.[85]

The history of U.S. regime change interventions abroad does not make adversaries receptive to arms control proposals that would one-sidedly advantage the United States. Yet, these are exactly the kinds of proposals that polarized politics motivate administrations to insist upon. Republican administrations' withdrawals from the ABM Treaty in 2002 and the JCPOA with Iran in 2018, as well as their halting fulfilment of the Agreed Framework negotiated with North Korea in 1994, reinforce doubts that the United States will uphold agreements that benefit adversaries, not only itself. All of this deepens suspicions that limiting or reducing military capabilities will only invite aggression or coercion—it will not lead to reciprocal and balanced outcomes.

Taiwan is a special variant of the regime change problem. Despite formal declarations in 1972, 1978, and 1982, U.S. officials, especially in Congress, tend to see Taiwan-China as an interstate problem rather than an intra-China problem.[86] Many in Washington who do not closely follow these issues treat Taiwan as if it is independent. This outrages and alarms Chinese

officials and much of the nationalist public. It appears to violate U.S. commitments to China. In China, welcoming or, worse, encouraging Taiwanese independence is treated as alarming interference in China's internal affairs.

The respected international relations scholar Charles Glaser summarizes the dilemmas here in a way that deserves to be quoted at length:

> Even purely defensive capabilities deployed by Taiwan and the United States would appear threatening to China because they could increase Taiwan's willingness to declare independence and reduce China's ability to coerce or invade the island. Consequently, even if the conditions that would usually blunt a security dilemma were available—such as highly effective defense capabilities that do not double as offensive capacities—they would do little to reduce competition and China's insecurity. Instead, China would see the United States as a threat and respond in ways that then threaten Taiwan. As China's power and military potential increase, so will military competition and political tensions.
>
> The United States is therefore left with only bad options. It can toughen Taiwanese defenses and its own commitment to safeguarding the island but will thereby continue to threaten China's security and risk a major war. It can implement that policy in a variety of ways, but not in one that solves the fundamental problem: that China sees Taiwan as a vital interest. Alternatively, the United States can end its commitment to using force to defend Taiwan, potentially inviting a Chinese invasion and the forcible unification of the island with the mainland. There are no options in between.

It is tempting for many in Washington and elsewhere to assume that if China were not a one-party state ruled by the Chinese Communist Party, perhaps the problem of Taiwan's freedom and security would go away. Unfortunately, this happy thought may be unrealistic. If China democra-

tized and had free and fair competitive elections, what evidence is there that Chinese Communist Party candidates insisting on unification with Taiwan would not win at least a plurality? If such candidates were elected, and the Taiwanese preferred not to unify with the resulting mainland government, on what basis would the United States defend Taiwan against a democratically elected government in China?

Perhaps even if Communists were omitted from leadership on the mainland, the people of Taiwan could still prefer not to unify. Having grown comfortable with their self-government, they could understandably resist opening the potential for actors elected by mainland voters to influence it. Then the question would be whether the elected officials and voting public of China would accept Taiwanese independence or instead would threaten the use of force to prevent that. Again, on what basis would it be legitimate for the United States to intervene?

This discussion suggests that the United States' legitimate interest is not in seeking or promoting regime change but, rather, in deterring or defeating actions by either Beijing or Taipei that would predictably lead to large-scale violence.

The United States (and others) could clarify this by vowing not to act overtly or covertly to remove governments of other nations unless authorized by the UN. Washington may never convince the likes of Putin, Xi, Kim, or Khamenei that it will not act to remove them from power, but it could try to educate itself about the poor results such efforts have achieved over the years. A partial list of the seventy-plus U.S.-led regime change attempts during the Cold War includes the ouster of Mohammed Mossadegh in Iran (1953), repeated attempts to remove Fidel Castro in Cuba and Sukarno in Indonesia, collusion in removing Salvador Allende from Chile (1973), the invasion and overthrow of Saddam Hussein in Iraq (2003) and Muamar Gaddafi in Libya (2011), and various efforts against the regimes in Iran and North Korea (which remain in power twenty-three years after being labeled part of the "axis of evil").[87]

U.S. and international security could benefit if current and future U.S. policymakers understood that when their adversaries possess nuclear weapons,

any perception that the United States pursues regime change is all the more counterproductive. Rather, it makes adversaries want even more nuclear weapons to reassure themselves that the United States will not run the risk of invading to remove them.

The Emergence of New Technologies

Militaries are paid to seek the capacity to win wars. No military voluntarily embraces being deterred and accepting that it cannot win. The famous Reagan-era historian Richard Pipes put it well in an influential 1977 article titled "Why the Soviet Union Thinks It Could Fight & Win a Nuclear War." Modern nuclear deterrence strategy, beginning with the classic work of Bernard Brodie and colleagues, posited that militaries now had to focus on "preventing wars rather than winning them, securing sufficiency in decisive weapons rather than superiority, and even ensuring the potential enemy's ability to strike back," Pipes wrote.[88] "Needless to elaborate, these principles ran contrary to all the tenets of traditional military theory, which had always called for superiority in forces and viewed the objective of war to be victory." Pipes went on to argue that Soviet nuclear forces and doctrine followed traditional military theory and U.S. policy should be corrected to counter this. Similar tensions between the precepts of deterrence and warfighting have flared over the ensuing decades.[89]

Technological innovation inspires temptation to escape from nuclear deterrence by gaining some usable advantage over the adversary. New military technologies improve the detection of targets and accuracy of attack, so the yields of nuclear weapons can be reduced without decreasing confidence that targets will be destroyed. Some targets that previously only nuclear warheads could destroy can now be ruined by conventional weapons. These emergent capabilities can reduce the risks of collateral damage and, more broadly, of crossing the threshold to nuclear conflict. Political leaders may then be more inclined to pursue military theories of victorious warfighting.

When adversaries perceive (or fear) their opponent is seeking supremacy, they may be more readily deterred. On the other hand, political and military advisors who believe their adversaries will be deterred by superior capa-

bilities may become less deterred themselves and make moves that end up provoking or escalating nuclear war. This can be a paradoxical destabilizing effect of nuclear deterrence: capabilities that deter your adversary may embolden yourself, but that adversary may fear that this new boldness will lead to aggression—which, in turn, leads them to desire more weapons for deterrence. This paradox produces security dilemmas and insecurity spirals: your effort to technologically strengthen your deterrent (and limit your opponents' capacity to damage you) looks like an offensive threat, which the adversary then tries to counteract through speech and/or action that you perceive as an offensive threat. Your counteraction to that move threatens your adversary, who may counter in return, and so on in a spiral.[90]

This can be a paradoxical destabilizing effect of nuclear deterrence: capabilities that deter your adversary may embolden yourself, but that adversary may fear that this new boldness will lead to aggression—which, in turn, leads them to desire more weapons for deterrence.

The diffusion of ever-more lethal conventional and dual-use weapons and reconnaissance and command-and-control capabilities, along with regional missile defenses and low-yield nuclear weapons, blurs the boundary between conventional and nuclear warfighting. As Russian scholar Alexey Arbatov notes, "Many current and future systems of this kind are dual-purpose delivering nuclear and conventional munitions, and their employment would be indistinguishable from a nuclear strike until detonated. This is true of heavy and medium bombers, tactical strike aircraft with missiles and bombs, surface ships and attack submarines with dual-purpose missile systems."[91]

All of this increases the prospect of inadvertent escalation to nuclear war, as James Acton has detailed.[92] An attacker may use non-nuclear capabilities—including hypersonic cruise missiles with conventional warheads or malware targeting command-and-control systems—to target what it thinks are the adversary's non-nuclear warfighting capabilities. But the victim may not be able to distinguish these operations from a nuclear attack: the incoming weapons could resemble nuclear ones, or the assets being attacked—such as command-and-control systems—may be part of the victim's nuclear deterrent system as well as its conventional capabilities.

There is some hope that new technologies can improve the capacities of states, international bodies, and civil society to monitor and verify compliance with arms control and confidence-building measures.[93] New monitoring and verifications capabilities could buttress confidence in older treaties that limit numbers of large objects like missile launchers, submarines, and bombers. But dual-use launchers and multiple-use satellites and software probably will not be subject to old-style controls. Instead, competing states will have to agree on codes of behavior. Breaches will be detected after the fact—hopefully not after significant damage has been done.[94] This trend toward controlling behaviors instead of military capabilities is driven partly by technological change and partly by the political factors discussed here and throughout this book. Instead of *arms* control, the new focus may be on *behavior* control.

The Political and Economic Power of Military-Technical-Industrial Complexes

The so-called military-industrial complex refers both to cognitive and material phenomena. A military-industrial complex is an interest group of military leaders, corporate shareholders, managers, and employees interacting with the state agencies that authorize and fund them. It is also a way of thinking that prioritizes building military capabilities over diplomatic initiatives and socioeconomic investments to resolve or redress disputes and influence foreign populations.[95]

Leaders determine nuclear-armed states' intentions, but military-industrial complexes can drive decisions on the development and deployment of capabilities.[96] U.S. president Dwight Eisenhower, in his famous 1961 farewell address, described how the military-industrial complex in the United States could acquire "unwarranted influence" and "public policy could itself become the captive of a scientific-technological elite."[97] Nuclear weapons laboratories and related think thanks invent new capabilities and potential uses for them. Military services vie for nuclear missions. Large construction and manufacturing companies lobby for contracts to build and base nuclear weapon systems.[98] Congressional representatives of the states

hosting all these activities and related employees promote government spending on them. Eisenhower understood the implications.

Militaries are paid to win wars, not to be deterred. Their job is to imagine the worst plausible thing their adversaries could do and find ways to either prevent it or to do even worse to the adversary. It is up to national leaders to decide whether and how to start, limit, or terminate wars. Yet, planning for wars, including nuclear conflict, is conducted primarily by militaries, so politicians get pressured to endorse large and variegated arsenals that planners claim (or hope) could win tactical advantages in combat and will therefore deter adversaries. While these winning capabilities may be defensively sought for deterrence, adversaries are likely to perceive them as aggressive. U.S. strategic missile defenses are an obvious example. China's new ICBM silos may be another example if their purpose is to ensure the survivability of China's basic deterrent in the face of potential U.S. missile defenses and offensive conventional strike forces.

Correcting worst-case perceptions, reducing escalation pressures, and facilitating political settlement requires political leaders to assert power over their military-defense establishments. This is not easy in democracies or nondemocracies.[99] In the United States, and likely in other countries, political leaders often find it risky to challenge or temper military leaders' desires to pursue victory in political or military contests with adversary countries. It is especially difficult when a leader is feeling politically vulnerable for any reason.

Similar military-industrial exertions occurred in the Soviet Union. As Anatoly Dobrynin recounted:

> The growing influence of the Soviet military-industrial complex was among the major factors gradually undermining détente, and not just because of its growing demands for technological sophistication, as in the United States. . . . In short, the military brass and the captains of military industry, who were Brezhnev's reliable supporters in the party and the government, had free access to him with their projects, but they had little knowledge and less

> responsibility in the field of foreign policy. . . . All this led to an uncontrollable arms race that was not linked to specific objectives of foreign policy or general concepts such as détente.[100]

In bilateral competition—such as the United States and Russia, or India and Pakistan—the nuclear military-industrial complexes feed off each other. This is increasingly the case with the U.S.-China competition too, after decades of relative self-restraint by Beijing as it bolstered the nation's economic power. One side's reported technological advance helps the other side's nuclear weapons laboratories or missile design bureaus obtain new funding for their desired countermeasures. A humorous variant of this phenomenon occurred at a meeting hosted by a nongovernmental organization in the early 1990s: U.S. nuclear weapons designers smilingly told their Russian counterparts how glad they were when Russia resumed nuclear testing in 1987 after a moratorium imposed by Soviet leader Mikhail Gorbachev throughout 1986.[101] The Russian test made it more likely the United States would respond in kind rather than imposing their own moratorium on testing, as the weaponeers had feared. (A moratorium on U.S. nuclear testing was established in 1992 and continues to this day.)

Similarly, in South Asia, the Indian Defence Research and Development Organisation's frequent (and often ill-founded) boasts about being on the cusp of a major new weapon capability—a ballistic missile defense, or multiple independently targetable reentry vehicles (MIRVS)—delighted the leadership of Pakistan's nuclear weapon complex. It helped them justify Pakistan's constantly evolving missile capabilities and warhead stockpiles as necessary defensive responses to India.[102]

There is at least one countervailing example where a military-industrial complex's shortcomings create a constraint against competition: when physical and managerial challenges and shortcomings beset the military-industrial complex. Huge delays and cost overruns in the new U.S. Sentinel ICBM program and uranium and plutonium component production facilities, for example, mean the American military-industrial complex may not be able to expand the U.S. nuclear arsenal as they would prefer.[103] Arms control

or other forms of constraint then may become more attractive as means to manage competition with adversaries.

Worst-Case Policymaking

All four of the phenomena discussed previously encourage worst-case policymaking, which has long been a problem in and between nuclear military-industrial complexes. As Aleksandr' Savel'yev and Nikolay Detinov wrote from firsthand experience in their important book, *The Big Five: Arms Control Decision-Making in the Soviet Union*, "it should surprise no one that—as with the United States—the leaders of the Soviet Union proceeded from a worst-case scenario in all their actions and forecasts."[104] Tong Zhao reports that "China's heavy reliance on worst-case-scenario thinking has created unintended consequences."[105]

Worst-case analyses reflect low confidence in intelligence assessments: if your intelligence community does not have good knowledge or insights into your adversaries' capabilities *and* intentions, it seems safest—for analysts' and policymakers' careers and perhaps for the nation—to assume the worst. Assuming the worst is even more natural (and tacitly encouraged) in an environment where compromise with domestic as well as foreign adversaries is anathema. When domestic political culture is highly polarized, being wrong in one's assessment and/or policies can invite vicious social media slander or even end a career. To the extent that worst-case thinking and analyses magnify threats, defense bureaus and industries' revenues will increase.

Mainstream analysts and policymakers assume, not unreasonably, that the more destructive or preemptively useful a state's weapons are, the more aggressive the intentions of that state. General (ret.) John Hyten, a former vice chairman of the U.S. Joint Chiefs of Staff, reflected this tendency when he suggested that China's maneuverable hypersonic glide vehicle tested in July 2021 "look[s] like a first-use weapon. That's what those weapons look like to me."[106] Chinese counterparts and longtime China scholars would not draw this conclusion so easily.

Worst-case thinking intensifies the feeling that regime change is necessary to stem adversarial threats. In the case of Iraq, the more monstrous U.S.

officials thought Saddam was, the surer they were that he was harboring chemical and biological weapons and building nuclear ones. To them, he simply had to go. And the more Saddam heard these allegations, the more he thought Washington was determined to kill him—even if he let inspectors prove that he had no WMDs. His worst-case thinking held that the U.S. Central Intelligence Agency was omniscient and must know that he didn't have these weapons. Assuming U.S. (and Israeli) determination to lie, sanction, and overthrow him no matter what, he defied inspectors to maintain his standing at home and in the Arab world.[107] Putin's decision to invade and take over Ukraine was motivated in part by his worst-case belief that Ukraine would be invited to join NATO, which would then "take Crimea back through military means."[108]

Worst-case projectors, and the people who quote them, may not even be aware they are using such logic. Nor do they warn their audience. Yet, some champions of nuclear disarmament evince a similar-yet-opposite approach: best-case-scenario thinking. They do not warn audiences that the argued benefits of nuclear disarmament depend on best-case assumptions, in which bigger powers are not more likely to prey on smaller ones in the absence of nuclear deterrence.

These analytic and policy risks were well represented in a recent article in *Joint Force Quarterly* by Kayse Jansen on U.S. deterrence strategy. Jansen, an official of the U.S. Strategic Command, suggested "best practices" to help strategists "recognize the threats as they are, and face head-on the reality of a complex, congested, and compounding security environment." The first imperative, she wrote, is to "let the worst-case scenario become the planning scenario."[109] Jansen goes on to instruct that "The statement 'They would never' should be prohibited from the modern strategist's lexicon." Yet, logically and historically, rejecting best-case thinking does not validate worst-case thinking. Both betray a lack of quality information, familiarity, and analysis regarding the adversary and problem at hand.

The five phenomena sketched in this chapter create powerful political, economic, and technological interests that are both causes and effects of nuclear arms racing and instability. These phenomena can derail nuclear arms control and disarmament; they can also be consequences of this failure and

abandonment. This is not tautological. Rather, the factors discussed here reflect the complex ways that polities organize and direct themselves as they perceive and manage relationships with competitors in what may be existential struggles. Change comes when polities and decisionmakers want to increase or decrease their intimidation of competitors, or instead when they prefer to assure them. Such changes in intention and practice often spring from the arrival of new leadership at home as much as from changes in adversarial behavior abroad.

Near the end of a lifetime of study and government service, Robert Jervis assessed the relative influence of domestic and foreign factors in shaping U.S. nuclear policymaking. He wrote:

> Internally generated impulses can override external stimuli; internal preoccupations can drown out a concern for what others are saying and doing. . . . The desire of democratic leaders to gain and retain power can guide foreign policy; concentrated and well-organized interests can trump or constitute the national interest; struggle and compromises within the bureaucracy can shape the information and options displayed to leaders. . . . The external world is glimpsed only dimly and in distorted form, and states may be reacting more to themselves than to others. Although deterrence theory and the security dilemma interpret arms competition differently, they both see states reacting to what others are building and doing. . . . But this may be more of a rationalization—sometimes without leaders being aware that this is the case—and the driving forces may be lodged within the state's own political economy. . . . It is surely a truism that the US government spends at least as much time negotiating with itself as it does negotiating with other countries—and the domestic struggles seem even more bitter.[110]

This is not a partisan observation. The former Trump administration deputy assistant secretary of defense for nuclear and missile defense policy, Robert Soofer, candidly details many of the dynamics Jervis described:

> The conventional wisdom about policymaking suggests that decisions should flow from a rational calculation of interests and objectives, with a conscious calibration of means and ends, and that the president wields extraordinary power in guiding policy formulation and its implementation by cabinet members and the national security bureaucracy. . . . In practice, policy – even that initiated by the president – is affected by institutional procedures, bureaucratic politics, the push and pull of domestic and international politics, individual priorities and personalities, interest groups, media influence, and even the press of time and events.[111]

Different observers in different states could add or subtract from this list of drivers. Not all these drivers need to be removed or reduced to create the possibility for cooperative efforts to stabilize nuclear competitions. For example, nuclear-armed states could request worst-case analysts to assess the effects of nuclear war and consider these analyses just as they weigh worst-case analyses of Russian or Chinese intentions and weapon programs. This could generate more interest in negotiating stabilization measures than occurs today. Leaders who became more aware of their counterparts' concerns about regime change could take steps to reassure them and clarify that peaceful coexistence is the guiding strategy. Maybe new technologies could be designed that bolster deterrence without conveying offensive threats. The one impediment to stabilization that must be reduced or removed is the unwillingness or political inability to compromise. This means recognizing the reality that people and nations may feel hostile toward each other; for them to live together without killing each other, they must sometimes negotiate outcomes that benefit the other side too—even if they don't like doing it. This does not mean giving away one's own interests. By making security arrangements that also account for the other side's interests, you can protect and advance your own.

Part Two: Where Might We Go and How Might We Get There?

04

Three Options for Nuclear Competition

The whole world has an existential stake in the prevention or limitation of nuclear war. The first question we must ask is whether nuclear deterrence (in some form or another) will prevent major war, including nuclear war, more effectively than nuclear abolition would. (Abolition could fail to prevent nuclear war if, in a crisis or conflict, one or more states raced to remake nuclear weapons or take them out of hiding, as discussed below).[112] The next question is whether some approaches to nuclear deterrence are more dangerous and unnecessarily costly than others. For example, are some arsenals and operational plans more likely to lead to overkill, in which massive nuclear exchanges kill indiscriminately and cause damage and suffering far greater than the threat being contested? Answers to these questions are highly debatable.

The next three chapters analyze arguments for and against: 1) nuclear abolition (disarmed competition); 2) unstabilized nuclear competition; and 3) stabilized nuclear competition. (The latter could entail a wide spectrum of doctrines, arsenals sizes, targeting plans, and potential destructiveness.) The analysis here is intended to be historically, technically, and logically valid *and* politically effective. That is, each chapter provides an argument that political actors could assess in deciding their nuclear weapon policy.

(A note on terminology: we use "stabilized" and "unstabilized" to reflect intentions and policy choices. Nuclear arsenals may inherently deter adversaries and thereby provide some degree of stability. However, as the stability-instability paradox suggests, in the absence of cooperative stabilizing measures, competitors may be emboldened to act aggressively below the presumed—and uncertain—threshold of strategic nuclear attack. When risks of escalation from conventional war to limited nuclear war to all-out nuclear war are unregulated by mutual understanding and negotiated stabilization measures, this is *unstabilized* nuclear competition. On the other hand, competitors may choose to genuinely negotiate or reciprocate restraining behaviors and military capabilities. This is *stabilized* nuclear competition. Stabilization can have varying forms and extent. In terms of the stability-instability paradox, stabilization can be pursued vis-à-vis nonstrategic and strategic nuclear forces as well as conventional forces. It can encompass restraints on behaviors by nuclear forces, conventional forces, paramilitary forces, and cyber forces. Leaders can foster stabilization via reassuring communications—confidential or public—and gestures such as summit meetings.)

Obviously, the merits and demerits of each approach depend on the historical circumstances in which they are being pursued or imagined. When the United States and the Soviet Union had no significant diplomatic communication and problem-solving capacity, their nuclear competition was unstabilized. Between 1963 and 1972, they cooperated to negotiate several stabilizing measures that epitomized their political détente, notwithstanding the Soviet intervention in Czechoslovakia and the war in Vietnam. In the 1990s, major reductions in nuclear and conventional forces occurred dialectically with intense leader-to-leader communication and problem-solving initiatives, all of which fostered hope in the early 2000s that nuclear disarmament could eventually be possible. Today, the circumstances among competing nuclear-armed states are more complicated than any previous period. Yet, the world has the benefit of being able to draw upon past experience in restraining nuclear competitions and averting the use of nuclear weapons.

Under political and security conditions like those today, stabilized competition would provide a better benefit–risk balance than either nuclear abolition or unstabilized competition.

We suggest that under political and security conditions like those today, stabilized competition would provide a better benefit-risk balance than either nuclear abolition or unstabilized competition. Within the wide range of possible postures and doctrines for stabilized competition, we argue further that the United States, Russia, and China would serve their own interests and the interests of the rest of the world if they pursued an agenda of steadily rolling back intentions and capabilities to threaten each other's nuclear deterrents and adopted an explicit goal of ending nuclear overkill—a level of death and destruction that would far exceed any damage done in the conventional conflicts that states hope to deter.[113]

05

The Nuclear Abolition Option: Disarmed Competition

If nuclear weapons could be securely and verifiably abolished, it would arguably mean that governments had solved the various challenges and dilemmas associated with securing the world from apocalyptic warfare today. There are many ways to define and accomplish the reduction, dismantling, and disposition of nuclear weapons on the way to abolition. The process would involve stages of disarmament that, for technical, budgetary, and political reasons, would take a long time.[114] This is a goal for the 191 state parties to the NPT. That seventy-three states have also acceded to the Treaty on the Prohibition of Nuclear Weapons reflects their impatience and frustration that this goal is not being pursued effectively. To them, nuclear deterrence is second best. And, of course, some approaches to deterrence are better than others at balancing risks and costs with reliability.

Notwithstanding the desired benefits, nuclear abolition is not being pursued in practice by any of the nine nuclear-armed states and their allies—at least, not as a near-term goal. For the most powerful actors, nuclear disarmament (as a process leading to abolition) has been taken off the agenda thanks to Russia's invasion of non-nuclear-armed Ukraine, the Chinese and North Korean nuclear weapon buildups, the U.S. nuclear modernization program, and the absence of structured arms control and confidence-building mea-

sures between India and Pakistan. So long as each nuclear-armed state feels more threatened by conventional war than by the risk that such a war will go nuclear, they will hold on to their nuclear deterrent.

Still, it is prudent and politically advisable to reinforce the G20 leaders' declaration that the "use or threat of use of nuclear weapons is inadmissible," and the Reagan-Gorbachev declaration that "a nuclear war cannot be won and must never be fought." No one knows whether a limited nuclear war can be kept limited. And if all-out nuclear war occurs, everyone will lose devastatingly. It is asking too much of twenty-first-century human beings and machines to believe that nuclear deterrence will work without fail over the next seventy-five years; if no powerful actors seriously pursue the disarmament project, the human species will doom itself on Earth (and probably on any other planet to which wealthy people hope to escape). This chapter, though, confines itself to the simpler purpose of briefly explaining the fundamental political obstacles that would need to be overcome to motivate competitive states to dismantle their nuclear weapons.

The giant challenge, of course, is how to get politically and physically from today's world, where nine countries have a total of more than 12,000 nuclear weapons, to a world in which all those weapons have been verifiably eliminated and everyone is sufficiently confident that no one will get away with secretly rebuilding them. How can the international community move purposefully toward such a world when great powers are arms racing rather than arms controlling, breaking nonproliferation norms rather than prioritizing them, hedging on old test-ban commitments rather than affirming them, and in a few cases making nuclear threats rather than making them taboo?

There is no agreed plan to do this. Joan Rohlfing, president of the Nuclear Threat Initiative, outlines the basic approach:

> An alternative strategy for preventing nuclear use could rely on a strict and effective technology-control regime around the dual-use technologies that can be utilized for peaceful purposes as well as for nuclear weapons. Seventy years ago, the technical capacity to do that did not exist.

> Today, it does. We have learned a lot about how to monitor, detect, and regulate nuclear technology that could be used or diverted for weapons purposes. Such a regime would need to be coupled with a legal prohibition against nuclear weapons possession, deployment and use, as well as with the policies, institutions, and capabilities necessary to implement, verify, and enforce such a prohibition. Each of these goals is formidable and will require steady effort over a generation or more.[115]

The negotiation of such a regime, especially its enforcement, would require concurrence from at least the United States, Russia, the United Kingdom, France, China, Israel, India, Pakistan, and North Korea—the nine states that now possess nuclear weapons. NATO and Asian allies under the U.S. security umbrella would also need to tolerate dismantling the U.S. nuclear deterrent. Each of these countries presumably would not be willing to eliminate their weapons unless all the others did: as long as one country retains nuclear weapons, it is assumed others will want to balance that power.

The biggest challenges today are the *non-nuclear* threats that make nuclear-armed states (or alliances) feel they need to retain their nuclear deterrent, even if everyone else were willing to get rid of their nuclear weapons.

As previously discussed, North Korean leaders fear that without a survivable nuclear deterrent, they could be attacked and removed by some combination of the United States and South Korea. Russian elites see that "Westerners are trying to make their latent economic advantage pay political dividends, to wear Russia out, and to provoke an internal split. . . . They are eager to degrade, or better yet, disintegrate Russia in order to later halt or even reverse China's victorious march," writes Sergei Karaganov. "The fear of nuclear weapons, or of nuclear war in general, must be restored without any further delay."[116]

China's rapid buildup of its nuclear arsenal suggests a fear that Taiwan would be more likely to declare independence with Washington's backing if China did not have nuclear weapons to deter U.S. conventional military intervention. Pakistan has long felt that nuclear weapons are necessary for it to stand

up to India's increasingly superior economic power and Hindu-nationalist anti-Muslim central government. Israel, in the aftermath of the horrific October 7, 2023, terrorist attack by Hamas and the horrific Israeli military response in Gaza, feels that Iran-backed adversaries would threaten the existence of the Jewish state if Tehran (and others) were not deterred by Israeli nuclear weapons.

The United States is probably most capable of defending its territory and sovereignty without nuclear weapons. Vast oceans separate it from its main adversaries or competitors, and the United States still possesses greater conventional military power than any other state (though it may lack sufficient time to deploy it to defeat a Chinese assault on Taiwan or a Russian assault on a Baltic state). Indeed, this advantage in non-nuclear military capabilities and other elements of national power informed Obama's call in Prague in 2009 for all countries "to seek the peace and security of a world without nuclear weapons." Like the longstanding nuclear hawk and negotiator Paul Nitze, Obama understood that in a world without nuclear weapons, U.S. power would be unrivalled.[117] Or, in the words of former secretary of defense Les Aspin:

> During the Cold War, our principal adversary had conventional forces in Europe that were numerically superior. For us, nuclear weapons were the equalizer. The threat to use them was present and was used to compensate for our smaller numbers of conventional forces. Today, nuclear weapons can still be the equalizer against superior conventional forces. But today it is the United States that has unmatched conventional military power, and it is our potential adversaries who may attain nuclear weapons. We're the ones who could wind up being the equalizee.[118]

Even if the United States had magically eliminated all its nuclear weapons in 2010, would Russia have followed? Would China have? Pakistan? North Korea? Israel? Today, nearly sixteen years after Obama's speech in Prague, nuclear weapons are even more important for these countries and for U.S. allies. Tellingly, since Russia's 2022 invasion of Ukraine, German politicians, including from the Green Party, have stopped speaking of disarmament.

"Security concerns now seem to trump anti-nuclear sentiments,"[119] as Tobias Bunde argues.

So long as there are powerful neighbors who might use military force, particularly nuclear weapons, to try to take disputed territory, nuclear-armed states and allies feel it is prudent to retain a nuclear deterrent. This wariness of nuclear abolition is intensified by the worry that even if a nuclear disarmament regime could be negotiated among all nuclear-armed states, an adversary could secretly remake their nuclear weapons and then dictate to the rest of the world. Each nuclear-armed state would worry this about the others.

"A 'world without nuclear weapons,'" Thomas Schelling wrote in 2009, "would be a world in which the United States, Russia, Israel, China, and half a dozen or a dozen other countries would have hair-trigger mobilization plans to rebuild nuclear weapons and mobilize or commandeer delivery systems, and would have prepared targets to preempt other nations' nuclear facilities, all in a high-alert status, with practice drills and secure emergency communications."[120] In a disarmed world like this, "every crisis would be a nuclear crisis, any war could become a nuclear war. The urge to preempt would dominate; whoever gets the first few weapons will coerce or preempt. It would be a nervous world," Schelling concluded.

Some form of nuclear deterrence would operate in this disarmed world. The United States, Russia, China, and others would retain experts who know how to make nuclear weapons and would have access to fissile materials in extremis. As Schelling wrote, "'Mutual nuclear deterrence' could take the form of letting it be known that any evidence of nuclear rearmament would be promptly reciprocated." Here, the question would be whether this kind of nuclear deterrence with zero declared weapons would be more or less stable than nuclear deterrence with negotiated, restrained arsenals and operational practices among the possessor states. A related and less obvious question asked by Schelling is whether individuals or political parties in a world of nuclear-disarmed states would be allowed to advocate nuclear rearmament. If not, what are the human rights implications of such stricture? And if one or more political factions *did* press for nuclear rearmament, how would that affect international stability? How would competitor governments' worst-

case analysts and military-industrial complexes react to such calls for nuclear rearmament in other countries? How would stability and confidence in the disarmament regime be maintained?

Such risks and concerns might be exaggerated, but the operative question is whether leaders contending for power in any of today's nuclear-armed states would gamble their careers on nuclear disarmament.

This is extremely difficult to imagine unless and until the world's major powers evolve a reliable mechanism for enforcing international law even over the objection of the most powerful states in the system. (The Treaty on the Prohibition of Nuclear Weapons, for instance, has no enforcement mechanism.) If enforcement of agreements were highly reliable, then a legal treaty committing all states to eschew the possession and acquisition of nuclear weapons, with rigorous verification modalities, could become the basis for perpetuating a world without nuclear weapons. The problem, of course, is that the most powerful states in the system do not agree to allow others to enforce unwelcome interpretations of international law on themselves. Wars in Ukraine, Gaza, and Iraq, to name three in the past twenty years, make this point. And Russia's, Israel's, and the United States' nuclear weapons help ensure that international legal judgments cannot be imposed on them.

All this is quite unsatisfying to much of the world whose future lives depend on a handful of leaders continuing to avoid nuclear war. All states share national security interests in avoiding nuclear war. Almost all states share interests in preventing nuclear weapon proliferation. But the world of nuclear haves and have-nots denies most states' desires for equal status. This world leaves most nations physically hostage to two or three leaders who could wage a nuclear war that, under certain conditions, could disrupt global supplies of food and other resources for decades.[121] No wonder, then, that the flaws of decisionmakers and the life-ending consequences of nuclear war make nuclear deterrence tolerable only until a better alternative can be negotiated and enforced and/or until a nuclear war erupts, in which case no one can predict what might happen after.[122]

For now, if major powers favor nuclear deterrence over disarmament, what form of nuclear deterrence, with what types of guardrails, is best for global

security? Best in terms of deterring adversaries without provoking unlimited competition for first-use or other escalatory advantages that are destabilizing, excessively costly, and futile. Best in terms of minimizing overkill—the scale of immediate and long-term destruction of life on earth. Best in terms of respecting the interests and legal protection of people in nations that are uninvolved in a given nuclear war but who are potentially casualties of its radioactive, climactic, and economic fallout. Best in terms of fulfilling the NPT bargain of security (neighbors do not acquire nuclear weapons; nuclear-armed states do not use these weapons to attack non-nuclear-armed states), peaceful uses of atomic energy, and progress toward the equity and peace of a nuclear-disarmed world.

In the next two chapters, we will analyze the perceived benefits and drawbacks of two alternative types of nuclear deterrence: unstabilized competition and stabilized competition. We say "perceived benefits and risks" because no one really knows what is most likely to make nuclear deterrence fail and what will happen if it does. There are no data. That is a good thing, but its meaning is debatable. It could mean that nuclear deterrence has worked so well that it has not failed and will continue to spare humanity from wars that might otherwise occur. It could also mean that nuclear deterrence will fail tomorrow and, if it does, no one knows whether or how nuclear war could be limited.

06

Nuclear Deterrence Option #1: Unstabilized Competition

Unstabilized nuclear competition was on full display between the United States and the Soviet Union from 1945 until about 1963. In 1967, after collaborating to complete the NPT, Moscow and Washington began negotiations to limit offense-defense arms racing.[123] This resulted in the first Strategic Arms Limitation Talks (SALT I) Interim Agreement and the ABM Treaty, both signed in 1972. Before that, the two powers built their nuclear arsenals as fast as their money and technical resources allowed. (The number of U.S. nuclear weapons peaked at 31,255 in 1967 when the Soviet Union had "only" 8,400. Soviet numbers peaked in 1986 at 40,159, when the United States had "only" 23,312.)[124]

Today, concerns are mounting that the expiration of the New START Treaty in February 2026 means Russia and the United States will again compete up and down the escalation ladder without restraint—with capabilities and plans to conduct demonstration shots, limited regional use of low-yield weapons, preemptive attacks, and massive retaliation. Gone will be any agreed-upon limits to the numbers and types of deployed strategic (long-range) nuclear weapon systems and intermediate-range systems of any kind. No limits will exist on missile defenses. The two countries may still abide by

moratoria on explosive nuclear weapon testing, but neither nation is bound legally to the Comprehensive Nuclear-Test-Ban Treaty.

This pending lack of restraint coincides with China's recent rapid expansion of its nuclear arsenal, after six decades of exceptional self-restraint. A new era of three-way unrestrained competition appears underway (unless Chinese leaders credibly clarify how their buildup reaffirms their stated no-first-use policy and a continued rejection of the plausibility of limited nuclear warfighting). North Korea could be added to this mix of unstabilized competition, as it appears to be advancing its nuclear weapon capabilities as rapidly and fully as it can, without any negotiated restraints. Indeed, Russia may be helping it.[125] The United States and its allies now fear that China and Russia, perhaps with North Korea, could coordinate in simultaneous conflicts in Europe and Asia, making it impossible for the United States to defend all its allies at once.[126]

"The main challenge," from the perspective of the United States and its allies, "is that adversaries think that nuclear blackmail, brinksmanship, or coercion can make the United States quit regional conflicts where we have less at stake than they do," in the words of longtime U.S. nuclear policy official Brad Roberts.[127] The Trump administration's handling of the Ukraine war could heighten that challenge. In terms of technology, all the antagonists are affected by largely unrestrained competition for dominance in cyberspace, outer space, and conventional forces.

Fortunately, the other four acknowledged nuclear-armed states are more self-restrained or constrained, even though they have not negotiated arms control agreements. The United Kingdom, France, India, and Pakistan all have arsenals under 300 weapons. They do not plan to conduct preemptive nuclear strikes on their opponents' deterrents, which would drive arms racing and motivate adversaries to prepare early use of nuclear weapons against them. They do not threaten to forcibly take disputed territory from others.

This chapter describes ways in which unstabilized competition is irrational and counterproductive and may be explicable largely through domestic defects that reinforce each other. Some influential actors have known

this. Obama, for example, opened a high-level meeting on nuclear policymaking by saying, "Let's stipulate that this is all insane." Reagan reminisced in his memoir, "some people in the Pentagon . . . thought in terms of fighting and *winning* a nuclear war. To me it was simple common sense: A nuclear war couldn't be won by either side. It must never be fought. . . . As far as I was concerned, the MAD [mutually assured destruction] policy was madness. For the first time in history, man had the power to destroy mankind itself. A war between the superpowers would incinerate much of the world and leave what was left of it uninhabitable forever."[128] Reagan's Soviet counterpart, Gorbachev, had a similar perspective, which he struggled to impress upon his "generals and even some people in the Foreign Ministry . . . [who] were firmly stuck in a logic of antagonism, and the military [who] sought to protect their corporate interests."[129] A deep study of Eisenhower's approach to nuclear weapons led the scholar Campbell Craig to conclude, "We should pay more attention to what the leaders of the superpowers did at the moments of truth than what their bureaucracies planned for in quieter times."[130] This could be amended by noting that, after they retire, some former military and national security officials question much of what they said and did regarding nuclear weapons while in office (Lee Butler and Sir John Gower are outstanding examples).

Each nuclear-armed military thinks that if it is losing a war at the conventional level, it must have options to use nuclear weapons in ways that will make their adversaries seek an off-ramp rather than escalate to all-out nuclear war.

"No nuclear strategy can be completely rational," Robert Jervis wrote, "But when one attempts to escape from the nuclear revolution by conventionalizing, the situation is made even worse."[131] Each nuclear-armed military thinks that if it is losing a war at the conventional level, it must have options to use nuclear weapons in ways that will make their adversaries seek an off-ramp rather than escalate to all-out nuclear war. The problem, of course, is that each side is seeking to deny those capabilities to its adversaries as well. So, each has an incentive not to back down and instead to try another round of controlled escalation in the hopes that now the adversary will stop. And so on, it goes.

Nobody can say with confidence that nuclear war can be kept limited. This is the risk that makes nuclear deterrence work for and against all sides—both the "good" guys *and* the "bad." For the United States, the central logic in these competitions is to maximize the probability of disabling its adversaries' most militarily important targets while minimizing the potential damage to civilians and the surrounding environment.[132] According to Keir Lieber and Daryl Press, "the effort to neutralize adversary strategic forces—that is, achieve strategic primacy—spans nearly every realm of warfare: for example, ballistic missile defense, antisubmarine warfare, intelligence, surveillance-and-reconnaissance systems, offensive cyber warfare, conventional precision strike, and long-range precision strike, in addition to nuclear strike capabilities."[133] One side might hope, and the other would fear, that nonnuclear operations could neutralize nuclear deterrents. But this dynamic produces unending, expensive competition and evolving risk. In an actual crisis or armed conflict, would a head of state gamble that a preemptive attack against another's nuclear forces will completely succeed when the consequence of being wrong is nuclear detonations on their own territory?

Russian military and political leaders assume the worst, of course. As Dima Adamsky puts it:

> the Russian nuclear establishment's main concern is a U.S. "prompt global strike" that decapitates the Russian military's supreme command and nullifies its nuclear retaliation capacity. Russian sources assume that to achieve these aims, the United States will employ nonnuclear offensive and defensive means, as Washington seeks to – according to Russian perception – "de-militarize" and "de-sovereign Russia" and then exploit the country's "territorial, natural, industrial, and human resources."[134]

Russia is developing five new delivery systems that could bypass future U.S. missile defenses: the Sarmat ICBM, whose great range of 16,000 kilometers would enable it to take a southern approach to U.S. targets and avoid missile defenses based in California and Alaska; the Kinzhal, Avangard, and Tsirkon hypersonic missiles that can maneuver to avoid defenses; the Poseidon

nuclear-powered and nuclear-armed torpedo, which can be launched from safe waters and travel deeply up to 5,000 kilometers before detonation; and the Burevestnik nuclear-powered, nuclear-armed cruise missile with a range of 23,000 kilometers.[135]

Putin has expressed this competitive logic. In late June 2024, he declared that Russia "should resume production of intermediate and shorter range nuclear-capable missiles and then consider where to deploy them," in the words of Reuters. The article continues, "Putin said Russia had pledged not to deploy such missiles but that the United States had resumed their production, brought them to Denmark for exercises and also taken them to the Philippines."[136]

In December 2022, Putin evinced the same logic. Speaking in Bishkek, Kyrgyzstan, he said it is potentially "worth thinking about adopting the ideas developed by our US counterparts, their ideas of ensuring their security" with respect to a disarming first strike. Washington has a "theory of a preventive strike," he said, and is "developing a system for a disarming strike" on the basis of its air- and sea-based cruise missiles. Putin claimed that Russia had already commissioned hypersonic weapons capable of carrying out such a strike, while the United States had not yet deployed such systems. "If the potential adversary believes that it can use the theory of a preemptive strike and we don't, it makes us think about the threats posed by such ideas in other countries' defensive posture," he said. Putin also explained the deterrence logic of launching one's nuclear weapons on warning that they are being attacked. "When the early warning system receives a signal about a missile attack, we launch hundreds of missiles that are impossible to stop," he said with a smile, according to the Associated Press. "Enemy missile warheads would inevitably reach the territory of the Russian Federation. But nothing would be left of the enemy too, because it's impossible to intercept hundreds of missiles. And this, of course, is a factor of deterrence."[137]

China, playing catch up, is enhancing its capacity to defeat U.S. and allied regional conventional forces, survive U.S. preemptive attacks on its nuclear deterrent, and defeat missile defenses at the regional and strategic levels. Some urge the United States to increase its offensive and defensive

missile forces, especially to counter China.[138] However, these advocates do not explain why China and Russia would be unable or unwilling to add offensive capabilities to overcome whatever new increment of defenses that Washington and its allies deploy.

This competitive logic was evident in then U.S. national security advisor Jake Sullivan's June 2023 speech to the Arms Control Association in Washington, D.C. "We're investing in cutting-edge non-nuclear capabilities that will help sustain our military advantage for decades to come," Sullivan declared. "Capabilities like conventionally-armed hypersonic missiles that can reach heavily-defended, high-value targets—in contrast to the nuclear-capable missiles of similar kind that Russia and China are developing. And capabilities like new space and cyberspace tools that will help the United States retain its advantage across every domain," are part of the U.S. effort. The United States, Sullivan said, will "negotiate arms control from a position of strength and confidence."

Comments like Putin's and Sullivan's may be intended to impress domestic audiences as much as to deter adversaries. Yet, they give adversaries compelling justification to enhance their own arsenals and war plans to compete. Russia and China see the United States as seeking advantages that they must counter. The United States sees them seeking more nuclear and other capabilities in order to take territory or sovereignty away from U.S. allies and to deter the United States from trying to stop them. Each, in its self-centered way, sees itself as acting defensively and the other acting offensively. The result, regardless, is ceaseless military-technical instability and political anxiety.

The rest of this chapter outlines eight major liabilities of unrestrained offense-defense competitions. The ultimate risk, of course, is that the United States and Russia and/or the United States and China could destroy each other and render earth uninhabitable for billions of other people whose nations are not in the fight.

Arms Racing

Uncontrolled pursuit of offensive and/or defensive superiority over an adversary's nuclear forces will likely lead to arms racing. Today, each state

prefers to say it is not seeking superiority but is merely seeking to prevent its adversaries from gaining superiority. Regardless, if competing states think their opponents can preemptively destroy many of their nuclear forces and command and control systems and then use missile defenses to block retaliation, they will mobilize resources to counter this risk and reinforce their own deterrent. This is the sort of arms racing the United States and the Soviet Union/Russia engaged in for decades and that China may now be conducting too, though Xi's thinking about nuclear competition has not been disclosed.[139] (India and Pakistan follow this logic in much more restrained ways, in part because India has adhered to a no-first-use posture.)

As the United States decides how to compete simultaneously with Russia and China without agreed-upon constraints, policymakers must answer why Russia would accept the United States' deploying significantly more weapons than Russia does, or why China would accept that the United States must build up to match both Russia and China but China should not do the same. Similarly, Putin and Xi should question whether unstabilized competition in nuclear weaponry will serve their strategic and economic interests as well as negotiated restraints with Washington and perhaps others would.

Crisis Instability and Conflict Escalation

Militaries are paid to win wars. Damage limitation, by targeting an opponents' nuclear forces and command and control systems, makes sense for the attacker. But, to the target, it looks like preemptive denial of deterrence. When there are no mutually agreed-upon norms of behavior in low-earth orbits, in disputed territorial waters and airways, or in cyberspace, competition to target each other's nuclear forces and command and control systems can be especially risky and destabilizing. This is compounded when competing states lack high-level communication channels to clarify intentions and manage crises. In these conditions, accidental collisions or misinterpreted intrusions can escalate crises into conflict, conflict into big wars, and big wars into nuclear catastrophe.

States facing an uncontrolled competitor may plan to launch their nuclear forces before they can be destroyed. This can involve launch on warning

(LOW) or launch under attack (LUA) plans, possibly including preprogrammed automatic launch of weapons if centralized command and control systems have been disabled. Both of these options are subject to human and technical error. Putin's remarks in Bishkek (see page 77) reflect this logic, as does official North Korean nuclear doctrine calling for nuclear launch if hostile forces conduct or appear on the verge of conducting "a nuclear or non-nuclear attack on the state leadership and the command organization of the state's nuclear forces."[140]

LOW and LUA policies are especially dangerous. They give decisionmakers less than ten minutes to assess whether warnings are valid or are due to technical malfunction, spoofing, mischaracterization, or some other human error. Time pressures make it likely that heads of state will be given response options that have been prepackaged by their military and may not reflect how that leader would wish to respond in the actual event.

China's limited experiences with early-warning technologies and LUA command and control operations add to the risk of accidents, mistakes, and misunderstandings, which occurred repeatedly in the early U.S. and Soviet/Russian competition. New technologies—such as maneuverable hypersonic missiles and malware that could interfere in command, control, and communications—present additional challenges for threat evaluation and decisionmaking compared with the nuclear rivalry of the Cold War.

Alexey Arbatov aptly summarized the risks that flow from targeting each other's strategic nuclear forces and command and control while relying on launch on warning to escape such targeting: "the LOW strike carries a significant risk of inadvertently triggering a nuclear war due to a technical failure of the ballistic missile early warning satellites and ground-based radars, unauthorized launch of missiles by the opponent, misinterpretation of the other side's actions or intentions, and uncontrolled escalation of a local armed conflict."[141]

U.S. nuclear strategists today emphasize that LUA or LOW is an option, not a first-choice plan. They argue the capability must be retained, even if a president is unlikely to authorize the use of nuclear weapons this way. Some observers say China is moving in a similar direction, toward LOW

capabilities, to ensure that the United States cannot preemptively destroy China's nuclear deterrent.[142] The dilemma, of course, is that adversaries assume that deploying LUA or LOW capabilities reflects the intention to use them. Assuming the worst, they build and plan accordingly. This is likely to continue, so long as these states prioritize nuclear counterforce targeting.

The Fleeting Illusion of Superiority

Logic and U.S.-Soviet history show that uncontrolled offense-defense competitions cannot be won in sustainable and affordable ways. The other side, unless it faces bankruptcy or radically different leadership, will find a way to counter whatever short-term advantage your side might gain on offense or defense. For some, the demise of the Soviet Union fosters hope that the United States could arms race China to death, too.[143] But China is too rich and its leaders too smart for that; it will seek affordable ways to deny U.S. strategic dominance. And the evolution of Russia from 1991 to 2021 should temper expectations that the losing side of a cold war will stay down for long. (Putin, in a February 2024 speech exhorting the Russian nation to victory in Ukraine, celebrated five new nuclear weapon systems that Russia is building. He noted that the West "attempts to draw us into an arms race, thereby exhausting us, mirroring the strategy they successfully employed with the Soviet Union in the 1980s."[144] Putin indicated Russia would not repeat that episode.)

As the wise Anatoly Dobrynin summarized:

> The whole history of the arms race showed that neither side would let the other pull ahead. . . . From the MIRV controversy all the way to Ronald Reagan's favorite dream of a Star Wars defense, it is easy to trace an American desire to acquire some form of ultimate weapon guaranteeing superiority over the Soviet Union, however illusory that might have been. . . . Because a limitation on MIRVed warheads or an outright ban would have been opposed by the Pentagon and its political supporters on the right, Nixon and [national security advisor Henry]

> Kissinger gradually decided to seek curbs on ABM systems only. . . . MIRVed missiles lasted as an American advantage for only a couple of years, when the Soviet Union built its own.[145]

Dobrynin tells a similar story about the Soviet leadership's "mistaken decision to deploy the SS-20s under pressure from our military, who were mesmerized by their high performance."[146] As a result, Dobrynin writes, the United States countered by deploying Pershing II missiles. "Military tensions rose in Europe, and the overall strategic nuclear balanced shifted in favor of the United States. Major efforts had to be made much later to relieve tension by mutually renouncing such missiles and scrapping them." Gorbachev shared Dobrynin's assessment that the SS-20 deployment was a huge mistake initiated by the Soviet military-industrial complex.[147]

Direct and Opportunity Costs

Uncontrolled competition can be extremely expensive, especially for weapons that are meant never to be used. Funding uncontrolled competition in nuclear forces diminishes the pool that could fund conventional forces, whose quality and quantity do more to determine outcomes on the ground and whether nuclear war will occur.

Competing with two peers—Russia and China—will be especially costly for the United States unless allies in Europe and Asia significantly increase the scale and effectiveness of their military capabilities, as Trump is once again imploring them to do.[148] Costs for the new Sentinel ICBM and the Columbia-class nuclear-powered ballistic missile submarine programs have risen 13 percent between the budgets for fiscal year 2024 and rate year 2025.[149] Both programs, as well as the over-budget Department of Energy plutonium pit program, are behind schedule. According to an in-depth *New York Times* report, the United States began

Funding uncontrolled competition in nuclear forces diminishes the pool that could fund conventional forces, whose quality and quantity do more to determine outcomes on the ground and whether nuclear war will occur.

an extensive nuclear weapon modernization program in 2010, budgeted at $1.7 trillion, "with no significant debate." Keeping with historical patterns, "At least 20 major projects are already years behind schedule and billions of dollars over budget."[150] Russia, China, North Korea, India, Pakistan, Israel, the United Kingdom, and France do not inform their citizens or the rest of the world what they spend in total on their nuclear weapon systems.

Overkilling People and the Planet

Even after their nuclear competition was controlled by treaties, the United States and the Soviet Union together deployed more than 60,000 nuclear weapons in 1985. That number finally began declining thereafter thanks to verifiable treaties. These two arsenals clearly could have killed more people than "required" for any sane deterrence or warfighting strategy. In determining how many weapons of what explosive yield (power) were necessary, U.S. planners considered only effects of blast—the tremendous shock wave and wind from a detonation. They did not consider the destructive effects of fire and radiation.[151] This resulted in war plans with shocking overkill. Civilian officials in the United States intermittently have examined military targeting plans and found hundreds of targets that did not merit nuclear weapons. But, despite these efforts to reduce overkill, successors ten or fifteen years later found that target lists were excessive again.[152]

U.S. and Soviet nuclear war planners (and others) also did not calculate environmental effects that could produce what became known has nuclear winter. Fire that burns large quantities of materials, especially from urban and industrial areas, can lift sufficient volumes of soot into the upper stratosphere in sufficient quantities to block sunlight, severely disrupting agriculture for years in nations that had nothing to do with the war.[153]

Nuclear Counterforce Strategy: What Leaders Value Most

There is a maxim that deterrence depends on targeting what adversary leaders value most.[154] But how do opponents assess what adversary leaders value most?

Steve Coll, in his formidable 2024 book *The Achilles Trap*, describes how U.S. officials could not fathom Saddam's motivations and intentions. Nor could Saddam understand and predict the behavior of U.S. leaders.

"During the conflict over Kuwait," for example, Coll writes, Saddam "was so convinced that an atomic strike by Israel or America was coming that he commissioned plans to evacuate Baghdad's population to the countryside." But this did not cause him to reverse his aggression or bow to international pressure.[155]

In much of the Cold War, Paul Nitze was an exceptionally influential voice in U.S. nuclear policymaking. He insisted with great confidence that Soviet leaders would use advantages in the carrying capacity (throw weight) of Soviet ICBMs to coerce the United States and others to accede to Soviet demands around the world. The throw-weight advantage, Nitze asserted, would make Soviet leaders confident that launching those heavy missiles' warheads against U.S. ICBM fields would so decimate the U.S. arsenal that the president could only retaliate against Russian cities. Doing so, he said, would motivate Russia to launch its remaining forces against U.S. cities. Faced with that prospect, a president would choose not to respond to Russian first strikes. Anticipating this U.S. inhibition, Russian leaders would then feel free to impose their will around the world.[156] Nitze propounded this view even after Gorbachev became general secretary. Yet, as Gorbachev, Dobrynin, and other memoirists and historians write, Soviet leaders had no such confidence. For every case of geopolitical competition in the Cold War where the Soviet Union gained an advantage against Western interests, there is another case where Western interests prevailed over Moscow's. And in the end, the Soviet Union collapsed despite its throw-weight advantage.

How many U.S. intelligence analysts and nuclear war planners in their offices in Langley, Virginia, or Omaha, Nebraska, have a real sense of how Putin, Xi, and Kim perceive U.S. intentions and capabilities? How many of those analysts and planners have ever spent time in Russia, China, or North Korea, and interacted with people there long enough to actually determine which targets would most threaten their leader's grip on power? There are many counterintelligence and security constraints on U.S. officials engaging with adversary counterparts or traveling in adversary countries to better un-

derstand their perspectives. Official meetings often amount to a sterile trade of talking points. These tendencies help explain why past breakthroughs have often been achieved directly through secret correspondence between top leaders and perhaps a designated back channel.

Political policy debates in Washington often feature the claim that adversaries do not sufficiently fear the United States (typically due to the weakness of whoever is being blamed for U.S. policy in Washington). So, the thinking goes, the country needs more and better weapons and a clearer willingness to use them. But Russian, Chinese, and Iranian officials and scholars often indicate in private and in public that they think the United States has clear military superiority and is always trying to bully or overthrow them.[157] What would happen if U.S. leaders asked their Russian and Chinese counterparts what they believe U.S. nuclear targeting plans are, and whether they have questions or warnings about them? When adversary leaders—be they Chinese, Russian, North Korean, or American—give speeches projecting their side of a dispute and describing the threats they perceive, their opponents tend to ignore or dismiss them. Yet, competitors' most *menacing* statements or capabilities are widely cited to justify one's own most belligerent or threatening policies.[158]

The United States, for decades, has selected targets on the reasonable assumption that the leaders of these countries value perpetuating their regimes and staying in power over their people.[159] But how does threatening to destroy some fraction of their nuclear arsenal make adversary leaders conclude that they would be removed from power? And how will that make them cave to whatever Washington is trying to make them do?

It seems there are two alternative ways the United States could threaten to end these regimes' power (and thereby deter or compel them to act differently). One—which is both repugnant and ridiculous—is to destroy their people so they have no one to rule over. The other, more theoretically and morally acceptable option is to remove and replace leaders and their apparatuses of repression and aggression. But doing that requires boots on the ground: hundreds of thousands (if not more) occupying soldiers, who can uproot existing repressive institutions and personnel and somehow replace them with leaders who are more decent to their people and less threatening

to their U.S-allied neighbors and the United States. Destroying an adversary's nuclear weapons, so that they could not be unleashed to stop a U.S.-led invasion, could make a regime-change war more credible in theory. But detonating the number of nuclear weapons needed to preemptively destroy an adversary's nuclear forces would have devastating and dangerous effects. Are U.S. and allied leaders likely to send their troops and other personnel into radioactive environments to replace the odious regimes in Russia, China, or North Korea? Even if Russia and China had zero nuclear weapons, it is inconceivable that the United States and its allies would invade and occupy either country and undertake the long, arduous process of rooting out their repressive and aggressive actors and institutions.

From a different angle, do Russian, Chinese, and North Korean leaders accurately judge what U.S. leaders value most? How would U.S. scholars, journalists, nuclear strategists, and politicians from different parties assess what U.S. leaders (ranging from Barack Obama to Donald Trump) value most? One answer must be that leaders value heavily their own reelection: how should that inform Moscow, Beijing, and Pyongyang's selection of targets? Would Electoral College swing states be targeted because residents might be less likely to reelect a president who presided over nuclear attacks against them? Or would targeting swing states make them *more* likely to support that president as a way to defy and seek revenge against the enemy? Performing this exercise of target valuation on your own country shows some of the limitations of nuclear deterrence targeting dogma. Leaders or the public can be surveyed about what they value most, but their perspective might change considerably after the experience of a nuclear attack.

As the United States, Russia, and China proceed to develop and deploy more nuclear weapons that threaten overkill, it is reasonable to ask what their targets are and why they think those choices will make each adversary leader desist from initiating or escalating the use of force.

Nuclear Counterforce Competition: Leaders May Think Differently

The variety of nuclear weapon systems that states develop and deploy in uncontrolled competition often reflects the desires of military-scientific-industrial establishments. Heads of state authorize these programs, doctrines, and general targeting plans, but they rarely understand the details. Nor do they reveal whether they, as the sole deciding authority, would launch the number of weapons envisioned in such plans.

McGeorge Bundy, national security advisor to U.S. president John F. Kennedy, wrote in his magisterial 1988 study of Cold War nuclear history, *Danger and Survival*, that "The president as commander in chief has been missing all too often in the planning, the procurement, and the doctrinal guidance of nuclear defense policy."[160]

In a similar vein, historian Marc Trachtenberg noted:

> the military establishment still invests heavily in counterforce, and this suggests a certain willingness, in the final analysis, to strike first in a general war. But this argument is weak for a number of reasons. First of all, the sort of counterforce targeting embodied in the war plans does not necessarily reflect a real commitment to anything like a first-strike strategy. It can be explained in other ways—for example, in terms of traditional military approaches to war fighting that were continued out of habit, well into the era of secure second-strike forces. Moreover, it is not up to the generals to decide whether to launch such an attack, and there is every reason to suppose that the political leadership is viscerally opposed to first-strike strategies.[161]

Soviet/Russian political leaders between Joseph Stalin and Putin appear to have been similarly more cautious about launching nuclear weapons than their military planners and large arsenals would suggest. In 1972, according to Gordon Barrass, a longtime British intelligence official, the Soviet Ministry of Defense invited then Soviet general secretary Leonid Brezhnev

and colleagues to participate in a so-called war game. The scenario, recounted in Barrass's fascinating history *The Great Cold War*, involved a surprise attack by more than a thousand U.S. nuclear-armed missiles that resulted in more than 80 million deaths, the destruction of the armed forces, and 85 percent of industry. Soviet minister of defense Marshal Andrei Grechko, according to Barrass's account:

> then asked Brezhnev to push a button that would launch a "retaliatory strike," which in reality involved the launch of just three missiles with dummy warheads along a test range. Brezhnev turned pale, began perspiring and trembled visibly. He repeatedly asked Grechko, "Is this definitely an exercise?" The leadership were traumatized by this experience. None of them ever again participated in such an exercise. Brezhnev immediately ordered yet tighter controls to ensure that there could never be unauthorized use of Soviet nuclear weapons. . . . The General Staff were allowed to work up options, but these were not plans that would be implemented automatically.[162]

Alexey Arbatov, a former Duma member, writes of Russian policy dynamics:

> military professionals and designers of nuclear weapon systems . . . almost never reveal the complex architecture of the nuclear planning to educate government leaders, policymakers, civilian experts, and the public. . . . Nevertheless, when these "nuclear modalities" catch the eyes of independent experts, it appears that many of these might be called into question, which implies the need to revise the strategic concepts and military programs promoted by the military departments and their industrial contractors. However because these circles have great political weight inside their own countries, this rarely happens.[163]

The point here is that nuclear arsenals and targeting plans involving thousands of weapons may not reflect what heads of state would actually be

willing to do in war. This cannot be proven and one or more leaders could be inclined differently. But history to date suggests that the logic of nuclear counterforce competition produces overkill and excessive risk that deciders reject. Given these risks and the costs involved—both direct costs and opportunity costs—it is no wonder that heads of state have often been the drivers (secretly in many cases) of negotiations to limit or reduce these weapons, despite the resistance of their militaries and bureaucracies.

The politics of unrestrained competition are easy to describe and prescribe. To sustain it, the United States, Russia, China, and North Korea should keep doing what they are doing now. This means continuing their current domestic political dynamics and approaches to diplomatic problem-solving with each other. In the U.S.-China case, as Tong Zhao writes, it's possible "that China's nuclear buildup is driven less by a desire to undermine the credibility of American deterrence and more by a fear of an increasingly hostile United States exploiting the relative weakness of China's nuclear capability. Considering China's siege mentality, if Washington enhances its nuclear capabilities without effective efforts to convey its defensive intentions, it will likely intensify Beijing's insecurity and strengthen its determination to further expand its nuclear capabilities."[164]

India and Pakistan, which have been relatively self-restrained, would need to resume making threats to militarily take the disputed sections of Kashmir, and India would need a leader unconstrained by rationality or electoral considerations. Under those circumstances, the growing prospects of a major conventional war in the Pakistani heartland, with nuclear counterattacks on the Indian heartland, could potentially motivate both sides to abandon the self-restraint that has contained the scale and pace of their arms racing. Thankfully, both of these contestants in South Asia seem to see an interest in averting crises or dramatic arms racing with the other so they can concentrate resources and energy on other challenges.

07

Nuclear Deterrence Option #2: Stabilized Competition

Stabilized competition is, to put it plainly, better than unstabilized competition. Fewer trillions of national currencies would be spent on weapons that are meant never to be used.[165] Mutual restraint would mean less risk of nuclear detonations, as capabilities and plans for preemptive strikes against nuclear deterrents are reduced. Fewer total weapons and less inclination to escalation would lower the likelihood of nuclear winter and other potential harms to innocent nations if deterrence should fail.

Stabilization can be visualized and experienced along a spectrum of restraint. Zero restraint can be defined as the testing and deployment of all nuclear offensive and defensive capabilities that a state's policymakers desire, its industry can produce, and the state is able to fund. The United States and the Soviet Union engaged in this approach between 1945 and 1963. Fortunately, no other states have copied them or built anything like the arsenals they once possessed.

Since 1963, after the scare of the Cuban Missile Crisis and the secret deal that Kennedy and Soviet leader Nikita Khrushchev struck to end it, the two superpowers began restraining themselves mutually. They worked with the United Kingdom to negotiate the 1963 Partial Test Ban Treaty, and with

sixteen other states to negotiate the NPT. Bilaterally, the two superpowers negotiated the SALT I Interim Agreement and the ABM Treaty in 1972; the unratified SALT II Treaty in 1979; the Intermediate-Range Nuclear Forces (INF) Treaty in 1987; the Presidential Nuclear Initiatives of 1991;[166] the first and second Strategic Arms Reduction Treaties (START I and II) and the Strategic Offensive Reductions Treaty (SORT) in, respectively, 1991, 1993, and 2002; and the New START Treaty in 2010. Along the way, the two superpowers and their alliance partners reduced and limited conventional forces in Europe, agreed on measures to prevent incidents at sea, and cooperated in negotiating the 1967 Outer Space Treaty. Over time, they took other steps to show each other that neither one would undertake a war of aggression against the other, and that the leaders of both countries understood they were better off accepting mutual deterrence than trying to escape it by seeking military supremacy.

China was, for fifty years at least, much more restrained than the Soviet Union/Russia and the United States. Between its first nuclear weapon test in 1964 and the start of Xi's presidency in 2014, China built about 250 nuclear weapons—compared to Soviet and U.S. arsenals that totaled around 64,000 in 1986.[167]

China and several other nuclear-armed states—the United Kingdom, France, Israel, India, and Pakistan—have restrained themselves in various ways without formal nuclear arms control commitments. China and India both have declared no-first-use policies and have long acted consistently with this doctrine. (Their no-first-use doctrines may not apply if an adversary attacks their nuclear arsenal first with conventional weapons, however, because the adversary would have initiated nuclear war, in a sense, by attacking nuclear forces.) China's and India's political authorities eschew making nuclear threats in crises. "India's nuclear weapons program remains remarkably placid despite the ferment in China and Pakistan's own efforts," as Ashley J. Tellis notes.[168] Similarly, even as China's dramatic nuclear buildup proceeds, it possesses around 4,500 fewer nuclear weapons than the United States and 5,000 fewer than Russia.[169] India and Pakistan have reportedly built 160 and 170 nuclear weapons, respectively. This is certainly fewer than they could have produced, and both seem to accept mutual deterrence.

The United Kingdom and France now deploy 200–300 nuclear weapons, mostly on submarines, intended to make any potential adversary conclude it would be suicidal to commit a major aggression against either nation. French President Emmanuel Macron has declared that France would consider "inflicting absolutely unacceptable damages upon" a state that threatened France's "vital interests, whatever they may be."[170] Beyond that, there is little public detail. The United Kingdom simply declares "We will maintain the minimum capability required to impose costs on an adversary that would far outweigh the benefits they could hope to achieve should they threaten our security, or that of our allies."[171] Neither the United Kingdom nor France seeks parity with the military of its most likely antagonist or appears to plan tit-for-tat strikes against adversaries' nuclear forces. Both do seem to plan for the possibility that, in an escalating crisis or conflict, they would detonate one or a few nuclear weapons as a warning, or, in the case of the United Kingdom, perhaps a larger, though still relatively small, number to persuade the adversary to deescalate. This relative restraint by the United Kingdom and France is enabled by political geography: neither Russia nor China is able or motivated to invade them or launch a bolt-from-the-blue nuclear strike on them. The primary scenarios for British and/or French use of nuclear weapons would be to compel Russia or China to deescalate a war against British or French allies, especially one in which British or French forces had been engaged and attacked.

Israel does not currently have a nuclear-armed adversary. The primary expression of its self-restraint is that Israeli officials do not talk about or show off their nuclear capabilities. The official policy is that Israel will not be the first country to introduce nuclear weapons to the Middle East.[172] The word "introduce" could mean to declare possession, to display a nuclear weapon, to threaten to use nuclear weapons, and/or to detonate one or more weapons.

Choosing the Logic of Stabilization

Looking to the future, officials and scholars have identified many types of restraint that nuclear-armed states and their allies could initiate or negotiate in various combinations to stabilize their competitions.[173] The ultimate model

of stabilization is summarized in Article VI of the NPT: the end of nuclear arms racing; nuclear disarmament; and "a treaty on general and complete disarmament under strict and effective international control."

The question is how we get from where we are today to durable nuclear stability among each set of competitors. And how, then, to get to general stability that enables and sustains a nuclear-disarmed peace? Another way to describe this far-reaching challenge is to say that the aim is to resolve the stability-instability paradox. That paradox is that adversaries with survivable nuclear arsenals will strive to avoid getting into wars with each other that would be likely to go nuclear, but, knowing that, each may be tempted to think it will get away with doing less damaging things like covert operations, sabotage, small territorial grabs, and proxy wars, for example.

Nuclear stabilization entails competitors explicitly recognizing that they cannot escape mutual vulnerability. States still may be tempted to compete for advantages at lower levels of conflict—the instability part of the paradox—and more broadly for political, economic, and soft power. Moreover, well-endowed scientific-technical establishments are always tempted to search for breakthroughs in offensive and defensive capabilities that might give them or their adversary a first-strike advantage. (It's more justifiable to say that one's technical quest is to innocently understand what capabilities the adversary might develop, rather than to pursue an offensive advantage for one's own side.) Nuclear stabilization measures put boundaries on such competition and provide monitoring and communication channels to give competitors sufficient warning to develop countermeasures. In parallel—or before and after nuclear stabilization measures occur—competing states can pursue broader and deeper forms of stabilization to alleviate perceived threats of any form of aggression. This could include addressing the causes of lower-level conflicts envisioned in the instability half of the stability-instability paradox. Examples of this include commitments to resolve disputes peacefully and to eschew armed coercion or changes to the territorial status quo. Such commitments can be both causes and effects of nuclear stabilization measures. During the Cold War—the one major "test case" for all these theories or observations—the most ambitious nuclear stabilization measures led to détente and were enabled by it: the Partial Test Ban Treaty (1963), the NPT (1968), SALT I, and the ABM Treaty (1972). However, Moscow

and Washington still competed for influence in what was then called the third world, often violently through proxies. Later, the INF Treaty (1987), the Presidential Nuclear Initiatives (1991), and the START Treaty (1991) encouraged and reflected the end of the Cold War and the dissolution of the Soviet Union and the Warsaw Pact.

To achieve nuclear stability in the coming years, key states will have to work from two angles: reassuring competitors and allies about their basic intentions and, synergistically, controlling or eschewing the deployment of capabilities that threaten each other's nuclear deterrents. The key states include the United States, Russia, and China globally; China and the United States and its allies in East Asia; North Korea and its partner Russia versus South Korea and the United States and Japan; India, Pakistan, and China in South Asia; and Russia and NATO—including the United Kingdom and France with their nuclear arsenals—in Europe. In each of these competitions, stabilization requires leaders to negotiate or find other ways to moderate their intentions, force deployments, and behaviors. Such stabilization measures would enhance international security today and are a necessary precondition for making nuclear disarmament possible and sustainable in the future.

As noted throughout this book, the fundamental need is to clarify whether competing states do not intend to use force to take control over territory or people they do not control today, and whether they are willing to negotiate mutual restraints on capabilities and behaviors that are most threatening to others (especially capabilities that could threaten their nuclear deterrents).

In other words, this would clarify that a state's overall political agenda and military posture—both conventional and nuclear—indicates a defensive purpose, not an intention to take disputed territory and/or change a government. Further, the restrained state's nuclear forces and doctrine would not appear designed to negate their adversaries' second-strike deterrents in ways that suggest offensive intentions to take territory or intervene in another's internal affairs.

For this clarification of restraint to happen, one or more leaders among competing states must step forward and propose an initiative that is equitable enough to make one or more counterparts say they are interested in explor-

ing the proposal further. Such initiatives usually begin with words—an offer to discuss how to reduce risks of ships and planes colliding at sea or in the air, for example, or to explore what would be required to limit or forego the deployment of new weapon systems. More persuasive initiatives offer deeds (even small ones) to show that the words are genuine—for example, moratoria on deploying intermediate-range missiles in Europe west of the Ural Mountains, which could also be applied to East Asia. As our colleagues at the Carnegie Endowment for International Peace have proposed, Beijing, Moscow, and Washington could signal restraint by notifying each other of all space launches, all test launches of ballistic or boost-glide missiles, and all test launches of missile defense interceptors and target missiles. Each of the three could invite the others to commit to maintaining minimum separation distances between its satellites and the satellites in high-altitude orbits that belong to the others.[174]

Over time, a dialectic between words and deeds, on one hand, and intentions and capabilities, on the other, moves competitors up and down the spectrum of stabilization (the conscious creation of stability). Changes in political leadership and agendas (intentions) motivate changes in capabilities. Changes in capabilities (toward restraint or expansion) also motivate changes in intentions.

The end of the Cold War (say, from 1986 to 1994) provides useful, albeit still debated, examples of nuclear restraint. To very briefly summarize, after the Soviet Union began deploying new intermediate-range nuclear missiles (SS-20s) in Europe in the late 1970s, the Reagan administration arrived in Washington determined to massively expand U.S. military capabilities, including by deploying ballistic and cruise missiles in Europe to counter the new Soviet systems. This competition alarmed the European and American publics, leading to large demonstrations by anti-nuclear and peace groups in Western Europe and the Nuclear Freeze movement in the United States. In March 1985, the Soviet Politburo selected Gorbachev to lead the Soviet Union. Through their glasnost and perestroika policies, he and close advisors like Alexander Yakovlev and Eduard Shevardnadze sought to liberalize Russian life, respect human rights, reduce the burden of military spending, end and reverse nuclear arms racing, and basically make peace with the outside world so that Russia could revive itself.

Even in the early stages of the U.S. arms buildup, Reagan was privately writing to Gorbachev's predecessors (Konstantin Chernenko and Yuri Andropov), declaring his interest in a world free of nuclear weapons.[175] Reagan did not understand the details or some of the implications of the weaponry and policies his Defense Department was pursuing, but he recognized that his bureaucracy did not share his desire to ultimately eliminate nuclear weapons. He kept his correspondence with Soviet leaders a secret from his own senior officials. Gorbachev and his team faced a similar challenge with the Soviet military-industrial complex. The first major breakthrough occurred in 1987, when the two leaders agreed to ban all intermediate-range missiles from Europe via the INF Treaty. Thereafter, through 2010, the two countries negotiated five agreements to reduce their nuclear arsenals and, it was hoped, end their nuclear arms racing. Then Russian revanchist frustration—fueled by the U.S. withdrawal from the ABM Treaty, expansion of NATO, interventions in Serbia and Iraq, and general disregard for Russian interests—moved Putin to steer Russia on a different course.[176]

Commentators and scholars in the West and Russia can endlessly debate whether history since 1981 proves that arms racing is the most effective way to encourage restraint. Does seeking superiority persuade big power adversaries to conclude they cannot win in the long run and would instead be better off negotiating mutual restraints? Or could governments be politically willing to favor diplomatic confidence building without first going through the tension and expense of overbuilding their nuclear forces? In any case, as Robert Jervis concluded regarding the Cold War: "Mutual security came within reach only when leaders on both sides became willing to give up the hope for superiority in return for arrangements that precluded the other side from achieving it and that lowered tensions and reduced spending (at least in principle)."[177]

Observers can also debate whether conscious stabilization requires leadership change, as happened in the Soviet Union with Gorbachev and, arguably, in reverse with Putin in Russia and Xi in China. Does the polarization and dysfunction of U.S. politics preclude the kinds of compromise necessary to negotiate mutual restraints with Russia, China, North Korea, or Iran, so long as those countries are led by men who rebuff Washington's demands?

If the United States, Russia, China, and perhaps North Korea are verging toward unstabilized competition, as many observers suggest, the leader of at least one of them is going to need to say and/or do something that makes one or more of the others offer a demonstrable shift toward restraint.

If the United States, Russia, China, and perhaps North Korea are verging toward unstabilized competition, as many observers suggest, the leader of at least one of them is going to need to say and/or do something that makes one or more of the others offer a demonstrable shift toward restraint. Here, complications immediately arise. So-called hawks—whether in the United States, Russia, or China—say that building more and better weapons is the least risky way to motivate an adversary to negotiate stabilization. Displaying more power convinces your opponents they cannot win—compelling them to negotiate restraints that will stabilize relations. This seems to be an approach that Trump favors. So-called owls, on the other hand, say that threats of domination, regime change, or one-sided deals are counterproductive. Rather, adversaries must believe that you are willing to work with them to design mutually beneficial restraints. If the United States, for example, makes a balanced offer to freeze or reduce deployment of a new weapon, Washington can make its opponent choose between exploring a reciprocal move or, if they do not, persuading the rest of the world why they are not the problem.

The often-cited U.S. political scientist Charles Glaser recently summarized this logic:

> Recognizing how its actions might make an adversary feel less safe, a state should lean toward defensive strategies, unilateral restraint, and negotiated agreements that limit the size and offensive attributes of its forces. Such policies can moderate the negative signals that military buildups can send to adversaries. An arms control agreement in the 1970s to ban MIRVs would have made the United States safer and eased Cold War tensions. States can sometimes become more secure by doing less.[178]

Of course, major powers are reluctant to offer restraint this way, both for the political and psychological reasons explored in Chapter 3 and because adversaries may exploit one's self-restraint to seek military superiority. We know that unrestrained postures prompt adversaries to answer in kind—with arms racing. But do restrained postures prompt corresponding restraint? Or do they invite opponents to seek a threatening advantage? If NATO had not expanded eastward since 1999 and Washington had not withdrawn from the ABM Treaty in 2002, would Russia have invaded Ukraine and built five new types of nuclear weapons designed to bypass missile defenses? Have U.S. and Russian nuclear postures had much to do at all with Putin's decisions to invade Ukraine in 2014 and 2022? Do Chinese leaders feel that their decades of self-restraint encouraged the United States to maintain strategic superiority and hegemony in Asia, and so a major Chinese nuclear buildup is necessary to gain influence? If U.S. and Taiwanese political parties clarified that Taiwan will not seek independence, would China be bolstering its military capabilities to impose its sovereignty on the island's population?

These questions may be unanswerable. But, looking ahead, leaders could test each other's willingness to be mutually restrained by offering to discuss and perhaps negotiate mutual limits on behaviors and capabilities. Nothing would be lost by offering such discussions, as no commitments would be made until negotiations satisfied all the relevant parties. But the willingness (or not) of leaders to seriously explore possibilities would provide valuable insights to clarify security dilemmas and inform policymaking going forward.

After all, the United States and China, in what is perhaps the most portentous relationship, coexist in a condition of mutual vulnerability. If a conflict between them escalates to the use of nuclear weapons, each can kill millions of the other's citizens and inflict overall damage that would dwarf the importance of whatever issue they were fighting over—which form of government Taiwan has, for example, or who has sovereignty over the Senkaku/Diaoyu or Spratly Islands. Neither one can decisively escape from this condition because both have the financial and technical resources to take countermeasures that would restore the other's vulnerability. For example, if the United States pursues capabilities and plans to preemptively attack China's nuclear deterrent to limit Beijing's capacity to respond, China indicates it will increase

If adversaries would prefer to negotiate mutual restraints on conventional forces rather than compete in unstabilized arms racing, the United States and its allies should welcome proposals for balanced stabilization and risk-reduction measures.

the size and capabilities of its nuclear arsenal to ensure that it can still inflict unacceptable damage on the U.S. homeland. Adopting technologies and plans to launch retaliatory nuclear forces before U.S. attackers arrive is another possibility. The overall result would be more spending, more potential damage to the combatant nations (including U.S. allies) and the global environment, and less stability in an escalating war.

Making an expensive, futile, and dangerous attempt to escape from this condition is less sensible than trying to stabilize competition. If imbalances in capabilities appear destabilizing, the priority on all sides should be to bolster conventional and other non-nuclear means to defend against armed efforts to change the status quo. More robust conventional capabilities need not threaten adversary nuclear forces. If adversaries would prefer to negotiate mutual restraints on conventional forces rather than compete in unstabilized arms racing, the United States and its allies should welcome proposals for balanced stabilization and risk-reduction measures. And, logically speaking, if all this fails, and adversaries' robust non-nuclear capabilities start threatening each other's nuclear deterrents, they (including the United States and its allies) can ultimately resort to bolstering their nuclear deterrents.

These implications of mutual vulnerability are true whether or not political leaders, including in allied countries, are willing to acknowledge them publicly. Recognizing these implications and understanding what to say and do to foster stability across the spectrum of potential conflict—from nuclear to conventional to paramilitary—will be more beneficial and heroic than waging unstabilized competition.

Six Steps Toward Stabilization

The following six basic policies could stabilize nuclear competitions and reduce risks of escalatory warfare if leaders in the contesting dyads or triads were to pursue them reciprocally.

1. Base Nuclear Policymaking on Mutual Vulnerability

The United States and Russia have pursued this policy since the 1970s. The expiration of the New START Treaty in early 2026 would end the formal acknowledgement and commitment to mutual vulnerability. There is reason to think the two sides can find a way to restate and extend this general framework, even if negotiating and ratifying new treaties is not practicable.

Republican and Democratic U.S. administrations alike have privately recognized that the United States and China are mutually vulnerable.[179] China's buildup and other steps demonstrate Beijing's determination to maintain this condition. To publicly embrace the reality of mutual vulnerability with China, U.S. officials would want to consult Japanese and other allied leaders who have been concerned that openly admitting vulnerability will somehow make deterrence less credible. A middle ground should be reachable. But more important than public declarations is to base nuclear policymaking on mutual vulnerability in practice. Nuclear-armed states, in close consultation with allies, can still formulate their nuclear policies on the basis of a private, common understanding of mutual vulnerability. They could further reach a common understanding on, for example, a posture that can be objectively identifiable as being based on mutual vulnerability.

India and Pakistan have had so little official engagement on nuclear (or other basic security) issues that they have not declared whether they base their strategies and policies on mutual vulnerability. India's no-first-use doctrine and historically judicious approach to nuclear force building suggest that its political leaders do acknowledge mutual vulnerability. Pakistani military leaders are officially reticent on this, but there is no evidence that they think they could preemptively deny India the capacity to destroy Pakistan's major cities and their scores of millions of residents.

To avoid nuclear war emanating from the Korean Peninsula likely requires the United States, South Korea, Japan, and others to recognize that they cannot escape their vulnerability to North Korean nuclear attacks on their cities. Recognizing mutual vulnerability with North Korea could create a basis for negotiating forms of restraint that could stabilize relations and threats.

2. Reduce Nuclear Counterforce Plans and Capabilities Intended to Preemptively Destroy Adversaries' Nuclear Deterrents

Arms racing and crisis instability are usually driven by fear that the adversary is seeking to destroy one's nuclear deterrent through a preemptive strike and/or missile defenses. The motive is understandable: to limit the damage the other side can impose on you.

But it is doubtful whether this can be done at a reasonable risk and cost, because the other side can act to counter your plans and capabilities: Your adversary can prepare to quickly launch their weapons before you can strike. They can increase their number of weapons. They can better hide them or make them maneuverable so you cannot confidently eliminate them. Anticipating attacks on their leadership and command-and-control systems, your adversary might partially automate counterattacks. They can develop capabilities to destroy your weapons first, which will alarm you and cause you to take your own countermeasures. Many of these actions would heighten the risk of inadvertent or accidental nuclear launches, thus potentially exceeding the benefits of limiting damage to your nation. The action-reaction cycles that are produced by such plans and capabilities make everyone worse off over time.

The quest for nuclear counterforce capabilities has driven the U.S.-Soviet and U.S.-Russian competition, and by default the U.S. approach to China and its much smaller nuclear arsenal. Remarkably, China did not join this competition for sixty years. Whether it now seeks counterforce capabilities against the United States is doubtful too, but less self-evident.[180] The United Kingdom and France, with much smaller arsenals than their likely adversary Russia, do not pursue ambitious counterforce. Some scholars suggest that Indian military technologists and officers want to pursue counterforce capa-

bilities vis-à-vis Pakistan, but this would be a significant departure from the intentions of India's political leaders and is far from demonstrable.[181]

One could argue that if these countries had bigger economies, they would build and deploy larger and more complicated counterforce capabilities. But the restrained arsenals of the United Kingdom and France are sufficient to deter Russia from launching conventional or nuclear aggression against them. Similarly, India does not need a large counterforce arsenal to deter China from major aggression, and Pakistan's primary need is to be able to defeat (and therefore deter) an Indian conventional invasion. Maintaining this restraint should be a global goal.

The problem of counterforce arms racing and instability has been obvious for decades, as many scholars and policymakers have noted.[182] Some of today's nuclear strategists try to escape by advocating "*limited* counterforce strikes" (italics added). Eighteen former senior nuclear policy officials from Republican and Democratic administrations, convened by the Lawrence Livermore National Laboratory's Center for Global Security Research, acknowledged that "even large-scale counterforce strikes cannot eliminate significant damage to the United States and its allies and partners." Their focus, therefore, was "on limited strikes."[183]

Unfortunately—and revealingly—the esteemed authors did not define "limited." Nor did they describe the purposes of limited counterforce strikes or how and why adversaries and the United States will keep their exchanges limited.

Meanwhile, even limited attacks on adversary nuclear forces carry big risks. As the Livermore study group noted, "Counterforce, either as first use or retaliation, can in fact muddle the message sent through limited use, potentially communicating that the attacking side is attempting a disarming attack."[184] This could likely prompt an adversary to unleash its nuclear arsenal in a use-it-or-lose-it panic—hardly a limited response.

More encouragingly, the Livermore authors acknowledge that "In principle, the U.S. policy of flexible response is entirely compatible with limited strikes on targets other than enemy nuclear forces, so long as these attacks comply

with the law of armed conflict."[185] As before, though, the authors do not discuss in any detail what such targets could be.

There are no real-world data on whether nuclear exchanges can be kept limited, or what would ensue on the ground if a nuclear exchange stopped after one or two limited rounds. U.S. presidents and senior civilian leaders in Congress have not participated in war games or other exercises that would enable them to grasp what fighting and trying to limit a nuclear war would actually involve.[186]

General (ret.) John Hyten, a former commander of U.S. Strategic Command, candidly recounted in July 2018 his experience with nuclear exercises. "How do you think it ends? It ends the same way every time. It does. It ends bad. . . . Meaning it ends with global nuclear war."[187] Perhaps the best one could hope for would be a negotiation to stop the fighting and agree to measures to stabilize the situation on the ground. Intuitively, it seems unlikely that either side's use of nuclear weapons would convince their opponent to give up territory it had taken or agree to make reparations for damage it had inflicted.

If limited nuclear attacks (against legal targets) are better than larger ones—whether the targets are nuclear forces or not—then it would be in almost everyone's interest to constrain and over time reduce the U.S., Russian, Chinese, North Korean, Indian, and Pakistani arsenals. (Weapons manufacturers and states that host nuclear bases and personnel, who would lose out on revenue, may not agree.)

Reducing nuclear counterforce targeting does not mean increasing targeting of civilians, as some have claimed.[188] No changes would need to be made in the moral and legal commitment to comply with the law of armed conflict. Existing lists of military targets could be used—if such targets could only be destroyed by nuclear attack—to reallocate nuclear weapons that would no longer be targeted at adversaries' nuclear deterrents. More specifically, a commander in chief could ask that no new targets near civilian populations be added to current targeting plans. The weapons made newly available by no longer targeting Russian and/or Chinese ICBMs, for example, could be used to target other growing military capabilities of concern to strategic planners. This would help alleviate demands that Washington increase its

arsenal to redress the "two adversary" problem that now preoccupies many U.S. defense officials and analysts. It would also be a constructive way to deal with constraints in the U.S. nuclear weapons complex, where programs to build new delivery systems and warheads are way behind schedule and over budget. Moreover, if planners in the U.S. Strategic Command feel that deterrence would be significantly weakened as a result, the president (and White House legal advisors) could invite them to directly discuss the pros and cons of adding targets in compliance with the law of armed conflict.

Were the United States to consider reducing its counterforce targeting, it could also enhance the value of negotiated reductions with Russia and/or China. It is impossible for outsiders to verify where a state's nuclear weapons are targeted, so Russia and China would not be confident that the United States is no longer targeting, for example, their ICBMs. But an offer to negotiate limits or reductions in the mix of each other's arsenals could validate the desire for mutual restraint rather than continued arms racing. All three countries could have economic reasons to move in this direction.

Admittedly, the creativity of U.S., Russian, and Chinese leaders and their designated representatives would be challenged by the difficulty of devising ways to reassure each other that they truly were sparing each other's most vulnerable nuclear forces from targeting plans. But such an effort on behalf of mutual restraint would be much less dangerous to everyone than unstabilized competition and preemptive counterforce targeting already are.

3. Limit Homeland Missile Defenses Against Large-Scale Nuclear-Armed Ballistic Missile Attacks

Governments' willingness to disavow ambitious nuclear counterforce and instead to reduce offensive forces may depend on their competitors' willingness to limit homeland missile defenses. Controlling nuclear competition among the United States, Russia, and China will be impossible without the willingness—particularly in Washington—to negotiate limits on homeland missile defenses that are supposed to negate adversaries' nuclear deterrents.[189]

By limiting homeland missile defenses, the 1972 ABM Treaty signified a mutual understanding that neither superpower could escape nuclear deterrence

by the other. Negotiated limits on offensive launchers—missiles, bombers, and submarines—in the several SALT and START agreements and the INF Treaty then prevented the two competitors from plausibly gaining escalation dominance (despite the predilections of their military-industrial complexes).

Since withdrawing from the ABM Treaty in 2002, the United States in practice has restrained its homeland missile defense deployments. This is probably due to technological constraints. Strategic-range offensive forces remain able to cost-effectively bypass defenses. So, even if realistic testing proved that defenses have become effective, deployment would drive arms racing that the defender cannot win.

Capable missile defenses against scores or hundreds of long-range attacks will make peer competitors increase the number and/or sophistication of their offensive weapons. This is to prevent the side with missile defenses from thinking it can conduct (or threaten) aggression with confidence that the victim will not be able to massively retaliate. However, this sort of arms racing happens even though, to date, missile defense technology has not been sufficiently able to prevail in contests with technologically advanced adversaries. The states facing missile defenses (Russia and China, primarily) fear a possible technological breakthrough that could rather suddenly threaten the viability of their deterrents. Some proponents of U.S. homeland missile defenses still hope this will happen, so they refuse to assuage Moscow's or Beijing's fears. They believe, as Reagan did, that defense could be made to work against all nuclear attacks.

More immediately, it should be possible to negotiate limits on missile defenses, which could help provide security against unauthorized or inadvertent nuclear attacks and small-scale attacks (or "cheap shots") from both peer and non-peer powers. In other words, defenses against attacks by relatively small numbers of relatively rudimentary missiles could be effective. Limiting defenses in this way could avoid the arms racing that unlimited defenses would provoke.

But, here, a couple challenges arise. First, the United States appears politically unable to ratify legally binding treaties; even if it could, as with the ABM Treaty, competitors fear that Washington will simply withdraw when

it is advantageous to do so. Second, U.S. allies might oppose limitations on missile defenses in their regions. An alternative could be to convey by some means—executive agreement, for example—that the United States will give others sufficient notice before testing a new system. Competitors could then be able to mount responses, while U.S. politicians and allies could feel that more effective defense technologies will be considered if and when they are developed.

Negotiated impermanent arrangements should make it easier for the United States (and others) to then negotiate mutual restraints on defenses against strategic forces.

Looking ahead, in the words of Tong Zhao:

> If Washington can demonstrate successfully to Beijing that its pursuit of counterforce damage limitation and homeland missile defense is genuinely limited in nature and distinctly less extensive than full-fledged capabilities that could undermine the Chinese nuclear deterrent, then China would be more inclined to accept some level of permanent capability asymmetry with the United States.[190]

In South Asia, too, India and Pakistan will not negotiate restraints on offensive capabilities without some corresponding limits on potential missile defense capabilities. Increasingly, India's nuclear force "requirements" will also be affected by China's missile defense capabilities, which will, in turn, affect Pakistan's calculations.

Overall, the point is not that defenses against weapons of various ranges are destabilizing or counterproductive. Rather, it is that competitors who feel their adversaries have intentions to change the status quo or otherwise attack them will likely conclude that defenses deployed by those adversaries actually serve offensive, not defensive, purposes.

4. Consider Using Nuclear Weapons Only as a Last Resort

Another principle of restraint is to commit, in the words of Jeffrey Lewis and Scott Sagan, "not to use nuclear weapons against any military target that

To help avoid situations where nuclear weapons are the only viable option, nuclear-armed states and allies must earnestly and assiduously pursue fair-minded diplomatic approaches to dispute resolution.

can be destroyed with reasonable probability of success by a conventional weapon."[191] In other words, using nuclear weapons should truly be a last resort. This, in turn, highlights a major problem with the potential use of nuclear weapons in preemptive strikes: How sure can the leader authorizing such strikes be that their adversary is on the verge of conducting an attack that can only be blunted by launching nuclear weapons first?

To help avoid situations where nuclear weapons are the only viable option, nuclear-armed states and allies must earnestly and assiduously pursue fair-minded diplomatic approaches to dispute resolution, backed up by non-nuclear means of deterrence and compellence such as stronger conventional and cyber capabilities or economic leverage.

This injunction may be more complicated than it first seems. In purely physical terms, the only targets that the United States cannot destroy without nuclear weapons are silos and deeply buried command bunkers. These targets are central to counterforce plans that, as previously noted, are drivers of unstabilized competition, crisis instability, and escalation. If nuclear weapons are not to be used on these targets, then it is not clear what other targets they would be necessary for. This is a good question for officials in various nuclear-armed states to debate with international experts. However, what may be true of U.S. and Russian capabilities may not apply to nuclear-armed states with lesser capabilities. Other states could say that if they were on the verge of losing a major war—the moment in which nuclear use would be seen most necessary—it would take too many conventional weapons and too much time to destroy the targets needed to stave off defeat. Thus, they would use nuclear weapons. A similar situation could arise also in the defense of U.S. allies in Eastern Europe and Asia. For example, if adversaries began using nuclear weapons against U.S. allies or forces in Asia, American and allied leaders could well conclude that there is not enough time to deploy sufficient conventional weapons to destroy the targets deemed necessary to deescalate the conflict (as discussed briefly regarding a Taiwan conflict scenario on page 115).

If nuclear weapons must be used, there are legal, moral, and strategic rationales for using the lowest-yield weapon necessary to destroy legitimate targets in time. This should enhance deterrence. To counter Russian or Chinese claims that lower-yield weapons signal aggressiveness, the United States and others should invite Russia and China to substitute lower-yield weapons for higher-yield weapons, so long as the total numbers in their arsenal do not grow. (High-yield weapons should be replaced by lower-yield ones, rather than adding lower-yield weapons to the stockpile of excessively destructive ones.) Critics of lowering the yield of weapons fear that this could make their use more likely. To the extent this is true, it could enhance deterrence and, therefore, reduce the probability of war. This is another nuclear paradox: a less destructive nuclear weapon could be more tempting to use, but that, in turn, makes its use less likely.

States with much smaller arsenals than the United States and Russia may lack the technical and financial resources to build new, lower-yield weapons to replace their existing ones. It would provide little benefit to anyone, on balance, for states with smaller arsenals to build low-yield weapons solely for the purpose of adding them to their nuclear stockpile. Rather, if and when they replace their current weapons, they should do so with lower-yield ones.

5. Reduce Risks of Inadvertent Escalation

New kinetic and space-based technologies can abet both conventional and nuclear attacks, increasing risks of inadvertent escalation (as noted earlier on page 51). Nuclear-armed states—especially the United States, Russia, and China—can help reduce these risks by adopting restraints. One potential self-restraint, proposed by James Acton, would be for China, Russia, and the United States to agree not to develop or deploy any type of dual-use missile (ballistic, boost-glide, and cruise) with a range in excess of an agreed threshold.[192] Such missiles could be deployed, but all of them would carry only one type of warhead—either conventional or nuclear. The ranges could be set for sea-launched missiles in accord with the longstanding arms control definition of a submarine-launched ballistic missile at 600 kilometers. For all other conventional ballistic or boost-glide missiles, the range limit could be 5,500 kilometers—consistent with the standard definition of an ICBM. For cruise

missiles, the limit could be 3,000 kilometers. Such an approach would not prevent a state from fielding non-nuclear missiles and nuclear-armed missiles with ranges exceeding these thresholds, so long as the nuclear-carrying missiles were a different type than the conventionally armed ones. Because radar and other warning systems are not able to determine the nature of the warhead on an attacking missile, the parties would need to sufficiently reassure each other that the agreement was being maintained.

The important purpose here would be to reduce the very destabilizing risks of inadvertent nuclear war that could arise if a state launched an attack with a known dual-use missile. The country under attack would find it extremely difficult to assess the incoming threat and, if inclined to assume the worst, could launch its own nuclear weapons. Acton's proposal "would not involve any verification but should include a commitment to discuss and try to resolve any questions or concerns raised by another participant."[193]

6. Seek Agreements to Codify and Verify Mutual Restraints

Mutually restrained competition reduces instability and costs to the degree that the competitors are confident restraints will endure. Steady dialogue between relevant officials can help by providing opportunities to address questions and reduce ambiguities. Behavior that is consistent with commitments and stated intentions builds confidence. Ideally, verifiable legally binding agreements can be made and upheld to extend the horizon of mutual confidence.

"Properly drafted treaties that have proven their effectiveness are one of the most reliable, best, proven means of ensuring national security," Russian Deputy Foreign Minister Sergei Ryabkov told an interviewer in 2018. He continued:

> They increase predictability (we know what we should spend money on and what is not worth being invested in), ensure the verification of the other side's actions, and are a way of looking from the inside into the dark corners of the military kitchen of our opponents. This doesn't mean

> that everything is out in the open, but it's an essential way of feeling that you know what's going on around you.[194]

"In other words," as Alexey Arbatov puts it:

> arms reduction and limitation measures are an effective way to prevent aggression, and that is exactly the basic function of nuclear deterrence. Not by scholastic disputes over doctrines and information exchanges, but by verifiable agreements on specific weapon systems, deployment regimes, and development programs, is it possible to mutually affect plans for their military use. The goal of such influence is to eliminate first-strike opportunities and incentives and to enhance stability in its clear strategic sense (as opposed to idealistic "peace for the world" interpretation).[195]

The fact that Arbatov and Ryabkov are Russian does not make them wrong. Indeed, the Congressional Commission on the Strategic Posture of the United States proffers that "Arms control and risk reduction . . . contribute to the goals of U.S. nuclear strategy by shaping adversary perceptions and capabilities, decreasing uncertainty, and reducing the risk of miscalculation."[196]

Unfortunately, stabilizing or competing with three actors is much more difficult than with two. If the United States feels a need to deter or potentially fight Russia *and* China for the foreseeable future, then it will want more capabilities than either Russia or China alone possess. If these capabilities include nuclear weapons to target Russia's and, especially, China's nuclear forces, backed by unrestrained missile defenses, then Russia and China each will feel the United States is seeking superiority over them. Both will be inclined to build up their forces to counter Washington. Washington then sees such buildups in Russia and China and concludes it must counter them both, especially because Moscow and Beijing may cooperate against it. This spiral of competition amongst the world's three largest nuclear powers creates an unprecedented challenge to stabilize. Further, as discussed in Chapter 1, Pakistan's and India's nuclear force requirements are affected by China's projected capabilities, which, in turn, are shaped by U.S.-Russian dynamics.

If there are no legally binding verifiable treaties to anchor restraints among these competitors, new approaches must be invented.

The U.S. Senate remains unlikely to consent to ratify any treaty that a non-Republican president signs with leaders from Russia, China, North Korea, or Iran. And a Republican administration in the foreseeable future is unlikely to offer terms that provide enough mutual benefit that those foreign leaders would agree to them. (Trump, like some of his predecessors, could be more willing than key defense and National Security Council appointees to sign a deal with Putin, Xi, or Kim. But it would then take persistent competence to push such deals through to ratification and implementation.)

There are no simple answers to these challenges. But a few (debatable) observations from history might suggest pathways forward. Military and defense (as well as internal security) establishments are much more influential than diplomatic services in China, Russia, the United States, North Korea, Pakistan, and Iran. Yet, these establishments generally lack the interest, career incentives, historical knowledge, and experience to design non-treaty-based forms of restraint that could be negotiable among the various competing dyads and triads. Historically, all breakthroughs toward arms control and reduction were driven by heads of state communicating privately with each other. Such leadership was necessary to overcome resistance by the U.S. and Soviet militaries, nuclear weapons laboratories, and adjacent politicians, as noted earlier.[197] Today, given the impediments to treaties, two or more heads of state would need to demand that their "systems" invent alternative approaches to devise and negotiate restraints that would build mutual confidence even if they were not legally binding. Leaders seeking such innovation might find it advisable to draw on nongovernmental experts and retired officials to complement or facilitate the work of their bureaus. And—like Reagan, Nixon, Obama, Kennedy, Khrushchev, Gorbachev, and others—today's leaders will need to press on even after agreements are seemingly reached, knowing that their national security establishments might resist implementation and follow-on restraints.

The Longer-Term Goal: End Overkill

Some of the restraints described in the preceding section are politically unimaginable for the United States, Russia, China, and North Korea today. Yet, they are less restrictive than arms controls that the Cold War antagonists negotiated and the force postures of the other five nuclear-armed states today.

If abolition is not going to be embraced in the foreseeable future, there are reasons of international security to pose restraints that are sufficiently ambitious and achievable as goals for a twenty-year agenda. Ending overkill—arsenals of a size and potential destructiveness that are more than enough to deter rational actors—is one such over-arching objective.

The use of overkill arsenals is objectively irrational. They would cause more death and destruction than the menace they are supposed to stop. They would also be self-destructive to use against a nuclear-armed adversary. By being irrational, this excess can also undermine the effectiveness of deterrence; such self-destructive actions are not credible threats. (This is why U.S., Russian, and Chinese military strategists focus now on scenarios of limited nuclear use.) Overkill arsenals and war plans—beyond being irrational, excessive, and not credible—are also unjust to nonbelligerent nations and evil to the Earth. While the International Court of Justice in 1996 could "not reach a definitive conclusion as to the legality or illegality of the use of nuclear weapons by a State in an extreme circumstance of self-defense, in which its very survival would be at stake," any theoretically legal use must accord with the law of armed conflict.[198] That must mean there is no less-lethal option to stop the aggressor (necessary), the attacks must spare civilians (discriminant), must not inflict incidental damage greater than military advantage anticipated (proportionate), and must not cause undue suffering. Overkill arsenals, if fully used, would inevitably violate the law of armed conflict. In addition, overkill arsenals have the potential not only to harm people and the environment in countries not directly involved in a nuclear war through radioactive fallout, but also to bring about climate change (global cooling) due to so-called nuclear winter.

The risks imposed on non-nuclear-weapon states are arguably greater and more obvious than the indirect benefits they receive even if they accept that nuclear deterrence helps prevent wars in Europe and Northeast Asia. The main concerns here are radioactive fallout from nuclear detonations and the possible nuclear winter effects of fires that loft particulates high into the atmosphere, where they block sunlight.[199] Environmental consequences would depend on the number, yield, and targets of the detonated weapons and the patterns of wind and weather. Effects would include death and sickness, severe economic loss, possible severe food shortages (and/or related conflicts), and destabilizing refugee flows. Other harms to people around the world would come from the economic and psychological costs of destroyed supply chains and markets for basic necessities, and from trying (or failing to try) to help destroyed cities and countries recover and rebuild after a nuclear war. The destruction of Gaza and areas of Ukraine today is tiny compared to the scale of destruction that nuclear war could cause, yet the costs and challenges of rebuilding Gaza and Ukraine will likely overwhelm governments and international aid agencies. The human and financial resources needed to recover from nuclear war would be unimaginably greater. In his speech at the 2024 Nobel Peace Prize award ceremony, Terumi Tanaka, a representative member of the Japan Confederation of A- and H-Bomb Sufferers Organizations (or Nihon Hidankyo), emphasized state compensation (from the Japanese government) for the atomic bomb damage as one of the main objectives of the organization, because he believed it was necessary to prevent similar damage from occurring again. In this sense, states conducting aggression, particularly using nuclear weapons, should be held accountable. And they should take into account state compensation for the victims before considering the use of nuclear weapons, in addition to the cost of rebuilding from the destruction and damage caused by the use of nuclear weapons anywhere on the Earth.

That the United States, Russia, and China are searching for capabilities and plans for limited nuclear operations to deescalate (favorably freeze or end) conventional wars is a serious contemporary problem. But the excessive size and destructiveness of their overall arsenals—not only the weapons they would plan to use initially—should not be forgotten. For, if leaders cannot stop each other's militaries from escalating, the overkill destructiveness of

their arsenals is what will harm nations not involved in the armed conflict. If some form of nuclear deterrence is deemed necessary to prevent major conventional warfare and escalation to nuclear war, it can and should be provided by forces and plans that are unlikely to cause unsurmountable harm to the entire world.

Leaders of nuclear-armed states with overkill arsenals should be confronted with the challenge of explaining and justifying them to others.

For example, considering a scenario of war with China over Taiwan, Greg Weaver, a longtime advisor to the U.S. Strategic Command, writes that "the overwhelmingly preferred option is for the United States, its allies, and Taiwan to field sufficient conventional forces to defeat a Chinese invasion with high confidence." But, Weaver continues, China's landing force in such a scenario "has an inescapable problem: it must concentrate to land sufficient force to overcome the Taiwanese defenders. If it does not, it will be defeated on the beach. But . . . concentrating a large-scale amphibious landing force offshore for many hours presents perhaps the best possible conventional force target for nuclear attack."[200]

If a small number of low-yield nuclear weapons would prevent Chinese forces from occupying Taiwan and do so quickly with few civilian casualties, this option could be clearly superior to much larger conventional military attacks that would take longer to effect. This scenario would be most likely in a war against two adversaries—for example, in Europe against Russia and in East Asia against China.

We cannot define the targets, numbers, and yields of arsenals that would fall below a reasonable threshold of overkill. Indeed, one benefit of making no-overkill a goal is that nuclear-armed states and others would need to discuss and debate what should be useable definitions of overkill. Such debate would create an opportunity for the international community to voice their interests. Leaders of nuclear-armed states with overkill arsenals should be confronted with the challenge of explaining and justifying them to others. Perhaps that challenge—which might be new for all of them—would awaken interests in exploring together whether more defensible alternative postures could be pursued through negotiation.

By ending overkill—or at least reducing it and making deterrents less costly and destructive—potentially millions of lives could be spared in combatant countries and, more extensively, in noncombatant nations where all the inhabitants and environment deserve not to be harmed. Even still, survivable, non-overkill arsenals would confront decisionmakers with risks of unprecedented destruction that would dwarf anything that could be gained by taking any territory currently in dispute.[201]

Smaller, less prominent deterrents also would represent progress toward fulfilling commitments under the NPT's Article VI. This would demonstrate fidelity to international rules and some respect toward the equity interests of the global majority. Compared to the arsenals of the United States, Russia, and (soon) China, such arsenals would convey understanding that attempting preemptive strikes to destroy peer adversaries' nuclear deterrents will make adversaries build more weapons and/or plan to launch them before yours arrive. Some could argue that the futility of trying to keep a nuclear war limited with such arsenals is obvious and therefore bigger counterforce arsenals strengthen deterrence. Others could argue that leaders would be more likely to use smaller, less destructive arsenals than they would with the excessive U.S. and Russian ones. This would be both an unwelcome danger and a possible enhancement of deterrence—another paradox. But the people who argue for overkill arsenals do not argue that China, France, the United Kingdom, India, Pakistan, Israel, and North Korea should expand their nuclear arsenals for the sake of deterrence. Deterrence can fail! If it does, the entire world, especially nonbelligerent nations, would be better off if the few with nuclear weapons limited the overkill potential of their arsenals. The reality of nuclear weapons is that even if the destructiveness of nuclear war were less than overkill arsenals would cause, the consequences for human lives, health, and political, economic, and social systems in and around the affected areas would still be catastrophic.

08

Conclusion: The Politics of Going From Here to Restraint

First, some hard truths.

The United States, Russia, and China will not revert to no-overkill postures unilaterally. Each would require the other two (at least) to agree to verifiable steps in this direction.

Russia's losses in Ukraine practically guarantee that Moscow will not decrease reliance on nuclear weapons across a range of scenarios.

China, after the buildup initiated by Xi, "will likely remain reluctant to enter arms control negotiations if it views such agreements as constraining its efforts to enhance force survivability or limiting its prestige by locking it into an inferior position vis-à-vis the United States and Russia," as David Logan and Phillip Saunders suggest.[202]

For its part, the United States will not consider comprehensively reducing the missions, numbers, and varieties of its nuclear weapons unless and until Russia poses no clear and present threat of aggression against its neighbors, the Chinese government in Beijing has demonstrated it will not seek to

impose itself by force on the people of Taiwan, and North Korea and South Korea have established a durable, peaceful modus vivendi. (Nuclear-armed states could be tempted to threaten to use nuclear weapons in response to biological weapon attacks. However, the logic of the policies recommended here should still hold, most particularly, using nuclear weapons only when no alternative means can destroy legitimate targets. Indeed, to guide deterrence of and response to biological weapons attack, the law of armed conflict would be especially germane and feasible to apply.)

But Washington could and should embrace without preconditions five of the six principles of restraint discussed in Chapter 7. It should base its policies toward Russia, China, and North Korea on mutual vulnerability; limit preemptive counterforce targeting and homeland missile defenses so as not to threaten the existential deterrents of competitors; consider using nuclear weapons only in situations when no other weapon can destroy the legal target; and reduce the risks of inadvertent escalation.

To persuade Asian and NATO allies that these principles should be realized, U.S. officials and experts from both major political parties need to remind them that nuclear deterrence depends on credible threats, not on wishful thinking that ideal theories of counterforce damage-limitation will provide victory. (The credibility required for compellence is even harder to achieve.[203]) First use of nuclear weapons by the United States on behalf of an ally will likely cause Moscow, Beijing, or Pyongyang to unleash nuclear weapons in response, especially if U.S. preemptive attacks are against adversary nuclear forces. This is a fact of life that cannot be wished away. Since Russia, China, and North Korea are not going to give up their nuclear weapons and because Russia and China can deploy enough of them to bypass plausible missile defenses, the United States and its allies would need to strengthen deterrence by bolstering conventional capabilities, offering strategic reassurances about their intentions,[204] and eschewing plans to use nuclear weapons to negate adversaries' nuclear deterrents.

U.S. leaders' words and deeds affect how Russia, China, and North Korea define what they want and need—their intentions and their capabilities. (The reverse is true too, of course!) One faction in the United States usually urges a mix of diplomacy and muscle building to show the adversary that re-

straint will beget restraint and/or pushing will be met with shoving. Another faction in Washington tends to downplay restraint, instead emphasizing arms building to the point that adversaries go bankrupt trying to compete or give up and accept restraints that are imbalanced in the United States' favor. This latter approach is articulated well by John Bolton, Robert O'Brien, Keith Payne, and many other career Defense Department officials.[205] It always favors arms racing and will tolerate negotiated restraints only if the net result is to increase the United States' advantage in firepower. But advocates of this approach cannot explain why competitors would agree to imbalanced restraints and adhere to them for years, especially if the United States continues to try to weaken and change their regime. If, like China and Russia, competitors can deploy sufficient resources, they will build up to try to balance forces. China, more than Russia in the Cold War or today, will have the resources to compete if its leaders choose to make it a priority, though a subsequent decline in living standards and economic hopefulness among young Chinese could create political risks. This process produces overkill, instability, overspending, and tremendous anxiety associated with unrestrained competition.

Russia's interest in restraining competition for now depends on Putin. Before and during this war, Putin put Russia's increasingly sophisticated nuclear arsenal in the foreground, reminding audiences of its undefeatable power. After the war in Ukraine is frozen or diplomatically ended, nuclear restraint could be appealing for two reasons: to avert spending on an unbounded arms race and to restore some international political standing as a state and leader with which others will negotiate and make agreements.[206] If such motives do emerge, whether they will be stronger than the ones that favor unrestrained nuclear arms building is difficult to predict. A further complication is that Moscow would likely insist more seriously than before that French and British nuclear forces be included in calculating and negotiating restraints.

China has never engaged in dialogue, let alone negotiations, on nuclear arms control with the United States, India, or other competitors. Some reasons why have been offered. In previous decades, the small size of China's nuclear arsenal relative to that of the United States (or Russia) meant that China relied on secrecy to protect the arsenal from U.S. preemptive attack. This

works against the transparency and verification expected from formal arms control. Now that China is rapidly expanding its nuclear forces, its old justifications for avoiding sustained dialogue on nuclear risk reduction (possibly including transparency) are not persuasive.[207]

As Tong Zhao noted in 2024:

> Beijing has not recognized the need to clearly explain to the United States and other countries why its current nuclear policy is driven by genuine and legitimate security concerns rather than expansionist and aggressive intentions. . . . Apart from calling for the United States to adopt a [no-first-use] policy, China has not explicitly outlined what specific assurances it desires. . . . The Chinese nuclear policy community should engage in a systematic internal analysis to identify specific and realistic assurance measures they would like the United States to undertake to address Chinese concerns.[208]

The NPT's obligation to pursue disarmament applies to all nuclear-weapon states, including China. China can try to avoid this by insisting quixotically (or cynically) that India, Pakistan, and Israel should join the NPT as non-nuclear-weapon states (which they cannot, because the treaty does not recognize as nuclear-weapon states any state that tests its first bomb after January 1, 1967). Yet, restraints like those discussed here could be presented as something different from arms control. China's major buildup under Xi should make the leadership conclude it can now engage the other biggest powers on solid footing. (Otherwise, why build up?) Encouragement by other governments, especially from the Global South, could help in this regard.

India and Pakistan have not conducted direct negotiations on nuclear arms control or restraint since their explosive tests in May 1998. They have been relatively moderate in their development, building, and deployment of nuclear forces, and have managed political-military crises well since the Kargil War in 1999. But India displays toward Pakistan a patronizing, dismissive attitude that deflects interest in negotiating mutual restraints, much like

China displays toward India. Given the close Pakistan-China relationship, it is difficult to imagine an Indian government willing or feeling politically safe to negotiate restraints with Pakistan before China is willing to do so with India.

What could make North Korea's leaders and the governments of the United States and South Korea genuinely seek restraints that would reassure each side that their security interests will be protected, no one will start a war, and therefore they can stabilize their competition in weaponry? How could China and/or Japan affect these calculations? One major reason why several U.S. administrations have not explicitly acknowledged a relationship of mutual deterrence (and vulnerability) with Pyongyang is concern that recognizing North Korea as a de facto or de jure nuclear-armed state, particularly if the longer-term goal of denuclearization is not mentioned, could weaken extended deterrence and, therefore, regional commitments to nonproliferation. This concern, especially in South Korea and Japan, could then become ammunition for domestic opponents to use against the serving administration (of either party) in Washington.

Toward Accountability

Such complex dynamics led the chair of the Japan-sponsored Group of Eminent Persons for the Substantive Advancement of Nuclear Disarmament to observe that:

> For states with nuclear deterrence deeply embedded in their national security policy, taking steps to reduce and ultimately eliminate their reliance on nuclear deterrence will be politically difficult. The abolition of nuclear weapons will constitute a change in the structure of international politics and cannot be achieved without building broad political momentum. In this sense, it is necessary for the international community to increase public awareness of the challenges and opportunities presented by nuclear disarmament, and to advance a strong, universal norm that nuclear weapons are taboo. Political and social

> movements that carry the flag for the humanitarian consequences of nuclear weapons are necessary to overcome the inevitable political challenges.[209]

Nuclear disarmers say the overriding global interest is to eliminate these excessively destructive weapons. Nuclear warfighters say the overriding interest is to preserve these weapons' unique deterrent effects by deploying capabilities to win escalation contests.

This book argues that the overriding global interest is to prevent a conflict whose casualties and destructiveness would be as terrible as nuclear war would be. If nuclear weapons can deter large wars without being used, they serve human interests. If deterrence fails and nuclear weapons are used, human interests would be served if the war ends *before* inflicting destruction as massive as could have otherwise occurred. But, if nuclear use escalates and destroys more life, property, and nature than would have otherwise occurred, then there would be no real winner. Global interests would be desecrated as never before in human history. Here is the essential problem: no one really knows what will happen when one nuclear-armed state uses a "limited" number of nuclear weapons to attack another nuclear-armed state or alliance member.

Heads of states now repeat, "nuclear war cannot be won and must never be fought." But, defense planners in China, Russia, and the United States (as well as others) compete with so-called theories of victory (or at least theories of denying victory to their adversaries).[210] Militaries are paid to be able to win wars—that is their job. Political leaders carry the burden of deciding when to begin or end wars, and whether to unleash nuclear weapons and re-leash them as war unfolds. Political leaders reasonably fear they will lose power if they do not appear victorious. Each leader concentrates on projecting strength and coercive power. They marshal their militaries to intimidate their counterparts and, they hope, make

The overriding global interest is to prevent a conflict whose casualties and destructiveness would be as terrible as nuclear war would be.

them more accommodating, more willing to give a little. Intimidators also are motivated by domestic politics—to show voters or party members that they are more deserving of support than their domestic competitors.

If deterrence fails, victory in nuclear war would be meaningful only if all the contestants took off-ramps and stopped using nuclear weapons before massive damage was done. If, instead, theories of victory envision that only the opponent exits, then each side will try to make the other exit first. This gives each a big incentive to fight another nuclear round in hopes that, this time, the opponent will take the off-ramp. And so on it goes, until . . . who knows what?

The best way to avoid the escalation dilemma is to stay out of war. Failing that, it is to acknowledge beforehand to one's own people and to adversaries that it is in everyone's interest for the combatants to reciprocally exit at the same time. This need not be a game of chicken where each driver speeds toward the other with nobody knowing if or when they will choose to turn off the suicidal collision course. Opponents in international politics could acknowledge to each other in advance the dangerous situation they are in and communicate that they are able and determined to conduct limited nuclear war to meet their objectives in a given conflict, but that they will stop nuclear exchanges if and when the other side signals its willingness to stop.[211] Such declarations would still leave a threatening chance, à la Thomas Schelling, that escalation would occur to unacceptable levels of destruction as leaders could change their minds—the essential threat that is supposed to restore deterrence. Indeed, China and Russia could see proposed guardrails against escalation as means to weaken their deterrence of the United States and allow reckless U.S. behavior. But, if such declarations about limiting potential nuclear war came amidst other mutual confidence-building measures, they could provide further reassurance and make nuclear deterrence less threatening to the whole world.

No one knows whether and how this can be managed—whether an initially limited nuclear war would end before it escalates to massive exchanges that would leave everyone worse off than if nuclear weapons had not been used at

all. But it is vital to understand that this is a political challenge, not a military or a technical one. There is no new weapon—no new missile or anti-missile defense—that can give its owner the rational confidence to fight and win a limited nuclear war against an adversary that also has a survivable nuclear arsenal. (And, again, seeking superiority in preemptive strike capabilities or missile defenses to negate an adversary's nuclear deterrent will be futile).

To get beyond endless competition in coercive technology, adversaries must conclude that they and the people they care most about will not be worse off after compromising than they would be if a conflict escalates to nuclear use. For this to happen between countries, it probably needs to happen within them too. Each faction, clan, or nation must comprehend that it will lose more from a conflict that escalates to nuclear war than from one that is resolved by compromise before nuclear war begins or escalates. Once leaders feel able to give as well as take for the sake of mutual survival—even if they detest each other—the prospects of averting conflict and nuclear war grow considerably. It becomes clearer how secondary this or that new nuclear weapon is.

Creating the will to compromise and acting on it often require a heroism that many leaders lack. Populations roused into nationalist excitement and hatred of the "other" intimidate even supposed strong men. Peacemaking entails more risk and courage than warmaking. Peacemakers may be blessed; but often they are killed by their own countrymen. (The picture comes to mind of Israeli prime minister Yitzak Rabin with Clinton and Palestinian Liberation Organization leader Yassir Arafat at the White House ceremony in 1993 celebrating the Oslo Accords. Rabin looked like he had swallowed vinegar as his hand gripped Arafat's. That deal bought time and offered some hope. But, in 1995, a right-wing opponent murdered Rabin. Ensuing agreements brokered by Clinton in 1998 and 2000 broke down amid mutual recrimination and domestic upheaval in Israel. Months later, the second intifada erupted, accelerating a decades-old process of extremist, government-backed trampling of Palestinian rights and legal protections under Israeli and international law, as documented by Ronen Bergman and Mark Mazetti in the *New York Times Magazine*.[212] Twenty-four years later, the barbarous Hamas assault, rape, and murder of more than 1,200 Israelis on October

7, 2023, triggered Israel's excessive assault on Gaza, a situation which still remains unresolved.)[213]

There may be a dialectical process that can help leaders decide to pursue give and take with their competitors. If leaders understand that the bargains to be explored are reasonable and affordable, they may be more likely to muster the courage necessary to test each other's intentions. ("Affordable," in this case, means something that benefits each nation enough that leaders conclude they can stay in power if they accept it.)

If the United States' political dysfunction renders it unable to lead, leaders from other countries and global civil society can drive home the message that refusing to negotiate or conduct sustained dialogue with adversaries like Russia, China, North Korea, and Iran does not weaken those regimes.[214] On the contrary, refusing to engage leaders of these countries helps them argue that the United States and its allies are the real threat. This helps leaders in autocratic states to justify stifling dissent and augmenting state power. Dialogue will not overthrow repressive regimes, but refusing to engage will not weaken them either. If dialogue can help manage competition and reduce risk of war, it should be pursued.

Secrecy (or, to put it more decorously, the use of back channels) can help and may even be necessary here. In polities where leaders are restrained by internal competition and foreign adversaries are demonized, only the most senior leaders can change the trajectory of relations. And, because offering to make deals with adversaries will invite political attack at home and may not succeed with the adversary, leaders often rely on private communications or negotiations.

The Cuban Missile Crisis was resolved through secret negotiations and a deal whose terms were not disclosed for decades. The Soviet Union agreed not to reveal that Kennedy would withdraw U.S. nuclear-armed Jupiter missiles from Türkiye in return for the Soviet withdrawal of nuclear weaponry from Cuba. U.S. president Lyndon Johnson in 1968 secretly began the arms control diplomacy with Moscow that later resulted in the SALT I Interim Agreement and ABM Treaty of 1972, which themselves involved a great deal of secret negotiation between Nixon and Soviet leaders Leonid

Brezhnev and Alexei Kosygin. These negotiations were conducted, again secretly, by national security advisor Henry Kissinger and Soviet ambassador to Washington Anatoly Dobrynin. Reagan conducted years of secret correspondence with Soviet counterparts trying to advance nuclear disarmament while bypassing the recalcitrant national security establishment in Washington. As Mariana Budjeryn details, Ukrainian and Russian negotiators in early January 1994 used secret letters to make reciprocal concessions, as both sides feared their publics' reactions.[215]

In 1998, after their sequential nuclear weapon tests, Indian and Pakistani leaders Atal Bihari Vajpayee and Nawaz Sharif set up a secret channel to improve relations and avert war. According to a close advisor, Sharif, meeting Vajpayee on the sideline of the UN General Assembly in September, whispered, "you know and I know that such sensitive and important issues cannot be resolved by civil servants. We as political leaders have to come to grips and take initiatives that will lead to solutions."[216] The diplomacy between the United States and Iran that ultimately led to the 2015 JCPOA began secretly with direct instigation by Obama.[217]

The fact that a number of these arms control and confidence-building measures were later undone or violated reinforces the centrality of politics and the secondary importance of the weaponry itself. In many cases, the ruptures were not caused by changes in the opponent's behavior or weaponry, but rather by internal motives. In 1999, Pakistan's army chief of staff, Pervez Musharraf, initiated a major clandestine incursion into the Kargil sector of Kashmir, triggering a war with India, which prime minister Sharif was helpless or hapless to prevent. The United States under George W. Bush withdrew from the ABM Treaty in 2002 for largely partisan ideological reasons, destabilizing strategic relations in the eyes of the Russian establishment. U.S. administrations for the next twenty years largely stayed within the terms of the ABM Treaty, indicating there was little strategic or technological need to withdraw from it. Trump reneged on the JCPOA primarily out of contempt for anything Obama had done, with no realistic plan to improve upon it (as history has shown alarmingly). Putin, acting essentially as a dictator, grotesquely and illegally violated the terms of the 1994 nuclear agreement with Ukraine in ways that other leaders of Russia might not have.

If anything, these examples should strengthen the case for arms control and other forms of negotiated restraint. Pakistan was made much worse off by the Kargil War and subsequent developments. Withdrawal from the ABM Treaty has not given the United States confidence that its interceptors could block North Korean, Chinese, or Russian large-scale nuclear attacks on the homeland, or Iranian missile attacks on NATO allies or Israel. But it did stimulate Russia's development of five new nuclear weapon delivery systems. Iran was adhering to the JCPOA before Trump undid it; now, Iran is much closer to having nuclear weapons. Putin was obsessed with NATO expansion and Ukraine's potential integration with Europe. Now, Sweden and Finland have joined NATO, Europe is arming Ukraine to fight Russia, Russia's army has been weakened and more than 600,000 soldiers have been killed or wounded, and Russia will face a massive rebuilding challenge in the immiserated borderlands that it acquired.[218] Overall, there is no evidence that anyone has agreed to a nuclear arms control limitation that then caused them to be a victim of aggression. (Ukraine has suffered enormously from violation of the terms of its 1994 agreement to denuclearize, but the country did not have the technical, economic, or strategic resources at that time to deploy its own nuclear arsenal over the opposition of the international community and Russia.)[219]

Today, the most feasible positive goal for the United States, Russia, and China would be to restrain their nuclear and broader military competition with an avowed commitment to steadily reduce overkill. This approach would recognize (at least for now), in the words of Dallas Boyd and James Scouras, "that while some missile defenses may contribute to national security, there comes a point at which additional defenses become harmful; while some reductions in nuclear arsenals may be stabilizing, deep cuts may be destabilizing; while diminishing the role of nuclear weapons may be beneficial, eliminating their function entirely may invite disaster."[220]

Today, the most feasible positive goal for the United States, Russia, and China would be to restrain their nuclear and broader military competition with an avowed commitment to steadily reduce overkill.

This agenda would recognize much of the world's legitimate frustrations with the nuclear-armed states' unwillingness to stabilize relations with each other. Instead of emphasizing arms racing and prevailing through limited nuclear warfighting, more people would be better off if nuclear-armed states and allies reaffirmed their obligation to steadily reduce nuclear weapons toward zero. But, unlike the declared logic behind the Treaty on the Prohibition of Nuclear Weapons, this hybrid approach would recognize a reality that states that depend on nuclear deterrence (directly or by extension from others) will not abandon it before they are confident they will not face aggression of the type that nuclear weapons plausibly deter. Rather than fetishizing weapon technology, this approach would concentrate appropriately on political-security relations.

Proponents of change can start by asking the highest leaders of nuclear-armed states fundamental questions. First, will they foreswear initiating the use of force to take disputed territory or impose changes of government? This is already an obligation under the UN Charter. But Taiwan and its neighbors fear that Xi will try to force reunification as an internal—not international—affair, much as Putin sought to force Ukraine back into Russia's orbit. Pakistan and India could do more to reassure each other on this score, too. Asking governments whether they will commit not to initiate force raises the salience of this most vital issue. If and when a leader evades the question, other leaders bilaterally and in multilateral groupings like the UN General Assembly, the Group of Seven (G7), and the G20 should ask for clarity.

Second, the heads of nuclear-armed states must be asked how they can justify not sustaining high-level dialogues on stabilizing strategic relations with each other and reducing risks of nuclear war. Such explanations could give the international community and their own citizens a better sense of where problems lay and what can be done to resolve them. For example, Xi, as the decisive voice in China, should be invited to explain how suspending dialogues on strategic issues and nuclear risk reduction will reduce risks of conflict, arms racing, and nuclear first use. In such dialogue, leaders of other nations and civil society could explore with Chinese officials what Beijing could do more effectively to make Taiwan less interested in bolstering its defenses. Xi has no international nor domestic excuse to avoid direct dia-

logue with his American and Indian counterparts. Indeed, with regard to India, Xi and his foreign minister and defense officials in late 2024 negotiated with their Indian counterparts a disengagement of forces from the Himalayan borderlands, where they had been engaged in sporadic violence since 2020.[221] Why doesn't Xi address issues that underlay the nuclear competitions and risks of conflict with the United States and India? Similarly, if Indian Prime Minister Narendra Modi does not have an adequately powerful civilian counterpart in Pakistan, he could request that the Pakistani president coordinate with the prime minister and the army chief to appoint a special envoy to meet with an envoy of Modi's choosing.

Yes, these recommendations amount to a lot of talk. But "Jaw, jaw is better than war, war," as a British prime minister once said. If creating and sustaining top leaders' engagement on these issues is easy and not ambitious enough, then why isn't it happening? Why aren't the presidents of Russia, China, and the United States addressing these questions with each other, if not publicly then in private communications? Why aren't the leaders of India and Pakistan, or India and China, doing so? Why aren't U.S. and North Korean leaders doing so? These are fundamentally political questions. They speak to responsibilities that leaders of states—elected or not—have to the people who are affected by their words and deeds regarding the making of conflict or peace and the role of nuclear weapons in either or both.

At lower levels—for example, international forums staffed by diplomats, such as preparatory and review conferences of the NPT, meetings of the UN First Committee (on disarmament and international security), and the Conference on Disarmament—parties to the Treaty on the Prohibition of Nuclear Weapons and civil society organizations could ask nuclear-armed states and allies the following questions, which are harder to deflect than calls for nuclear disarmament:

1. Are they committed to adhering to the law of armed conflict (or international humanitarian law) in the potential conduct of nuclear war?

Norms and laws, over time, can restrain leaders and military officers from using the full destructive power at their disposal, because violating norms and laws could tarnish their international, national, and self-images, and

invite sanctions and reprisals against their nation and themselves. The legality of using nuclear weapons is not widely agreed upon in part, thankfully, because nuclear weapons have not been used in war since 1945. The central categories of international law in this domain are not disputed: necessity (no other weapon would do the job), discrimination (damage to civilian life and support systems is the minimum possible), proportionality (damage to civilian life is not excessive in relation to the direct military gain of the attack[222]), and avoidance of undue suffering (environmental, health, and other effects do not cause long-term harm especially to nations not involved in the fighting). Asking leaders of nuclear-armed states and allies how they think their nuclear doctrines, war plans, and forces could be used in compliance with these principles is a reasonable thing to do. How could leaders with the authority to unleash the destructiveness of nuclear weapons justify not answering such questions?

Some leaders could say that nuclear war probably *cannot* be waged in accord with all the principles of international law, which is why they want nuclear forces and plans that will robustly deter adversaries from starting war against them. Fair enough. But such leaders could then be asked whether there is an obligation to pursue negotiations with all competitors to reduce the illegal scale of harm done if deterrence fails. The political aim, ultimately, is to engender discussion and debate that could help clarify the world's views on the matter and create both a legal and political basis for holding leaders accountable for potential overkill. These questions can and should also be addressed in dialogue between nuclear-armed states and allies such as bilateral extended deterrence dialogue.

2. Would states (and alliances) that used nuclear weapons be willing to compensate nonbelligerent nations for measurable harms from nuclear detonations? If not, why? If so, how?

In December 2024, 144 members of the UN General Assembly voted in favor of establishing a panel of twenty-one experts to study the physical effects and societal consequences of nuclear war.[223] Only Russia, France, and the United Kingdom voted against it. China was the one nuclear-armed state that voted in favor. North Korea, Pakistan, India, and Israel abstained, while the United States did not vote.

Responsibility and rationality depend on doing one's best to assess the probable consequences of one's actions. Opponents of a state-of-the art study of the consequences of nuclear war say they already know the consequences would be horrible. But, in evaluating their arsenals, the states with the biggest arsenals have concentrated on how effectively their current and prospective weapons will work against adversaries' forces. This is primarily a function of blast—the explosive force from a detonation. Why not ask what damage weapons' other effects, such as fire and radiation, will have on humans and their environment under various circumstances?

If the completed study shows that some plausible scenarios of nuclear war would probably cause disastrous harm on populations of noncombatant nations, then citizens of the world—and their governments—should want to know whether and how the governments that caused this harm plan to compensate victims. If the number, explosive yield, and targeting of nuclear weapons significantly affect the probability and scale of harm to nonbelligerent nations, and the nuclear-armed states and alliances with the most potentially destructive arsenals do not indicate plausible plans to compensate victims, they should be asked to provide plausible proposals to reduce and stabilize their nuclear competitions at levels that would be significantly less destructive.

The political strategy of asking questions is modest. Many citizens and governments would prefer to demand that nuclear-armed states simply eliminate their nuclear weapons or otherwise commit not to use them. Unfortunately, nuclear-armed states are comfortable ignoring such demands, especially those seven nuclear powers that have no organized critics of their nuclear policies. It should be more difficult for leaders and diplomats of these states to refuse to answer when their counterparts in official meetings ask them questions like the ones suggested here. To do this, of course, the questioners need to become sufficiently informed about these issues to conduct a dialogue that helps clarify intentions and identifies further steps that could build international confidence that nuclear war will not be fought.

Competitors from vastly different cultures and systems of government may be unable to fully understand each other. Heads of states may lie to each other or to themselves (perceiving their intentions as benign when most

other observers would say they are aggressive). Diplomats, especially in non-democratic countries, often do not know the real intentions of their heads of states and lack power to adjust them through dialogue. Thus, normal diplomatic processes are unlikely to sufficiently clarify core intentions. There is no sure way to completely overcome these challenges.

Yet, it should be possible through dialogue and negotiation to understand whether the intentions of leaders of nuclear-armed states are tolerable enough to pursue mutual restraint in the development, deployment, and possible use of nuclear weapons. History suggests that secret correspondence, dialogue, and negotiations between heads of states and through their designated back channels offers the best hope of clarifying intentions and, when intentions are not unyieldingly aggressive, finding pathways to stabilization. The practice (or violation) of restraints in capabilities and behavior can prove intentions.[224]

In any case, there is no evidence that one more delivery system or a hundred more nuclear warheads (for the United States and Russia, at least) will change a leader's mind about invading another country or coming to the assistance of the invaded. (Putin, for example, has not mentioned disparities in numbers of nuclear weapons or missile defenses in any of his nuclear blustering.) Foreign adversaries are already nuclear deterred and will continue to be nuclear deterred for the foreseeable future. If more deterrence is needed, the priorities for effectiveness should be on conventional power, superior economic performance, the attraction of talented young people from competing nations (immigration), and the recruitment of countries from all continents to the comprehensive political-economic-military defense of the people being threatened.

Notes

1 Robert Jervis, "Was the Cold War a Security Dilemma?," *Journal of Cold War Studies* 3, no. 1 (2001): 36–60, 56.

2 Reagan and Gorbachev made such a pronouncement privately to each other in November 1985 after their first meeting in Geneva and it helped open the way to the various mutual restraints that followed. Anatoly Dobrynin, *In Confidence: Moscow's Ambassador to Six Cold War Presidents* (University of Washington Press, 2016), 595.

3 "Mars & Beyond: The Road to Making Humanity Multiplanetary," SpaceX, https://www.spacex.com/humanspaceflight/mars/.

4 Ibid.

5 Florian Neukart, "Towards Sustainable Horizons: A Comprehensive Blueprint for Mars Colonization," *Heliyon* 10, no. 4 (2024): e26180, ISSN 2405-8440, https://doi.org/10.1016/j.heliyon.2024.e26180.

6 For a brilliant examination of the political-economic dimensions of human activity in and through space, see: Daniel Deudney, *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity* (Oxford University Press, 2020).

7 Ibid., 211.

8 Project on Reducing the Risk of Nuclear Weapons Use in Northeast Asia, "Humanitarian Impacts of Nuclear Weapons Use in Northeast Asia: Implications for Reducing Nuclear Risk," RECNA-Nagasaki University, Asia-Pacific Leadership Network, Nautilus Institute, March 2023, https://www.recna.nagasaki-u.ac.jp/recna/bd/files/Year_2_NU-NEA_Book_E_2303.

9 A senior official who had served in U.S. President George W. Bush's administration explained, in December 2008, why he supported the Global Zero movement: "The answer to the riddle," he whispered, "is, we win in a world without nuclear weapons." Unsurprisingly, after then U.S. president Barack Obama declared in April 2009 that "America's commitment to seek the peace and security of a world without nuclear weapons," officials in Russia privately conveyed that this was a U.S. plot to gain further advantage over them, because in a world without nuclear weapons, the United States would be the strongest power. Author conversations in Paris (December 2008) and Moscow (May 2009).

10 Sam Nunn, "Senator Nunn at Chautauqua Institution," Nuclear Threat Initiative, July 19, 2010, https://www.nti.org/news/nunn-chautauqua-institution/.

11 A notable exception is the International Commission on Nuclear Non-proliferation and Disarmament, whose final report acknowledged "the reality that there will be very large psychological confidence barriers to overcome before all nuclear-armed states are willing to give up all their nuclear weapons." See: Gareth Evans and Yoriko Kawaguchi, "Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers," International Commission on Nuclear Non-proliferation and Disarmament, November, 2009, http://www.icnnd.org/reference/reports/ent/contents.html, 73.

12 "Chair's Report of the Group of Eminent Persons for the Substantive Advancement of Nuclear Disarmament," Japanese Ministry of Foreign Affairs, 2020, https://www.mofa.go.jp/mofaj/files/000529774.pdf.

13 Dobrynin, *In Confidence*, 202.

14 George H. W. Bush and Brent Scowcroft, *A World Transformed* (New York: Knopf, 1998), 45.

15 Marc Trachtenberg, *A Constructed Peace: The Making of the European Settlement, 1945-1963* (Princeton University Press, 1999), 382.

16 Tong Zhao, "Political Drivers of China's Changing Nuclear Policy: Implications for U.S.-China Nuclear Relations and International Security," Carnegie Endowment for International Peace, July 17, 2024, https://carnegieendowment.org/research/2024/07/china-nuclear-buildup-political-drivers-united-states-relationship-international-security?lang=en.

17 Scott Sagan, "Just and Unjust Nuclear Deterrence,", *Ethics & International Affairs* 37, no. 1 (2023): https://doi.org/10.1017/S0892679423000035.

18 John Bolton, *The Room Where It Happened***:** *A White House Memoir* (New York: Simon & Schuster, 2020), 323–332.

19 Robert Jervis noted the difficulty of achieving this clarity: "The Soviet archives have yet to reveal any serious plans for unprovoked aggression against Western Europe, not to mention a first strike against the United States," but U.S. defense policy and politics for forty years was based on the opposite. See: Jervis, "Was the Cold War a Security Dilemma?," 59.

20 As Dobrynin noted, the nuclear restraints Washington and Moscow negotiated in the 1970s through 1990s were "based on a broad foundation of compromise." Dobrynin, *In Confidence*, 344.

21 Stephen M. Walt, "Does Anyone Still Understand the 'Security Dilemma'?," *Foreign Policy*, July 26, 2022, https://foreignpolicy.com/2022/07/26/misperception-security-dilemma-ir-theory-russia-ukraine/.

22 Graham Allison, *Destined for War: Can America and China Escape Thucydides's Trap?* (Boston: Houghton Mifflin Harcourt, 2017), 107.

23 Pranay Vaddi, "Adapting the U.S. Approach to Arms Control and Nonproliferation to a New Era" (remarks before the Arms Control Association annual meeting), Arms Control Association, June 7, 2024, https://www.armscontrol.org/2024AnnualMeeting/Pranay-Vaddi-remarks.

24 Kari A. Bingen, Kaitlyn Johnson, and Zhanna Malekos Smith, "Russia Threatens to Target Commercial Satellites," Center for Strategic and International Studies, November 10, 2022, https://www.csis.org/analysis/russia-threatens-target-commercial-satellites; Kevin Holden Platt, "Russia Threatens Space Strikes On Western Satellites At UN Peace Forum," *Forbes*, September 26, 2024, https://www.forbes.com/sites/kevinholdenplatt/2024/09/25/russia-threatens-space-strikes-on-western-satellites-at-un-peace-forum/.

25 "The 2024 Presidential Race and the Nuclear Weapons Threat," Arms Control Association, June 25, 2024, https://www.armscontrol.org/issue-briefs/2024-06/2024-presidential-race-and-nuclear-weapons-threat.

26 "DOE Admits Design Problems with Controversial New Plutonium Bomb Plant at Savannah River Site, Cost Soars to $25 Billion," EIN Presswire, March 14, 2024, https://whnt.com/business/press-releases/ein-presswire/695772044/doe-admits-design-problems-with-controversial-new-plutonium-bomb-plant-at-savannah-river-site-cost-soars-to-25-billion/; Curtis T. Asplund and Frank von Hippel, "Dealing With a Debacle: A Better Plan for US Plutonium Pit Production," Bulletin of the Atomic Scientists, April 27, 2023, https://thebulletin.org/2023/04/dealing-with-a-debacle-a-better-plan-for-us-plutonium-pit-production/.

27 "Defense Policy," Chinese Ministry of National Defense, http://eng.mod.gov.cn/xb/DefensePolicy/index.html#:~:text=to%20safeguard%20national%20sovereignty%2C%20unity,safeguard%20China's%20overseas%20interests%3B%20and.

28 "US Hegemony and Its Perils," *China Daily*, February 20, 2023 (last updated February 21, 2023), https://global.chinadaily.com.cn/a/202302/21/WS63f40722a31057c47ebafd61.html. In March, President Xi Jinping said the United States' aim was "all-around containment, encirclement, and suppression of China."

29 Tong Zhao, "The Real Motives for China's Nuclear Expansion," *Foreign Affairs*, May 3, 2024, https://www.foreignaffairs.com/china/real-motives-chinas-nuclear-expansion.

30 "The Concept of the Foreign Policy of the Russian Federation," Russian Ministry of Foreign Affairs, March 31, 2023, https://mid.ru/en/foreign_policy/fundamental_documents/1860586/.

31 Dmitry Adamsky, *The Russian Way of Deterrence: Strategic Culture, Coercion, and War* (Redwood City, CA: Stanford University Press, 2024), 26; Alex Ward, "Putin Thinks the US Is Trying to Overthrow Him," Vox, June 29, 2017, https://www.vox.com/world/2017/6/29/15892472/putin-russia-dia-report-regime-change.

32 "Presidential Address to the Federal Assembly," President of Russia, March 1, 2018, http://en.kremlin.ru/events/president/news/56957; Rose Gottemoeller, "Russia Is Updating Their Nuclear Weapons: What Does That Mean for the Rest of Us?," Carnegie Endowment for International Peace, January 29, 2020, https://carnegieendowment.org/posts/2020/01/russia-is-updating-their-nuclear-weapons-what-does-that-mean-for-the-rest-of-us?lang=en.

33 Jeongmin Kim, "Why North Korea Declared Unification 'Impossible,' Abandoning Decades-Old Goal," NK News, January 1, 2024, https://www.nknews.org/2024/01/why-north-korea-declared-unification-impossible-abandoning-decades-old-goal/.

34 Ibid.

35 Hyung-Jin Kim and Kim Tong-Hyung, "North Korea's Kim Threatens to Destroy South Korea With Nuclear Strikes If Provoked," Associated Press, October 3, 2024, https://apnews.com/article/north-korea-kim-nuclear-weapons-south-b10f3ee96e9a1171ad8043f2d8d0f8bb; Hyung-Jin Kim, "North Korea Threatens to Boost Nuke Capability in Reaction to US-South Korea Deterrence Guidelines," Associated Press, July 13, 2024, https://apnews.com/article/north-korea-us-south-nuclear-guidelines-13e33ca55c904cfea2bbea20b8fe9ab5.

36 Japanese Ministry of Foreign Affairs "National Security Strategy of Japan," Japanese Ministry of Foreign Affairs, December 2022, https://www.cas.go.jp/jp/siryou/221216anzenhoshou/nss-e.pdf.

37 "America's Strategic Posture: The Final Report of the Congressional Commission on the Strategic Posture of the United States," Institute for Defense Analyses, October 2023, 7, 35, 69, 90, https://www.ida.org/-/media/feature/publications/a/am/americas-strategic-posture/strategic-posture-commission-report.ashx; Study Group, "China's Emergence as a Second Nuclear Peer: Implications for U.S. Nuclear Deterrence Strategy," Center for Global Security Research at Lawrence Livermore National Laboratory, Spring 2023, https://cgsr.llnl.gov/sites/cgsr/files/2024-08/CGSR_Two_Peer_230314.pdf; Eric S. Edelman and Franklin C. Miller, "Joint Prepared Statement and Opening Remarks Before the United States Senate Committee on Armed Services," United States Nuclear Strategy and Policy, September 20, 2022, https://nipp.org/information_series/eric-s-edelman-and-franklin-c-miller-joint-prepared-statement-and-opening-remarks-before-the-united-states-senate-committee-on-armed-services-united-states-nuclear-strategy-and-policy-september-2/; Keith B. Payne and David J. Trachtenberg, "Deterrence in the Emerging Threat Environment: What Is Different and Why It Matters," *Journal of Policy and Strategy* 2, no. 4 (2022): https://nipp.org/wp-content/uploads/2022/11/Analysis-Payne-Trachtenberg.pdf.

38 Robert Soofer and Tom Karako, "Project Atom: Defining U.S. Nuclear Strategy, 2030–2050," in "Project Atom 2023: A Competitive Strategies Approach for U.S. Nuclear Posture through 2035," Center for Strategic and International Studies, September 2023, 13–14, http://www.jstor.org/stable/resrep53287.4.

39 "America's Strategic Posture," vii.

40 Russian military planning and exercises to conduct tactical nuclear weapon strikes against Chinese forces reinforce doubts about the depth of Russian-Chinese willingness to risk much to defend each other. See: Max Seddon and Chris Cook, "Leaked Russian Military Files Reveal Criteria for Nuclear Strike," *Financial Times*, February 28, 2024, https://www.ft.com/content/f18e6e1f-5c3d-4554-aee5-50a730b306b7.

41 Greg Bruno, "Nuclear War Would Cause a Global Famine and Kill Billions, Rutgers-Led Study Finds," Rutgers University, August 15, 2022, https://www.rutgers.edu/news/nuclear-war-would-cause-global-famine-and-kill-billions-rutgers-led-study-finds.

42 For an extensive discussion of the proposal to share U.S. nuclear weapons with India and other neighbors of China, see: George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Oakland, CA: University

of California Press, 1999), 90–102; John Lewis and Xue Litai, *China Builds the Bomb* (Redwood City, CA: Stanford University Press, 1988), 41, 105, 140; Shen Zhihua and Yafeng Xia, "Between Aid and Restriction: Changing Soviet Policies toward China's Nuclear Weapons Program: 1954-1960," Wilson Center, May 2012, https://www.wilsoncenter.org/publication/between-aid-and-restriction-changing-soviet-policies-toward-chinas-nuclear-weapons#:~:text=Soviet%20support%20for%20Chinese%20nuclear,well%20as%20missile%20technology%20development.

43 Perkovich, *India's Nuclear Bomb*, 102.

44 Ibid., 95–99.

45 William Burr, ed., "60th Anniversary of Irish Resolution: A Forerunner of the NPT," National Security Archive, October 29, 2018, https://nsarchive.gwu.edu/briefing-book/nuclear-vault/2018-10-29/60th-anniversary-irish-resolution-forerunner-npt.

46 Trachtenberg, *A Constructed Peace*, 382–385.

47 Article 2 (4), Charter of the United Nations, United Nations, October 24, 1945, https://www.un.org/en/about-us/un-charter/full-text; United Nations, No. 52241, Memorandum on Security Assurances in Connection With Ukraine's Accession to the Treaty on the Non-Proliferation of Nuclear Weapons (December 5, 1994), https://treaties.un.org/doc/Publication/UNTS/Volume%203007/Part/volume-3007-I-52241.pdf.

48 "Negative Security Assurances," Nuclear Threat Initiative, https://www.nti.org/education-center/treaties-and-regimes/proposed-internationally-legally-binding-negative-security-assurances/.

49 "China Says AUKUS on 'Dangerous Path' With Nuclear Subs Deal," Associated Press, March 14, 2023, https://apnews.com/article/china-aukus-nuclear-submarines-f6ecf854646e2dbddd6ebeaa2f2e971d.

50 Robert Einhorn, "A Way Forward on a US-Saudi Civil Nuclear Agreement," Brookings Institution, April 12, 2024, https://www.brookings.edu/articles/a-way-forward-on-a-us-saudi-civil-nuclear-agreement/#:~:text=A%20bilateral%20U.S.%2DSaudi%20agreement,to%20statehood%20for%20the%20Palestinians.

51 R. Scott Kemp et al., "The Weapons Potential of High-Assay Low-Enriched Uranium," *Science* 384, no. 6700 (June 6, 2024): https://www.science.org/doi/10.1126/science.ado8693.

52 Kelsey Davenport, "Iran Accelerates Highly Enriched Uranium Production," *Arms Control Today* 54, no. 1 (January/February 2024): https://www.armscontrol.org/act/2024-02/news/iran-accelerates-highly-enriched-uranium-production.

53 Toby Dalton and Ariel Levite, "AUKUS as a Nonproliferation Standard?," *Arms Control Today* 53, no. 6 (July/August 2023): https://www.armscontrol.org/act/2023-07/features/aukus-nonproliferation-standard.

54 For an analysis of five challenging questions that South Korea and the United States would need to consider, see: Toby Dalton and George Perkovich, "South Korea Goes Nuclear. Then What?," *Foreign Policy*, September 22, 2024, https://foreignpolicy.com/2024/09/22/south-korea-nuclear-weapons-proliferation-deterrence-strategy/.

55 Masataka Kosaka, *International Politics and the Search for Peace* (Tokyo: Japan Publishing Industry Foundation for Culture, 2023), 78.

56 As Kosaka wrote presciently: "As the number of nuclear states rises, instability also grows. . . . Communications among nuclear states are indispensable for arms control. However, such communications become all the more complicated and difficult when the number of such states increases." Ibid.

57 Greg Weaver, "The Role of Nuclear Weapons in a Taiwan Crisis," Atlantic Council, November 2023, https://www.atlanticcouncil.org/wp-content/uploads/2023/11/Weaver-Role-of-Nuclear-Weapons-in-Taiwan-Crisis.pdf, 13.

58 Mariana Budjeryn, *Inheriting the Bomb: The Collapse of the USSR and the Nuclear Disarmament of Ukraine* (Baltimore: Johns Hopkins University Press, 2023), 230.

59 In 2018, Japan published specific measures to secure a balance between a demand and supply of plutonium. See: "The Basic Principles on Japan's Utilization of Plutonium," Japan Atomic Energy Commission, July 31, 2018, https://www.aec.go.jp/jicst/NC/iinkai/teirei/3-3set.pdf.

60 National Academies of Sciences, Engineering, and Medicine, *Laying the Foundation for New and Advanced Nuclear Reactors in the United States* (Washington, DC: The National Academies Press, 2023), https://doi.org/10.17226/26630.

61 George Perkovich, "No Losers: Making Arms Control Work," in "The Future of Nuclear Arms Control and the Impact of the Russia-Ukraine War," American Academy of Arts and Sciences, March 2024, https://www.amacad.org/publication/future-nuclear-arms-control-and-impact-russia-ukraine-war/section/3. Reviewing the book *Partisan Nation: The Dangerous New Logic of American Politics in a Nationalized Era*, the New York University legal scholar Louis Menand commented that "the emergence of two ideologically rigid political parties intolerant of compromise" is the threat to American democracy. "Working systems require buy-in, and

buy-in must be bought by giving something up." See: Louis Menand, "Is It Time to Torch the Constitution?," *New Yorker*, September 23, 2024, https://www.newyorker.com/magazine/2024/09/30/constitution-book-reviews-chemerinsky-pierson-schickler.

62 Dobrynin lamented how the unwillingness of Reagan administration factions to compromise with each other deeply frustrated Russian leaders who were trying to negotiate mutual restraints and deal with their opponents in the military-industrial complex. See: Dobrynin, *In Confidence*, 579, 595.

63 The longtime senior Republican official John Bolton epitomizes this approach. See: John Bolton, *Surrender is Not an Option: Defending America at the United Nations and Abroad* (New York: Simon & Schuster, 2007); Bolton, *The Room Where It Happened*.

64 Thomas C. Schelling and Marie Slaughter, *Arms and Influence*, rev. ed. (1966; repr., New Haven, CT: Yale University Press, 2020).

65 Author email correspondence with John Harvey, October 13, 2023.

66 Author conversation with Jung Pak, meeting at the Carnegie Endowment for International Peace, March 5, 2024.

67 Steve Coll, *The Achilles Trap: Saddam Hussein, the C.I.A., and the Origins of America's Invasion of Iraq* (New York: Penguin Random House, 2024), 350.

68 Ibid.

69 Dobrynin, *In Confidence*, 507.

70 Ronald Reagan, *An American Life* (New York: Simon & Schuster, 1990), 599, 608

71 Ibid., 594–595.

72 Coll, *The Achilles Trap*, 344.

73 Jeffrey S. Peake, *Dysfunctional Diplomacy: The Politics of International Agreements in an Era of Partisan Polarization* (New York: Routledge, 2022).

74 Marianna Sotomayor, "'Increasingly Chaotic': Why House Republicans Are Heading for the Exits," *Washington Post*, April 7, 2024, https://www.washingtonpost.com/politics/2024/04/07/house-republicans-retirements-mike-johnson-majority-elections/.

75 Robert Soofer, "The Politics of Nuclear Weapons Policy," *Comparative Strategy* 35, no. 2 (July 2016): http://dx/doi.org/10.1080/01495933.2016.1176478, 173.

76 A Republican colleague challenged this assessment by saying that if a Democratic president were willing to invest many billions more in modernizing and expanding the U.S. nuclear arsenal, a sufficient number of Republicans would support arms control in return. However, this begs the question why Russia or China would go along with an arms control arrangement that ultimately facilitates a major augmentation of U.S. nuclear forces.

77 Email correspondence with unnamed Chinese nuclear policy expert, commenting on George Perkovich, "Engaging China on Strategic Stability and Mutual Vulnerability," Carnegie Endowment for International Peace, February 23, 2023, https://carnegieendowment.org/research/2022/10/engaging-china-on-strategic-stability-and-mutual-vulnerability?lang=en.

78 Bolton, *The Room Where It Happened*, 324–332.

79 Coll, *The Achilles Trap*, 285–86.

80 Tong Zhao, "Underlying Challenges and Near-Term Opportunities for Engaging China," *Arms Control Today* 54, no. 1 (January/February 2024): https://www.armscontrol.org/act/2024-01/features/underlying-challenges-near-term-opportunities-engaging-china.

81 "Remarks by President Biden Announcing the Fiscal Year 2023 Budget," March 28, 2022, National Archives, https://bidenwhitehouse.archives.gov/briefing-room/speeches-remarks/2022/03/28/remarks-by-president-biden-announcing-the-fiscal-year-2023-budget/.

82 "Speech and the Following Discussion at the Munich Conference on Security Policy," President of Russia, February 10, 2007, http://en.kremlin.ru/events/president/transcripts/24034.

83 Matt Pottinger and Mike Gallagher, "No Substitute for Victory: America's Competition With China Must Be Won, Not Managed," *Foreign Affairs*, April 10, 2024, https://www.foreignaffairs.com/united-states/no-substitute-victory-pottinger-gallagher; Joseph Bosco, "We Need Regime Change in Russia—But How?," *Hill*, May 3, 2023, https://thehill.com/opinion/international/3982406-we-need-regime-change-in-russia-but-how/; David Remnick, "Should Biden Push for Regime Change in Russia?," Political Scene (podcast), *New Yorker*, October 2, 2023, https://www.newyorker.com/podcast/political-scene/should-biden-push-for-regime-change-in-russia; Anonymous, "The Longer Telegram: Toward a New American China Strategy," Scowcroft Center for Strategy and Security, Atlantic Council, 2021, https://www.atlanticcouncil.org/content-series/atlantic-council-strategy-paper-series/the-longer-telegram/#conclusion; Zack Cooper and Hal Brands, "America Will Only Win When China's Regime Fails," *Foreign Policy,* March 11, 2021, https://foreignpolicy.com/2021/03/11/america-chinas-regime-fails/; Matthew Kroenig and Dan Negrea, "Against China, the United States Must Play to Win," *Foreign Policy,* June 24, 2024, https://foreignpolicy.com/2024/06/24/usa-china-biden-xi-taiwan-competition-ccp-war/; Michael R. Pompeo, "Communist China and the Free World's Future" (remarks at the Richard Nixon Presidential Library and Museum), Richard Nixon Presidential Library and Museum, July 23, 2020, https://mn.usembassy.gov/speech-secretary-pompeo-07-23-2020/.

84 Pottinger and Gallagher, "No Substitute for Victory."

85 "There has to be a change of government," Condoleezza Rice, George W. Bush's national security advisor, told a French official in January 2003. "After a while, we can lift the sanctions." See; Coll, *The Achilles Trap*, 445. For an excellent scholarly treatment of these issues, see: Reid B. C. Pauly, "Damned If They Do, Damned If They Don't: The Assurance Dilemma in International Coercion," *International Security* 49, no. 1 (2024): https://doi.org/10.1162/isec_a_00488, 91–132.

86 Susan V. Lawrence, "Taiwan: The Origins of the U.S. One-China Policy," Congressional Research Service, September 27, 2023, https://crsreports.congress.gov/product/pdf/IF/IF12503/1.

87 Lindsey A. O'Rourke, "The Strategic Logic of Covert Regime Change: US-Backed Regime Change Campaigns during the Cold War," *Security Studies* 29, no. 1 (2020): https://www.tandfonline.com/doi/full/10.1080/09636412.2020.1693620, 92–127.

88 Richard Pipes, "Why the Soviet Union Thinks It Could Fight & Win a Nuclear War," *Commentary*, July 1977, https://www.commentary.org/articles/richard-pipes-2/why-the-soviet-union-thinks-it-could-fight-win-a-nuclear-war/.

89 See, for example: Janne Nolan, *Guardians of the Arsenal*: *The Politics of Nuclear Strategy* (New York: Basic Books, Inc., 1989); Fred Kaplan, *The Bomb: Presidents, Generals, and the Secret History of Nuclear War* (New York: Simon & Schuster, February 2, 2021); Gen (ret.) Lee Butler, "Death by Deterrence," *Resurgence* 193 (March/April 1999): https://www.nuclearinfo.org/wp-content/uploads/2022/02/Butler_DEATH_BY_DETERRENCE_April_1999_volume_1_of_1..pdf.

90 For a detailed recent discussion of these dilemmas, see: Kayse Jansen, "New Strategic Deterrence Frameworks for Modern-Day Challenges," *Joint Forces Quarterly* 112, no. 1 (2024): 60-69; Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30, no. 2 (1978): 167–214, https://doi.org/10.2307/2009958; Jervis, "Arms Control, Stability, and Causes of War," *Political Science Quarterly* 108, no. 2 (1993): 239–53, https://doi.org/10.2307/2152010; Jervis, *Perception and Misperception in International Politics* (Princeton, NJ: Princeton University Press, 1976); Stephen M. Walt, "Rethinking the 'Nuclear Revolution,'" *Foreign Policy*, August 3, 2010, https://foreignpolicy.com/2010/08/03/rethinking-the-nuclear-revolution/; and Stephen M. Walt, "Does Anyone Still Understand the 'Security Dilemma'?," *Foreign Policy*, July 26, 2022, https://foreignpolicy.com/2022/07/26/misperception-security-dilemma-ir-theory-russia-ukraine/.

91 Alexey Arbatov, "Nuclear Metamorphoses," *Polis. Political Studies* 5 (2023): http://www.politstudies.ru/files/File/2023/5/Polis-2023-5-Arbatov-Eng.pdf, 18.

92 James M. Acton, "Escalation Through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risks of an Inadvertent Nuclear War," *International Security* 43, no. 1 (2018): 56–99, *https://doi.org/10.1162/isec_a_00320*; Acton, "Is It a Nuke?: Pre-Launch Ambiguity and Inadvertent Escalation," Carnegie Endowment for International Peace, 2020, https://carnegieendowment.org/research/2020/04/is-it-a-nuke-pre-launch-ambiguity-and-inadvertent-escalation?lang=en; Acton, "Silver Bullet? Asking the Right Questions About Conventional Prompt Global Strike," Carnegie Endowment for International Peace, 2013, https://carnegieendowment.org/research/2014/11/silver-bullet-asking-the-right-questions-about-conventional-prompt-global-strike?lang=en.

93 Rose Gottemoeller, "New START: Security Through 21st-Century Verification," *Arms Control Today* 40, no. 7 (September 2010): https://www.armscontrol.org/act/2010-09/new-start-security-through-21st-century-verification; Jane Vaynman, "Better Monitoring and Better Spying: The Implications of Emerging Technology for Arms Control," *Texas National Security Review* 4, no. 4 (Fall 2021): https://tnsr.org/2021/09/better-monitoring-and-better-spying-the-implications-of-emerging-technology-for-arms-control/#:~:text=This%20article%20investigates%20four%20emerging%20technologies%20that%20have,drones%2C%20AI%2C%20and%20additive%20manufacturing, 33–56.

94 James M. Acton, Thomas MacDonald, and Pranay Vaddi, "Reimagining Nuclear Arms Control: A Comprehensive Approach," Carnegie Endowment for International Peace, 2022, https://carnegieendowment.org/research/2021/12/reimagining-nuclear-arms-control-a-comprehensive-approach?lang=en; George Perkovich, "Arms Control in Cyberspace and Outer Space," in *Arms Control at a Crossroads: Renewal or Demise?*, eds. Jeffrey A. Larsen and Shane Smith (Boulder, CO: Lynne Rienner, 2024), https://www.degruyter.com/document/doi/10.1515/9781685859879-013/html.

95 Mikhail Gorbachev, in his worthwhile memoir, avers that the U.S. military-industrial complex mobilized to "undermine improvements in Soviet-American relations." My observations at the time and subsequently suggest that Gorbachev may have underestimated the cognitive/perceptual influence of this complex relative to the financial. See: Mikhail Gorbachev, *Memoirs* (New York: Doubleday, 1996), 416, 439, 444.

96 "President Dwight D. Eisenhower's Farewell Address (1961)," National Archives, https://www.archives.gov/milestone-documents/president-dwight-d-eisenhowers-farewell-address.

97 Ibid.

98 Interestingly, fifty-six years after Eisenhower's speech, Robert Soofer does not mention any influence of defense contractors in his otherwise revealing article cited earlier on the many domestic interests affecting nuclear weapons policymaking. See: Soofer, "The Politics of Nuclear Weapons Policy."

99 Joel Wuthnow, "Why Xi Jinping Doesn't Trust His Own Military," *Foreign Affairs*, September 26, 2023, https://www.foreignaffairs.com/china/why-xi-jinping-doesnt-trust-his-own-military. To change the trajectory of U.S. relations with adversaries, defense analysts Dallas Boyd and James Scouras noted, it would be necessary "to revise the strategic concepts and military programs promoted by the military departments and their industrial contractors. However because these circles have great political weight inside their own countries, this rarely happens." See: Dallas Boyd, and James Scouras, "Escape From Nuclear Deterrence," *Nonproliferation Review* 20, no. 2 (June 2013): https://www.tandfonline.com/doi/full/10.1080/10736700.2013.799822, 339–360.

100 Dobrynin, *In Confidence*, 474. Alexey Arbatov adds, "Often, it is not military objectives that dictate the development of certain weapons, but the opposite is actually the case: the objectives are adjusted to the development and deployment of weapons that are produced to integrate technological advances, to raise the national prestige, or to catch up with and overtake a potential adversary." See: Arbatov, "Nuclear Metamorphoses."

101 George Perkovich participation in U.S.-Russia lab-to-lab NGO meeting; Gorbachev, *Memoirs*, 193, 413.

102 Author conversations with General Khalid Kidwai, Rawalpindi, 2010, 2013. Ashley Tellis describes this phenomenon with customary nuance: "Pakistan will likely possess the largest and most diversified nuclear capabilities in Southern Asia because its program is increasingly driven less by what India is actually doing and more by its fervid imaginings of Indian capabilities coupled with an expansive—and expanding—conception of what its nuclear requirements entail." See: Ashley J. Tellis, "Striking Asymmetries: Nuclear Transitions in Southern Asia," Carnegie Endowment for International Peace, 2022, https://carnegie-production-assets.s3.amazonaws.com/static/files/202207-Tellis_Striking_Asymmetries-final.pdf, 5.

103 "Over Budget and Delayed—What's Next for U.S. Nuclear Weapons Research and Production Projects?," U.S. Government Accountability Office, August 17, 2023, https://www.gao.gov/blog/over-budget-and-delayed-whats-next-u.s.-nuclear-weapons-research-and-production-projects.

104 Aleksandr G. Savelyev and Nikolay N. Detinov, *The Big Five: Arms Control Decision-Making in the Soviet Union* (Westport, CT: Praeger, 1995), 35.

105 Tong Zhao, "Political Drivers of China's Changing Nuclear Policy: Implications for U.S.-China Nuclear Relations and International Security," Carnegie Endowment for International Peace, 2024, https://carnegieendowment.org/research/2024/07/china-nuclear-buildup-political-drivers-united-states-relationship-international-security?lang=en, 60.

106 David Martin, "No. 2 in U.S. Military Reveals New Details About China's Hypersonic Weapons Test," CBS News, November 16, 2021, https://www.cbsnews.com/news/china-hypersonic-weapons-test-details-united-states-military/.

107 Coll, *The Achilles Trap*, 350–364.

108 "News conference following Russian-French talks," President of Russia, February 8, 2022, http://en.special.kremlin.ru/events/president/news/67735.

109 Jansen, "New Strategic Deterrence Frameworks for Modern-Day Challenges," 69.

110 Robert Jervis, "Psychology and Security: Enduring Questions, Different Answers," *Yale Journal of International Affairs* 7, no. 2 (Summer 2012): 13.

111 Robert Soofer, "Documentation: 'The Politics of Nuclear Weapons Policy,' Presentation to Johns Hopkins University Graduate School Symposia, Washington, DC, April 8, 2015," *Comparative Strategy* 35, no. 2 (2016): 169–175.

112 Thomas C. Schelling, "A World Without Nuclear Weapons?," *Daedalus* 138, no. 4 (Fall, 2009): 124–129.

113 For similar calls, see: Carl Sagan "Nuclear War and Climatic Catastrophe: Some Policy Implications," *Foreign Affairs*, Winter 1983/84, https://www.foreignaffairs.com/articles/1983-12-01/nuclear-war-and-climatic-catastrophe-some-policy-implications; Paul Doty, "The Minimum Deterrent & Beyond," *Daedalus* 138, no. 4 (2009): https://doi.org/10.1162/daed.2009.138.4.130, 130–139.

114 George Perkovich and James Acton, *Abolishing Nuclear Weapons: A Debate* (Washington, DC: Carnegie Endowment for International Peace, 2008), https://carnegie-production-assets.s3.amazonaws.com/static/files/abolishing_nuclear_weapons_debate.pdf.

115 Joan Rohlfing, "The Myth of 'Just' Nuclear Deterrence: Time for a New Strategy to Protect Humanity from Existential Nuclear Risk," *Ethics & International Affairs* 37, no. 1 (2023): https://www.cambridge.org/core/services/aop-cambridge-core/content/view/69AD91EBBB624839D15C06D99629693F/S0892679423000023a.pdf/the-myth-of-just-nuclear-deterrence-time-for-a-new-strategy-to-protect-humanity-from-existential-nuclear-risk.pdf/, 47.

116 Sergei Karaganov, "How to Prevent a Third World War," *Russia in Global Affairs*, September 26, 2023, https://eng.globalaffairs.ru/articles/how-to-prevent-a-third-world-war/.

117 Paul Nitze, "Is It Time to Junk Our Nukes? The New World Order Makes them Obsolete," *Washington Post*, January 15, 1994, https://www.washingtonpost.com/archive/opinions/1994/01/16/is-it-time-to-junk-our-nukes-the-new-world-disorder-makes-them-obsolete/e3580886-a891-462f-98bc-b3deaf07fdbd/.

118 Les Aspin, "Counterproliferation Initiative Presidential Decision Directive PDD/NSC 18, December 1993," speech to National Academy of Sciences, December 7, 1993, https://irp.fas.org/offdocs/pdd18.htm.

119 Tobias Bunde, "Nuclear Zeitenwende(n): Germany and NATO's Nuclear Posture," and Ulrich Kuhn, "Of Dependence and Conservatism: Conclusions for German Nuclear Policies in the 21st Century," in *Germany and Nuclear Weapons in the 21st Century: Atomic Zeitenwende?*, ed. Ulrich Kuhn (New York: Routledge, 2024), 87–112 and 308.

120 Thomas C. Schelling, "A World Without Nuclear Weapons?," *Daedalus* 138, no. 4 (Fall 2009): 124–129.

121 Nina Tannenwald, *The Nuclear Taboo: The United States and the Non-Use of Nuclear Weapons Since 1945* (Cambridge, UK: Cambridge University Press, 2007), DOI: https://doi.org/10.1017/CBO9780511491726, 342.

122 Boyd and Scouras, "Escape From Nuclear Deterrence."

123 Arbatov correctly notes that the impetus for nuclear arms control and détente came from the June 1967 Glassboro summit, where U.S. defense secretary Robert McNamara and president Lyndon Johnson surprised Soviet premier Alexei Kosygin with a proposal to stabilize their nuclear competition in ways that would be mutually beneficial. See: Alexey Arbatov, "Controlling Nuclear Arms in a Multipolar World," *Survival* 66, no. 6 (2024): https://www.tandfonline.com/doi/full/10.1080/00396338.2024.2432195, 87–102.

124 Hans M. Kristensen, and Robert S. Norris, "Global Nuclear Weapons Inventories, 1945–2013," *Bulletin of the Atomic Scientists* 69, no. 5 (2013): https://journals.sagepub.com/doi/full/10.1177/0096340213501363, 75–81.

125 Kim Tong-Hyung and Jim Heintz, "What's Known, and Not Known, About the Partnership Agreement Signed by Russia and North Korea," *Los Angeles Times*, June 20, 2024, https://www.latimes.com/world-nation/story/2024-06-20/whats-known-and-not-known-about-the-partnership-agreement-signed-by-russia-and-north-korea.

126 America's Strategic Posture, 7.

127 Workshop, Carnegie Endowment for International Peace, November 7, 2023.

128 Reagan, *An American Life*, 258.

129 Gorbachev, *Memoirs*, 415–416.

130 Campbell Craig, review of *The Revolution that Failed: Nuclear Competition, Arms Control, and the Cold War*, by Brendan R. Green, *Perspectives on Politics* 18, no. 4, (December 2020): https://doi.org/10.1017/S1537592720002741, 1,304–1,305.

131 Robert Jervis, *The Illogic of American Nuclear Strategy* (Ithica, NY: Cornell University Press, 1985), https://doi.org/10.7591/9781501738654, 64.

132 For insight into the history of U.S. quests for nuclear superiority, see: James Graham Wilson, *America's Cold Warrior: Paul Nitze and National Security from Roosevelt to Reagan* (Ithica, NY: Cornell University Press, 2024).

133 Keir Lieber and Daryl Press, "The New Era of Nuclear Weapons, Deterrence, and Conflict," *Strategic Studies Quarterly* 10, no. 5 (2016): https://www.jstor.org/stable/26271621, 33.

134 Dima Adamsky, "Russia's New Nuclear Normal," *Foreign Affairs*, May 19, 2023, https://www.foreignaffairs.com/russian-federation/russias-new-nuclear-normal.

135 Jill Hruby, "Russia's New Nuclear Weapon Delivery Systems: An Open-Source Technical Review," Nuclear Threat Initiative, 2019, https://media.nti.org/documents/NTI-Hruby_FINAL.PDF.

136 Guy Faulconbridge, and Dmitry Antonov, "Putin Says Russia May Resume Global Deployment of Intermediate Range Missiles," Reuters, June 28, 2024, https://www.reuters.com/world/europe/putin-says-russia-resume-production-intermediate-range-missiles-2024-06-28/.

137 "Putin Says Russia Could Adopt US Preemptive Strike Concept," Associated Press, December 9, 2022, https://apnews.com/article/putin-moscow-strikes-united-states-government-russia-95f1436d23b94fcbc05f1c2242472d5c.

138 Keith B. Payne, "Why Rebuild the Triad? Because a Nuclear War Cannot Be Won and Must Never Be Fought," *National Institute for Public Policy*, May 4, 2021, https://nipp.org/information_series/keith-b-payne-why-rebuild-the-triad-because-a-nuclear-war-cannot-be-won-and-must-never-be-fought-no-488-may-4-2021/; Keith B. Payne, "Why US Nuclear Force Numbers Matter," *Strategic Studies Quarterly* 10, no. 2 (2016): 14–24. http://www.jstor.org/stable/26271503; Robert C. O'Brien, "The Return of Peace Through Strength," *Foreign Affairs*, July/August 2024, https://www.foreignaffairs.com/united-states/return-peace-strength-trump-obrien.

139 M. Taylor Fravel, Henrik Stålhane Hiim, and Magnus Langset Trøan, "China's Misunderstood Nuclear Expansion," *Foreign Affairs*, November 10, 2023, https://www.foreignaffairs.com/china/chinas-misunderstood-nuclear-expansion: "Taken together, these two developments suggested that

the United States posed an elevated threat to China's nuclear deterrent. In essence, the United States could use conventional weapons systems (or nuclear ones) to destroy most of China's small nuclear arsenal and then use its missile defenses to limit China's ability to retaliate with any surviving missiles. As two PLA Air Force scholars wrote in 2019, this "combined use of strategic offensive and strategic defensive systems will give the United States a monopolistic strategic advantage."

140 "Law on DPRK's Policy on Nuclear Forces Promulgated," KCNA Watch, September 9, 2022, https://kcnawatch.org/newstream/1662687258-950776986/law-on-dprks-policy-on-nuclear-forces-promulgated/.

141 Arbatov, "Nuclear Metamorphoses," 14.

142 For an excellent discussion of these dynamics, see: Oriana Skylar Mastro, "China's Nuclear Enterprise: Trends, Developments, and Implications for the United States and Its Allies," in "Project Atom 2023 A Competitive Strategies Approach for U.S. Nuclear Posture through 2035," September 2023, https://www.orianaskylarmastro.com/_files/ugd/d769ce_cd0c85ba73384fa396f3d432199a0df4.pdf.

143 "Transcript: Special Presidential Envoy Marshall Billingslea on the Future of Nuclear Arms Control," Hudson Institute, May 22, 2020, https://www.hudson.org/national-security-defense/transcript-special-presidential-envoy-marshall-billingslea-on-the-future-of-nuclear-arms-control: "The president's made clear that we have a tried-and-true practice here. We know how to win these races. And we know how to spend the adversary into oblivion. If we have to, we will, but we sure would like to avoid it."

144 "Presidential Address to the Federal Assembly," President of Russia, February 29, 2024, http://en.kremlin.ru/events/president/news/73585.

145 Dobrynin, *In Confidence*, 212–213.

146 Ibid., 430.

147 Gorbachev, *Memoirs*, 444.

148 Piero Cingari, "Trump at Davos: NATO 5% Push, Tariff Warnings for Europe," Euronews, January 23, 2025, https://www.euronews.com/business/2025/01/23/trump-at-davos-nato-5-push-tariff-warnings-for-europe.

149 Xiaodon Liang, "U.S. Nuclear Costs, Projections Continue to Rise," Arms Control Today 54, no. 3 (April 2024): https://www.armscontrol.org/act/2024-04/news/us-nuclear-costs-projections-continue-rise.

150 W.J. Hennigan, "The Price," *New York Times,* October 10, 2024, https://www.nytimes.com/interactive/2024/10/10/opinion/nuclear-weapons-us-price.html.

151 Lynn Eden, *Whole World on Fire: Organizations, Knowledge, and Nuclear Weapons Devastation* (Ithica, NY: Cornell University Press, 2004).

152 Robert Kehler, "Nuclear Weapons and Nuclear Use," *Daedalus* 145, no. 4 (Fall 2016): 50–61; Daniel Ellsberg, *The Doomsday Machine: Confessions of a Nuclear War Planner* (New York: Bloomsbury, 2017), and Franklin Miller in *Uncommon Cause - Volume II: A Life at Odds with Convention - The Transformative Years*, General George Lee Butler (Parker, CO: Outskirts Press, 2016).

153 Alan Robock, "Nuclear Winter," *Wiley Interdisciplinary Reviews: Climate Change* 1 (May/June 2010): https://climate.envsci.rutgers.edu/pdf/WiresClimateChangeNW.pdf, 418–427; William Burr, ed., "Nuclear Winter: U.S. Government Thinking During the 1980s," National Security Archive, June 2, 2022, https://nsarchive.gwu.edu/briefing-book/environmental-diplomacy-nuclear-vault/2022-06-02/nuclear-winter-us-government; Raymond Jeanloz, "Environmental Effects of Nuclear War," in *Andrei Sakharov: The Conscience of Humanity*, eds. S. D. Drell and G. P. Shultz (Stanford, CA: Hoover Institution Press, 2015), 53–68.

154 For recent invocations of this phrase, see the 2022 U.S. Nuclear Posture Review and the 2023 Strategic Posture Commission Report, 27.

155 Steve Coll, "Why Authoritarians like Saddam Hussein Confound U.S. Presidents," *New York Times,* February 28, 2024, https://www.nytimes.com/2024/02/28/opinion/saddam-hussein-cia-iraq.html?smid=nytcore-ios-share&referringSource=articleShare.

156 For a book-length treatment of Nitze's views, see: James Graham Wilson, *America's Cold Warrior: Paul Nitze and National Security from Roosevelt to Reagan* (Ithica, NY: Cornell University Press, 2024), 172.

157 Among the more readable sources on this phenomenon, see: Coll, *The Achilles Trap*; Tim Weiner, *Legacy of Ashes: The History of the CIA* (New York: Doubleday, 2007); Dobrynin, *In Confidence*; Hossein Mousavian, *The Iranian Nuclear Crisis: A Memoir* (Washington, DC: Carnegie Endowment for International Peace, 2012).

158 For a good example of dismissing what adversaries say about their own motivations, see: Kaplan, *The Bomb*, 280.

159 Steven Kull, *Minds at War: Nuclear Reality and the Inner Conflicts of Defense Policymakers* (New York: Basic Books, 1988); Nolan, *Guardians of the Arsenal*; Scott D. Sagan and Allen S. Weiner, "The Rule of Law and the Role of Strategy in U.S. Nuclear Doctrine," *International Security* 45, no. 4 (2021): https://doi.org/10.1162/isec_a_00407, 126–166; Scott D. Sagan, "Armed and Dangerous: When Dictators Get the Bomb," *Foreign Affairs*, November/December 2018, https://www.foreignaffairs.com/articles/north-korea/2018-10-15/armed-and-dangerous.

160 McGeorge Bundy, *Danger and Survival: Choices About the Bomb in the First Fifty Years* (New York: Vintage Books, 1990), 611.

161 Marc Trachtenberg, "The Past and Future of Arms Control," *Daedalus* 120, no. 1 (Winter, 1991): https://www.jstor.org/stable/20025364?origin=JSTOR-pdf, 210.

162 John G. Hines interview with Colonel General Varfolomei Vladimirovich Korobushin with participation by senior Defense Department advisor Vitalii Kataev (December 10, 1992) in *Soviet Intentions 1965-1985: Volume II Soviet Post-Cold War Testimonial Evidence*, John G. Hines, Ellis M. Mishulovich, and John F. Shull (Maclean, VA: BDM Federal, Inc., 1995), https://nsarchive.gwu.edu/document/17327-document-27-interview-colonel-general.

163 Alexey Arbatov, "Nuclear Metamorphoses," *Polis. Political Studies* 5 (2023): http://www.politstudies.ru/files/File/2023/5/Polis-2023-5-Arbatov-Eng.pdf, 12.

164 Zhao, "Political Drivers of China's Changing Nuclear Policy," 61.

165 Thinking here of lifetime costs for all states involved in nuclear competition.

166 "The Presidential Nuclear Initiatives (PNIs) on Tactical Nuclear Weapons at a Glance," Arms Control Association, last reviewed July 2017, https://www.armscontrol.org/factsheets/pniglance.

167 Phillip Patton Schell and Hans Kristensen, "Chinese Nuclear Forces" in "SIPRI Yearbook 2014: Armaments, Disarmament and International Security," Stockholm International Peace Research Institute, 2014, https://www.sipri.org/sites/default/files/SIPRIYB14c06sV.pdf.

168 Tellis, *Striking Asymmetries*, 6.

169 Hans Kristensen et al., "Status of World Nuclear Forces," Federation of American Scientists, March 29, 2024, https://fas.org/initiative/status-world-nuclear-forces/.

170 "Speech of the President of the Republic on the Defense and Deterrence Strategy," President of France, February 7, 2020, https://www.elysee.fr/en/emmanuel-macron/2020/02/07/speech-of-the-president-of-the-republic-on-the-defense-and-deterrence-strategy.

171 "The UK's Nuclear Deterrent: What You Need to Know," Gov.uk, March 28, 2024, https://www.gov.uk/government/publications/uk-nuclear-deterrence-factsheet/uk-nuclear-deterrence-what-you-need-to-know#:~:text=Since%201962%20the%20UK%20has,European%20and%20Euro%2DAtlantic%20security.

172 "Fact Sheet: Israel's Nuclear Inventory," Center for Arms Control and Non-Proliferation, March 31, 2020, https://armscontrolcenter.org/fact-sheet-israels-nuclear-arsenal/.

173 See: "Creating an Environment for Nuclear Disarmament (CEND) Subgroup 3 on Interim Measures to Reduce the Risks Associated with Nuclear Weapons," U.S. Department of State, June 7, 2024, https://www.state.gov/cend-subgroup-3-on-interim-measures-to-reduce-the-risks-associated-with-nuclear-weapons/; "Identifying Collaborative Actions to Reduce Today's Nuclear Danger," United Nations Institute for Disarmament Research (UNIDIR) August 2021, Identifying_Collaborative_Actions_to_Reduce_Todays_Nuclear_Dangers.pdf; "Reducing Nuclear Risks: An Urgent Agenda for 2021 and Beyond, Agenda for the Next Administration: Nuclear Policy," Nuclear Threat Initiative, October 26, 2020, Reducing_Nuclear_Risks_An_Urgent_Agenda_for_2021_and_Beyond.pdf.

174 Acton, MacDonald, and Vaddi, *Reimagining Nuclear Arms Control*.

175 Reagan, *An American Life*, 550.

176 "Speech and the Following Discussion at the Munich Conference on Security Policy," President of Russia.

177 Jervis, "Was the Cold War a Security Dilemma?," 56.

178 Charles Glaser, "Fear Factor: How to Know When You're in a Security Dilemma," *Foreign Affairs*, June 18, 2024, https://www.foreignaffairs.com/united-states/fear-factor-security-charles-glaser.

179 Authors' conversations with Defense Department officials in the Obama, Trump, and Biden administrations, and with Republican U.S. Senate Armed Services Committee staff.

180 Mastro, "China's Nuclear Enterprise"; Zhao, "Political Drivers of China's Changing Nuclear Policy."

181 Christopher Clary and Vipin Narang, "India's Counterforce Temptations: Strategic Dilemmas, Doctrine, and Capabilities," *International Security* 43, no. 3 (Winter 2018/19): https://doi.org/10.1162/ISEC_a_00340, 7–52; Tellis, *Striking Asymmetries*.

182 Kull, *Minds At War*; Jervis, "Was the Cold War a Security Dilemma?"; Jervis "Arms Control, Stability, and Causes of War"; Hans Morgenthau, "The Four Paradoxes of Nuclear Strategy," *American Political Science Review* 58, no. 1 (March 1964): https://www.jstor.org/stable/1952752, 23–35; Jansen, "New Strategic Deterrence Frameworks for Modern-Day Challenges."

183 Study Group, "China's Emergence as a Second Nuclear Peer: Implications for U.S. Nuclear Deterrence Strategy."

184 Ibid, 32.

185 Ibid.

186 For fascinating reportage on a 1983 wargame that made top Reagan officials conclude nuclear war could not be limited, see: William Langewiesche, "The Secret Pentagon War Game That Offers a Stark Warning for Our Times,"

New York Times, December 2, 2024, https://www.nytimes.com/2024/12/02/magazine/nuclear-strategy-proud-prophet.html.

187 General (ret.) John Hyten, "The Mitchell Institute Triad Conference" (remarks), U.S. Strategic Command, July 17, 2018, https://www.stratcom.mil/Media/Speeches/Article/1577239/the-mitchell-institute-triad-conference/.

188 Keith B. Payne, John R. Harvey, Franklin C. Miller, and Robert Soofer, "The Rejection of Intentional Population Targeting for "Tripolar" Deterrence," National Institute for Public Policy, 2023, https://nipp.org/wp-content/uploads/2023/09/Vol-3-No-9.pdf.

189 Charles L. Glaser, James M. Acton, and Steve Fetter, "The U.S. Nuclear Arsenal Can Deter Both China and Russia: Why America Doesn't Need More Missiles," *Foreign Affairs*, October 5, 2023, https://www.foreignaffairs.com/united-states/us-nuclear-arsenal-can-deter-both-china-and-russia.

190 Zhao, "Underlying Challenges and Near-Term Opportunities for Engaging China."

191 Jeffrey G. Lewis and Scott D. Sagan, "The Nuclear Necessity Principle: Making U.S. Targeting Policy Conform with Ethics & the Laws of War," *Daedalus* 145, no. 4 (2016): , https://doi.org/10.1162/DAED_a_00412, 62–74.

192 As in the previous proposal, a missile type should be considered dual use if it has both nuclear and nonnuclear warheads operationally available. See: Acton, "Is It a Nuke?: Pre-Launch Ambiguity and Inadvertent Escalation."

193 Acton, "Is It a Nuke?: Pre-Launch Ambiguity and Inadvertent Escalation."

194 Exclusive interview of Sergey Ryabkov (August 24, 2018), quoted in Arbatov, "Nuclear Metamorphoses," 26.

195 Ibid.

196 Strategic Posture Commission, 28.

197 Dobrynin, *In Confidence*, 476: "Détente, never forget, was in no small measure prompted by the personal ambition and drive of both the Soviet general secretary and his American counterparts." As noted earlier, see also: Reagan, *An American Life*; Bundy, *Danger and Survival*; Kaplan, *The Bomb*.

198 Para. 97 of the 1996 ICJ advisory opinion.

199 For a chastening study of casualty scenarios from plausible scenarios of nuclear use in Northeast Asia, see Project on Reducing the Risk of Nuclear Weapons Use in Northeast Asia, "Humanitarian Impacts of Nuclear Weapons Use in Northeast Asia"; Alan Robock et al. "Global Food Insecurity and Famine From Reduced Crop, Marine Fishery and Livestock Production Due to Climate Disruption From Nuclear War Soot Injection," *Nature Food* 3 (2022): 586–596.

200 Weaver, "The Role of Nuclear Weapons in a Taiwan Crisis."

201 The U.S. Strategic Posture Commission describes an assured second-strike deterrent as one with "sufficient size and capability to inflict unacceptable damage on an attacker under any circumstances," including after an adversary first-strike. See: America's Strategic Posture, 26.

202 David C. Logan and Phillip C. Saunders, "Discerning the Drivers of China's Nuclear Force Development: Models, Indicators, and Data," National Defense University Press, 2023, https://ndupress.ndu.edu/Media/News/News-Article-View/Article/3471053/discerning-the-drivers-of-chinas-nuclear-force-development-models-indicators-an/.

203 Todd Sechser and Matthew Fuhrmann, *Nuclear Weapons and Coercive Diplomacy* (Cambridge University Press, 2017).

204 Pauly, "Damned If They Do, Damned If They Don't: The Assurance Dilemma in International Coercion."

205 Bolton, *Surrender is Not an Option*; Bolton, *The Room Where It Happened* ; O'Brien, "The Return of Peace Through Strength"; Keith B. Payne and Mark B. Schneider, "U.S. Nuclear Deterrence: What Went Wrong and What Can Be Done?," National Institute for Public Policy, October 7, 2024, https://nipp.org/information_series/keith-b-payne-and-mark-b-schneider-u-s-nuclear-deterrence-what-went-wrong-and-what-can-be-done-no-601-october-7-2024/.

206 Nadezhda Arbatova, "European Security after the Ukraine Conflict: Respice Finem," in "The Future of Nuclear Arms Control and the Impact of the Russia-Ukraine War," American Academy of Arts and Sciences, March 2024, https://www.amacad.org/publication/future-nuclear-arms-control-and-impact-russia-ukraine-war/section/2.

207 Michiru Nishida, *Kaku no Tomeisei: Beiso Beiro oyobi NPT to Chugoku eno Tekiyo Kanousei [Nuclear Transparency: Practices of US-USSR/Russia and NPT as well as their Potential Applicability to China]* (Tokyo: Shinzansha, 2020), 260-278.

208 Zhao, "Political Drivers of China's Changing Nuclear Policy," 66–69.

209 "Chair's Report of the Group of Eminent Persons for Substantive Advancement of Nuclear Disarmament," Japanese Ministry of Foreign Affairs.

210 On theories of victory and denial of adversary victory, see: Brad Roberts, *The Case for U.S. Nuclear Weapons in the 21st Century* (Redwood City, CA: Stanford University Press, 2015); Keith Payne and Matthew Costlow, "Deterring China: A Victory Denial Strategy," *National Institute for Public Policy*, April 4, 2022, https://nipp.org/wp-content/uploads/2022/04/519.pdf, Keith Payne, "Tailored Deterrence: China and the Taiwan Question,"

National Institute for Public Policy, January 2022, https://nipp.org/papers/tailored-deterrence-china-and-the-taiwan-question/.

211 Robert Jervis proposed something like this in his discussion of restraining escalation, in *The Logic of Images in International Relations* (Princeton University Press, 1970), p. 236.

212 Ronen Bergman and Mark Mazzetti, "The Unpunished: How Extremists Took Over Israel," *New York Times Magazine*, May 16, 2024, https://www.nytimes.com/2024/05/16/magazine/israel-west-bank-settler-violence-impunity.html.

213 Tamara Zieve, "This Week in History: Wye River Land-for-Peace Deal," *Jerusalem Post*, October 21, 2012, https://www.jpost.com/features/in-thespotlight/this-week-in-history-wye-river-land-for-peace-deal#google_vignette.

214 Richard Nixon, *1999: Victory Without War* (New York: Simon & Schuster, 1988), 162–163: "Communication does not produce peace, but it does enable each side to get a clear measure of the other and thereby reduce the risk of a miscalculation leading to war." As Anatoly Dobrynin concluded from the Cold War, "The only real answer was for the heads of both countries to streamline arms negotiations by taking an active, continuous, and direct role themselves." See: Dobrynin, *In Confidence*, 424–425.

215 Budjeryn, *Inheriting the Bomb*, 209.

216 Nick Wheeler, *Trusting Enemies: Interpersonal Relationships in International Conflict* (Oxford, UK: Oxford University Press, 2018), 199 and 225.

217 William J. Burns, *Back Channel* (New York: Penguin Random House, 2020).

218 This number needs to be updated and sourced at time of final editing. Eric Schmitt, "September Was Deadly Month for Russian Troops in Ukraine, U.S. Says," *New York Times*, October 10, 2024, https://www.nytimes.com/2024/10/10/us/politics/russia-casualties-ukraine-war.html.

219 Budjeryn, *Inheriting the Bomb*.

220 Boyd and Scouras, "Escape from Nuclear Deterrence," 355.

221 "Statement by External Affairs Minister, Dr. S. Jaishankar in Lok Sabha," Indian Ministry of External Affairs, December 03, 2024, https://www.mea.gov.in/Speeches-Statements.htm?dtl/38665/.

222 "Military Advantage," International Committee of the Red Cross, accessed March 10, 2025, https://casebook.icrc.org/a_to_z/glossary/military-advantage.

223 Lachlan Bennett, "United Nations to Study Impact of Nuclear War for First Time Since 1989 Amid 'Elevated Risk,'" ABC New, November 6, 2024, https://www.abc.net.au/news/2024-11-07/un-votes-for-nuclear-weapons-scientific-panel/104564126.

224 Putin demonstrated all these points in his famous speech to the Munich Security Conference in 2007 when he declared the need "to avoid excessive politeness and the need to speak in roundabout, pleasant but empty diplomatic terms." He listed a number of grievances that Russia subsequently acted upon. This did not stop Moscow and Washington from negotiating and implementing the 2010 New START Treaty, but shortly thereafter Russia began cheating on the earlier INF Treaty. See: "Speech and the Following Discussion at the Munich Conference on Security Policy," President of Russia.

Carnegie Endowment for International Peace

In a complex, changing, and increasingly contested world, the Carnegie Endowment generates strategic ideas, supports diplomacy, and trains the next generation of international scholar-practitioners to help countries and institutions take on the most difficult global problems and advance peace. With a global network of more than 170 scholars across twenty countries, Carnegie is renowned for its independent analysis of major global problems and understanding of regional contexts.

Nuclear Policy Program

The Nuclear Policy Program aims to reduce the risk of nuclear war. Our experts diagnose acute risks stemming from technical and geopolitical developments, generate pragmatic solutions, and use our global network to advance risk-reduction policies. Our work covers deterrence, disarmament, arms control, nonproliferation, and nuclear energy.

Research Center for Nuclear Weapons Abolition

The Research Center for Nuclear Weapons Abolition (RECNA) at Nagasaki University is at the interdisciplinary center between academia and first-hand experiences of the horror of nuclear weapons. Through academic research and analysis, RECNA seeks to redefine the significance of Hiroshima's and Nagasaki's experiences amid current global trends, and to disseminate information and make proposals toward abolishing nuclear weapons.

CarnegieEndowment.org

RECNA.Nagasaki-U.ac.jp/recna/en-top